Assessment of Green Finance Products Impacts on Commercial Bank Performance:
A Study of Thai 3 Major Banks (2018-2022)

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Abstract

Thailand is a developing economic country in South East Asia, it has had a high growth in economic prospects in recent years. In the modern world, green financial products have increased and caught the interest of investors. Banks in many countries have been generating green products seeking to improve their profitability and performance as well as improving the country's environment, especially in Thailand. This research paper aims to focus on green loans and measurement of banks' performance by looking at the EBITDA (Earmings Before Interest, Tax, Depreciation and Amortizations), ratio of the three major banks in Thailand; namely, Kasikornbank, Siam Commercial Bank, and Bangkok Bank where the data collected from each bank financial reports and some is calculated by hand such as Green Loan Ratio. Therefore, it is crucial to study how banks generate green loans to impact the banks' performance, leading to further study to improve the green economy in Thailand. Using the data of three commercial banks from 2018 to 2022 as samples, the random effects model was used for correlation analysis. As a result, the study shows that there is a correlation between green loans and banks' performance by looking at the EBITDA. The study could be expanded in the future and provide a contribution for the financial sector in Thailand in order to have more motivation playing in green financial products.

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Introduction

There are increasing environmental concerns across the world nowadays. The number of listed companies in the green business group constitutes a small proportion, accounting for only 0.4% of all registered companies (excluding the power plant business). With all the slow growth in the operations, a better and easier potential way to attract the investors to understand and enclose with the social responsibility activities would be banks issuing green loans.

Importance of Green Loans

Green loan providers look beyond profits because every person or business that borrows marks the beginning of change. Naturally, banks must factor in financial risks to prevent deposits from turning into bad debt. But, what banks can achieve through green financial products is the facilitation of loans that benefit both society and the environment, potentially reducing the impact on the environment. This commitment is reflected in varying interest rates.

Role of Banks in Sustainable Development

Banks should play a key role in driving the transformation of the business sector for the better. Unfortunately, the Thai financial sector and banks have yet to acknowledge the significance of sustainable development. They often perceive themselves as not directly contributing to the depletion of natural resources.

Objective and Research Question

To examine through empirical evidence the likely benefits banks will receive from green loans, this study, therefore, uses EBITDA to examine whether the availability of green loan products affects the better performance of the banking business. In this research, we will use the theory following the study of Syndicate green lending and lead bank performance. The research question is: we would like to know how green loans affect the banks' performance in terms of EBITDA in 3 top Thai biggest banks: Kasikornbank, Siam Commercial Bank, and Bangkok Bank. This paper is the first to investigate the relationship between green lending and Thai banks' performance using EBITDA, seeking to analyze the green lending impacting on better performances as a result. In addition, we will use the factors that influence the EBITDA, including Green Credit Ratio (GLR), Total Assets (TA), Liquidity Ratio (LR), Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), and Gross Domestic Product (GDP), due to the scarcity of the prior study on the correlation of the green lending and EBITDA.

1. To examine whether there is a relationship between green lending and the banks' performance

2. To provide contribution to financial sectors in Thailand in order to have more motivation to play in the green-products trends and for investors by investing into the loans.

Literature Review

Financial Products

1. Green Loan

Green finance operations are not just Corporate Social Responsibility (CSR) activities, but it is beyond strategy to attract investors conserving the environment and increase their life utility (Sheikh, 2014). Green loans are offered as a reduction in interest rates in the

Global Business Loan Program. These loans are available to customers whose objectives include increasing energy efficiency, protecting pollution prevention and control in their businesses, procuring and distributing products that support the production or consumption of environmentally friendly products, sourcing products from responsible production sources, and providing services or consulting for businesses in environmental management or sustainable practices (Gilchriast et al., 2021). Some papers said that approaching green products would also improve the firm's competitiveness as well (Jose et al., 2009).

2. GLR

The green credit ratio is a metric that assesses the share of green credit balance in the total loan portfolio. It serves for evaluating the progress of commercial banks in advancing green credit initiatives. Prior research, obtained data from 20 China commercial banks from 2009 to 2018, implying that GLR is negatively associated with the bank's performance as the higher the green credit ratio, the lower the rate of banks' profitability by running the Hausman test (Chang, 2021). Also, the result from Scholtens and Dam (2007) by looking at 27 banks with green credit and 57 banks without green credit stated that the green credit had a negative impact on the commercial banks in China. Through the overall operation, expenses increased, leading to lower profitability and performance.

