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ANALYSIS OF THE INFLUENCE OF GREEN DIGITAL ON GREEN FINANCE IN DEVELOPED COUNTRIES IN ASIA

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Abstract

This research aims to see the influence of green digital on green finance in developed Asian countries, namely Japan, South Korea, Singapore and Hong Kong. Since Covid 19 hit throughout the world, digital transformation has grown very rapidly. Now transactions are made easier with the help of digital, and in developed countries digitalization and a sustainable economy are developing very rapidly. This research uses a linear regression analysis model with green finance as the dependent variable and green digital as the independent variable. The results show that green digital has an influence on green freedom in developed Asian countries.

Keywords: Developed Asian Countries, Green Finance, Green Digital

INTRODUCTION

The development of technology and information has caused a shift in public activities, especially the use of media and applications for transaction activities. The more advanced the discovery of information technology, the easier it is for the public to access information through their smart mobile devices. There are various application facilities on smart mobile media such as e-commerce which provides various online trading platforms. It also notes that the use of digital technology in daily life transactions can significantly facilitate daily life (Sunuantari et al., 2021) in (Surya Yudha Regif et al, 2023).

Green technology (also known as green technology or green tech) is a field of technological innovation that aims to develop solutions that are more environmentally friendly, efficient in the use of resources, and economically sustainable. Amid the challenges of climate change and the need for sustainable development, green technology has emerged as a promising solution. This technology not only helps in reducing the carbon footprint but also supports the efficient use of natural resources (https://osc.medcom.id).

One of the main pillars of green technology is renewable energy. Energy sources such as the sun, wind, and water have become important alternatives to fossil fuels. The development of solar panels, wind turbines, and hydroelectric power plants has made it possible to utilize natural resources without producing harmful emissions (https://osc.medcom.id).

The concept of a green economy is an economic idea that aims to improve the welfare

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and social equality of society, while significantly reducing the risk of environmental damage. The difference between the green economy and other economic ideas is the direct assessment of natural capital and ecological services as economic value and cost accounting where the costs realized to society can be traced back and calculated as liabilities, entities that do not harm or ignore assets. (Frone, 1997) (Anwar, 2022) (Hari Kristianto, 2020) (Yasa, 2010).

Green economy, or green economy, refers to the concept of economic development that focuses on sustainable growth, is environmentally friendly, and pays attention to social welfare. Some of the technologies needed to drive a green economy are still in the development stage or are expensive to access, especially for developing countries. This creates a technology gap between developed and developing countries.

The need for green projects, such as sustainable infrastructure and renewable energy, continues to increase. It is estimated that the average annual demand will reach US$200 billion per year by 2030 in Asia. In ASEAN, the annual volume of green finance supply is estimated to have increased to US$40 billion (www.infrastructureasia.org).

Most Asian economies are also exposed to significant transition risks due to the changes required in the global energy and transportation systems. It is therefore imperative to incorporate climate-related financial risks into financial decision-making (Ivan Diaz Rainey et al, 2023).

The energy transition challenge is particularly acute in Asia given its rapid economic growth and associated growth in energy demand, high reliance on coal-fired power generation (it is the most coal-dependent region) and issues of energy security and sustainable energy access in developing Asia, with hundreds of millions of people without access to electricity (Diaz-Rainey, Tulloch et al., 2021).

This research is expected to make a significant contribution to the green technology and green economy literature by broadening the understanding of how renewable energy can be harnessed for sustainable innovation. In addition, the results of this study are expected to provide practical guidance in designing and implementing effective strategies, resulting in maximum innovation value and sustainable competitive advantage (Armando Kusumah et al, 2024).

MATERIAL AND METHODS

Linear Regression Analysis

Next, the data obtained is tabulated to carry out quantitative analysis, using linear regression, with the formula:

$$\mathbf{Y = \alpha + b1X1 + e}$$

Description:

Y	= Green Finance
β	= Constant
X1	= Green Digital
regression ε	= nuisance variable

Results

Dependent Variable: GF
Method: Least Squares
Date: 10/27/24 Time: 15:56
Sample: 1 80
Included observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.35462	1.077403	13.32336	0.0000
GD	-0.011753	0.007383	-0.237445	0.0129