Bank Performance by Using EBITDA

For so long, measuring banks performance and many other financial institutions has used risk and return aspects to measure. Some use a variety of ratios; for example, Return on Asset (ROA), Return on Equity (ROE), or other financial ratios (Sheikh, 2014). In this paper, we will use EBITDA, an acronym for Earnings Before Interest, Tax, Depreciation, and Amortization, representing the profit generated from a company's operations. The benefit of EBITDA is that it allows people to understand the true profitability of all operations. By initially trimming expenses that are not considered normal operating expenses, it enables a clear overview of the overall business of your company. Positive EBITDA has a favorable impact on the company: If the Net Profit of the company or business is negative, but EBITDA remains positive, the company or business is still making a profit. This can positively influence the company's image and future growth (Cornier et al., 2017).

As for bank performance, Buscemi (2015) suggested that EBITDA is easy to calculate and often used to operate cash flow and an accounting tool to demonstrate the longevity and productivity of a business as well. Hence, businesses, even the small ones in the modern world, most likely use EBITDA to see the business cycle. On the contrary, Rosebrock (2021) said that the EBITDA should not have been used to observe the performance since it discounted cash-flow strengths.

Factors influencing EBITDA

1. Capital Adequacy Ratio (CAR)

Xiaoyi (2021) explored variables related to financial performance received from bank lending have been studied. One of them is the capital adequacy ratio. By examining the average return on total assets about the profits of banks originating from China in green credit, Chang (2021) believed that the capital adequacy ratio is a tool that banks use to measure how much risk they can afford to pay. This can indicate the stability of a bank based on its money management and debt management. In the study case of Indonesian banks, CAR resulted in a negative relationship with the bank performance (Hersugondo et al., 2021). This result complies with

the research from Tan and Anchor (2016) who examined the impact of risk and competition on bank profitability in China which confirmed that there is a negative correlation between CAR and bank performance including ROE and NIM provided negative correlation with the CAR. However, not all studies imply negative relationships, Hersugondo et al. (2021) found that there is no relationship between CAR and ROA in Indonesian banks.

2. Total Assest (TA)

The bank's Total Assets (TA) are used to measure its size. Using total assets for comparing the performance of banks of various sizes, the larger bank generates greater EBITDA per unit of total assets. According to Zhao Ranning from Shanghai University implies that green credit and the bank's total assets are significantly negatively correlated, with 36 commercial banks listed in China (Ranning, 2022). Hersugondo et al. (2021) studied the case in Indonesia, taking data from both state-owned and private commercial banks in 2015 to 2019, also stated that the bank sizes have positive relationship with the banks performance.

3. Liquidity Ratio (LR)

Liquidity Ratios (LR) is one of the crucial financial tools that measure financial performance (Loh, 2017). It will be used to measure the liquidity of the banks (Chang, 2021). LR is expected to be negatively significant to the banks' performances. The result from measuring 69 Indian bank's performance, LR is found to have negative coefficient as it expected (Almaqtari et al., 2018). Similarly, Loh (2017) had finalized that the liquidity ratio was shown to have no relationship with profitability and overall performance of company level. However, there are some studies from Tiberiu (2015) that explain LR can have both effects.

4. Non-Performing Loan (NPL)

Non-Performing loans, often referred to as loans in prolonged arrears, are characterized by their inability to generate income for the bank. These loans are typically categorized based on the duration of their overdue status. Various countries have distinct regulations regarding the classification of non-performing loans. Generally, a loan is deemed non-performing if the debtor fails to give money to the bank for more than 90 days. Most of the banks aimed to prevent the loans from turning into non-performing loans (SCB Annual Report, 2021). Running (2022) implies from 36 commercial banks in China that there will be a negative relationship between banks' profitability and NPL, indicating that the less NPL, the more green loan lending and the performance of the bank. Similarly, Cui et al. (2018) also found a negative correlation between NPL and the bank's performance in the 24 Chinese banks they have studied.

5. Gross Domestic Product (GDP)

GDP is an economic indicator that is commonly used as it reflects the overall economy as a whole. In this paper, GDP is expected to be positively correlated with the bank performance as economic growth and financial performance are well-associated (Pasiouras & Kosmidou, 2007). In the prior studies, different studies were focused on several countries; for example, India. However, there was no evidence of GDP affecting the bank profitability in Indian banks (Almaqtari et al., 2018). Similarly, Loh (2017) stated that GDP had no relationship with the profitability and performance of the company level.

Theoretical Framework

1. Stakeholder Theory

A stakeholder is a group or individual who will strongly influence the firm's activities and also impact on the firm's decision-making processes. They are most likely based on

the firms or other parties to satisfy their interests (Freeman, 1984). Donaldson and Preston (1995) said that we must not only look into stakeholders' wealth but also stakeholder's demands. With four key original points of stakeholder theory, strategic planning, systematic, corporate social responsibility, and organization theory, each firm has a different relationship with its stakeholders which may affect or are affected by the firm's decisions (Mainardes et al., 2011). The terms of stakeholder theory have been adapted to many perspectives including financial institutions, such as green lending. People are more aware and concerned about what the environment will impact their life, so they tend to change their behaviors in order to save the environment (Wong, 2012). With all mentioned above, this theory has paved the way to create the hypothesis of the study about banks issuing green loans impacting their performance. The banks' stakeholders include the government, investors, and issuing companies. Xie et al. (2019) stated that green product innovation have a positive impact on the financial performance as a whole. Not only the government and green companies who are interested in development of the environment would benefit from the activity, but also investors will gain interests directly from the loans and have a good willingness for helping the society. Also, feedback from the stakeholders could be beneficial for the firms to maximize the use of their resources and gain competitive advantages (Zhang et al., 2020)

2. Triple Bottom Line Theory

The Triple Bottom Lines which seeks to expand the concepts of social responsibility to include not just the financial success of a business but also the benefit of the planet and human beings: Profit, Planet, and People. The theory has helped organizations not only in the economic aspects but also in social responsibility as well. Furthermore, it can be used as a parameter of the organizations' performance in terms of business and social responsibility (Zak, 2015). Afterward, when we look into the impact of green loans and the bank's performance, the TBL would help to encourage overall organizations. Therefore, it tends to have a high possibility to stimulate green finance impacting the overall economy and society which will reflect back to, undeniably, a positive relationship with the EBITDA of the banks.

The remainder of the paper proceeds as follows: First, we uphold both stakeholder and triple bottom line theory directly creating the hypothesis. Second, the studies can guarantee that having green products is correlated with the bank's EBITDA.

3. Relevant Research

On the other hand, there is doubt to the theory, according to Baggio and Cooper (2010), stakeholder interests typically conflict with one another, making it impossible for management to make a clear choice. Stieb (2009), who questioned the power-sharing supported by Freeman (2002, 2008), took the same stance. The author questioned how you may deal with vendors, the neighborhood, and customers while in charge of the business. This appears to be, at the very least, not feasible to the real world.

Additionally, there are some theories about the TBL which only look into one dimension, not as a whole. Hence, they decided to use paradox theory instead by stating that the theory provided the conceptual foundations for shifting beyond business sustainability. And the result suggested that the organizations will be exhausted once they try to address all three instead of all one (Walker et al., 2020).

Methodology

Research Design

In this paper, the researcher adopted a Pearson Correlation to see the relationship between green loans and the Thai 3 big banks' performance: Kasikornbank, Siam Commercial Bank, and Bangkok Bank. The equation below illustrates a correlation between dependent variable and independent variables, which are EBITDA, GLR, TA, LR, CAR, NPL, and GDP respectively. The equation takes the following form:

$$EBITDA = \beta_0 + \beta_1 TA + \beta_2 LR + \beta_3 CAR + \beta_4 NPL + \beta_5 GLR + \beta_6 GDP + \varepsilon_1$$

Table 1 Variables Description

Variables	Label	Description
Green Loan	GLR	Total Green Loan issued in the year/ Total Loan issued in the year
Potential Internal Factors of Banks that Influence EBITDA		
Total Asset	TA	To compare the performance of banks of different sizes, the larger bank tends to generate more EBITDA per unit of total assets.
Liquidity Ratios	LR	Liquidity ratios a representative of financial health
Capital Adequacy Ratio	CAR	The higher capital adequacy ratios can lead to higher operating income.
Non-Performing Loans	NPL	Total of non-performing loans/total loans (%) as there is a correlation that the higher non-performing loan ratios may reduce their operating income.
Potential External Factors that Influence EBITDA		
GDP	GDP	Market Conditions