R-squared	0.500722	Mean dependent var	14.14500
Adjusted R-squared	-0.512089	S.D. dependent var	5.490796
S.E. of regression	5.523885	Akaike info criterion	6.280722
Sum squared resid	2380.038	Schwarz criterion	6.340273
Log likelihood	-249.2289	Hannan-Quinn criter.	6.304598
F-statistic	0.056380	Durbin-Watson stat	0.084309
Prob(F-statistic)	0.012934		

Source: Results of eviews 2024 data processing

Based on the information in the table above, it can be seen that the independent variable green digital is a variable that has an influence and is significant to green finance in this study. This is because the regression coefficient value is 0.011 and the linear regression equation is obtained as follows:

Y = 14.35462 - 0.011753 + e

The Adjusted R Square (R2) value is 0.512 or 51.2%. So the green digital variable can explain 51.2% of the relationship to the green finance variable and the remaining 48.8% is explained by other variables outside the model.

Ramsey RESET Test
Equation: UNTITLED
Specification: GF C GD
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	7.737434	77	0.0000
F-statistic	59.86789	(1, 77)	0.0000
Likelihood ratio	46.01686	1	0.0000

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	1041.061	1	1041.061
Restricted SSR	2380.038	78	30.51330
Unrestricted SSR	1338.977	77	17.38931

LR test summary:

	Value
Restricted LogL	-249.2289
Unrestricted LogL	-226.2205

Source: Results of eviews 2024 data processing

Based on the table above, it can be seen that green digital has a tcount value = 7.737> ttable = 2.052 with a significant level of 0.005 <0.00. So it can be concluded that green digital has a simultaneous effect on green finance in developed Asian countries.

From the eviews output above, it can be concluded that Green Digital in Japan, South Korea, Singapore and Hong Kong has a negative (0.512) and significant effect on Green Finance as indicated by the Prob sig value <0.05, which is 0.0129 in each country.

DISCUSSION

Analysis of the Influence of Green Digital on Green Finance

The digital economy and the green economy are the most important subjects on the environmental policy agenda in recent years. The integration between the two produces a new paradigm and creates opportunities for sustainable development, as well as for economic recovery in the context of the current crisis (Carmen Nadia Ciocoiu, 2010).

In this study, the results show that the independent variable green digital is a variable that has a significant influence on green finance in this study.

This is in line with the research of Fazli Abdillah, 2024, where the results of his research explain that the rapid development of technology and digitalization has presented a digital economy characterized by the high development of technology-based businesses and trade transactions.

And this research is in line with the research of Yunxing Song et al, 2024, where the results of his research show that the development of digital finance has a positive impact on green development, but this impact is asymmetric, especially showing regional disparities and threshold effects. In addition, digital finance can effectively suppress consumption volatility and the negative impact of green financial shocks on green development. Importantly, the smoothing effect of digital finance is particularly visible during the downturn phase of the financial cycle. Further examination reveals the moderating role of educational attainment, economic structure, R&D, and government intervention. Our findings underscore the urgent need for government authorities to prioritize economic transformation and R&D activities to strengthen the synergistic benefits between digital finance and green growth (Yunxing Song et al, 2024).

Green Economy Development in China

Looking back, China's rapid economic growth has long been achieved at the expense of environmental pollution. The extensive economic growth mode, which is mainly in exchange for short-term economic benefits, is characterized by high input, high consumption, and high pollution. Although China is the world's largest and fastest growing economy, its economic growth is accompanied by serious environmental pollution, and this economic growth mode is no longer sustainable. It is necessary to fundamentally change the economic growth mode and take the path of green growth. In view of this, how to eliminate the "black footprint" in the process of rapid economic growth and achieve green growth is an important issue that is widely concerned by China and most countries in the world (Capasso et al., 2020 ; Liu et al., 2019 ; Vargas-Hernandez, 2018 ; Sun et al., 2020) in (Guangyou Zhou, et al. 2022).

As one example of what China has done, the implementation of the Central Bank Digital Currency (CBDC) has been carried out in several major cities in China. This implementation occurs as the most important progress to adapt to the digital era in the economic sector. Based on a survey conducted by the BIS Innovation Hub, 86% of central banks in the world are actively exploring CBDC. In April 2020, the People's Bank of China announced the cities of Shenzhen, Chengdu, Suzhou, and Xiongan as the initial cities to be pilot cities for the implementation of CBDC. Seven months later, six cities were included, including the largest city in China, Shanghai (Gatra.com).

Green Economy Development in South Korea

South Korea during the administration of President Lee Myungbak implemented a green growth policy as its national policy in 2008. Green Growth is a concept of environmentally friendly economic development discussed in various international organizations such as UNEP, UN ESCAP, World Bank and OECD. Through this policy, South Korea wants to switch to a green economy (Ari Putra, 2014).

South Korea has made various efforts to improve energy efficiency and reduce greenhouse gas emissions in its country. Limitations in ownership of natural resources and negative impacts to establish policies that can synergize between environmentally friendly economic growth. One of them is to establish green growth as its national policy. The government has made several efforts to achieve green growth, such as launching a green new deal where the government allocates funds for the environmental sector. The government has

also established a five-year development plan (the five-year plan) where the government allocates funds in the development of green technology as an effort to address climate change and increase the country's energy independence. South Korea's green growth policy has encouraged the government and large companies to invest in the development of green technology and renewable resources (Ari Putra, 2014).

Green Economy Development in Japan

A series of policies in Japan introduced in 2009 that include subsidies for the purchase of eco-cars with incentives have had a significant impact on the market. The Japanese car market is the second largest market in the world after the United States, where around 3 million cars are sold each year, including Toyota which is the largest manufacturer in Japan.

Around 43% of the market share, and Nissan and Honda are the second and third largest, each consisting of 17% and 15%. Then followed by Daihatsu, Mitsubishi, Mazda, Suzuki, and Subaru. More than 90% of Japanese car sales, and thus imported cars are still less common. With increasing concerns about the effects of car use on the environment, the Japanese government has established environmental policies in the car market for the purpose of expanding the spread of eco-car types. Policies used such as tax reductions on car use and the purchase of new cars based on eco-cars, and subsidies for the purchase of eco-cars and the replacement of old cars to switch to environmentally friendly green cars (Khairiyah, 2012).

Singapore's Green Economy Development

The Singapore government has launched the Singapore Green Plan 2030. It is a nationwide movement to advance Singapore's national agenda on sustainable development and has five key pillars: City in Nature, Sustainable Living, Energy Reset, Green Economy, and Resilient Future. To achieve these pillars, the Singapore government will introduce a series of new initiatives and targets in the areas of green finance, sustainability, solar power, electric vehicles (EVs), and innovation. The Singapore government has launched the Singapore Green Plan 2030, a nationwide movement to advance Singapore's national agenda on sustainable development. The Green Plan will be spearheaded by five ministries – the Ministries of Education, National Development, Sustainability and Environment, Trade and Industry, and Transport – and has five key pillars as follows: (reedsmith.com).

1. City in Nature: to create green, livable and sustainable homes for Singaporeans.
2. Sustainable Living: making reducing carbon emissions, keeping the environment clean, and conserving resources and energy a way of life in Singapore.
3. Energy Reset: using cleaner energy and improving energy efficiency to reduce Singapore's carbon footprint.
4. Green Economy: seeking green growth opportunities to create new jobs, transform Singapore's industries and leverage sustainability as a competitive advantage.
5. Resilient Future: to build Singapore's climate resilience and enhance its food security (Source: www.reedsmith.com, 2021).

To help achieve these five key pillars, the government will introduce a series of new initiatives and targets. The highlights are:

1. Green Finance: To make Singapore a leading green finance hub in Asia and globally.
2. Sustainability: Introduction of a new Corporate Sustainability Programme to help

Singapore companies develop sustainability capabilities.

3. Solar: Commitment to increase the deployment of solar power generation assets in Singapore to at least 2GWp.
4. Electric Vehicles: Supporting the growth of electric vehicles by doubling the number of electric vehicle charging points in Singapore from 28,000 to 60,000

Innovation: Promoting domestic innovation under the Research, Innovation & Enterprise Plan 2025 (RIE2025), and attracting companies to anchor their R&D activities in Singapore to develop new sustainability solutions. (Source: www.reedsmith.com, 2021).

CONCLUSION

Based on the data obtained and a series of tests that have been carried out using a linear regression analysis model, the conclusions drawn by the researcher are as follows:

a. Green digital is a variable that has an influence and is significant to green finance in this study.
b. The Adjusted R Square (R2) value is 0.512 or 51.2%. So the green digital variable can explain 51.2% of the relationship to the green finance variable and the remaining 48.8% is explained by other variables outside the model.
c. China, South Korea, Japan and Hong Kong are among the developed countries in the Asian region and these developed Asian countries are very aware of the importance of green finance or green economy in sustainable life.

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