Hypothesis

1. H0: There is no significant correlation between bank performance and the proportion of green loans.

2. H1: There is a significant positive correlation between bank performance and the proportion of green loans.

Data Collection

As the researcher would like to study the bank's performance, the data is collected from each bank's financial annual reports between 2018 and 2022. Also, some ratio needs to be calculated by hand by collecting other raw numbers; for example, Green Loans Ratio, which is the number of Total Green Loan issued in the year/ Total Loan issued in the year. As each bank provides the number of total issued loans, the researcher needs to sum up the number of green

loans which are included by many product types. Next, for external factors, Gross Domestic Product numbers from 2018 to 2022 are collected from the National Economic and Social Development Council. After all data are obtained, the data can be now used to run the correlation coefficient to answer our research questions. The equations below are provided for each bank to use in the Pearson Correlation.

$$EBITDA_{KBANK} = \beta_0 + \beta_1 TA + \beta_2 LR + \beta_3 CAR + \beta_4 NPL + \beta_5 GLR + \beta_6 GDP + \varepsilon_1$$
$$EBITDA_{SCB} = \beta_0 + \beta_1 TA + \beta_2 LR + \beta_3 CAR + \beta_4 NPL + \beta_5 GLR + \beta_6 GDP + \varepsilon_1$$
$$EBITDA_{BBL} = \beta_0 + \beta_1 TA + \beta_2 LR + \beta_3 CAR + \beta_4 NPL + \beta_5 GLR + \beta_6 GDP + \varepsilon_1$$

Results

In this research, we have used the Pearson Correlation and tested each bank's correlation model. The following tables illustrate compelling insights into the green finance product: Green Loans and the factors that influence EBITDA as we present a comprehensive analysis of the impact of Green Finance Products on the operational and financial success of Thailand's three prominent banks using EBITDA throughout the period spanning 2018 to 2022.

Table 2 Kasikornbank

Ratio	EBITDA	GDP	TA	LR	CAR	NPL	GLR
EBITDA	**1.000**	0.731	-0.737	0.349	0.119	-0.378	0.105
GDP	0.731	**1.000**	-0.577	-0.121	0.660	0.142	-0.578
TA	-0.737	-0.577	**1.000**	-0.618	0.159	-0.007	-0.014
LR	0.349	-0.121	-0.618	**1.000**	-0.527	-0.537	0.684
CAR	0.119	0.660	0.159	-0.527	**1.000**	0.131	-0.707
NPL	-0.378	0.142	-0.007	-0.537	0.131	**1.000**	-0.787
GLR	0.105	-0.578	-0.014	0.684	-0.707	-0.787	**1.000**

Table 3 Siam Commercial Bank

Ratio	EBITDA	GDP	TA	LR	CAR	NPL	GLR
EBITDA	**1.000**	0.715	-0.219	0.208	-0.305	-0.130	0.303
GDP	0.715	**1.000**	-0.613	-0.202	0.286	-0.013	0.174
TA	-0.219	-0.613	**1.000**	0.889	0.046	0.667	0.391
LR	0.208	-0.202	0.889	**1.000**	0.092	0.738	0.532
CAR	-0.305	0.286	0.046	0.092	**1.000**	0.735	0.257
NPL	-0.130	-0.013	0.667	0.738	0.735	**1.000**	0.543
GLR	0.303	0.174	0.391	0.532	0.257	0.543	**1.000**

Table 4 Bangkok Bank

Ratio	EBITDA	GDP	TA	LR	CAR	NPL	GLR
EBITDA	**1.000**	0.661	-0.598	-0.380	0.297	-0.421	-0.744
GDP	0.661	**1.000**	-0.624	-0.223	0.613	0.009	-0.284
TA	-0.598	-0.624	**1.000**	0.899	0.228	-0.444	0.030
LR	-0.380	-0.223	0.899	**1.000**	0.626	-0.564	-0.148
CAR	0.297	0.613	0.228	0.626	**1.000**	-0.533	-0.437
NPL	-0.421	0.009	-0.444	-0.564	-0.533	**1.000**	0.874
GLR	-0.744	-0.284	0.030	-0.148	-0.437	0.874	**1.000**

Discussion

EBITDA	GDP	TA	LR	CAR	NPL	GLR
Kbank	0.731	-0.737	0.349	0.119	-0.378	**0.105**
SCB	0.715	-0.219	0.208	-0.305	-0.130	**0.303**
BBL	0.661	-0.598	-0.380	0.297	-0.421	**-0.744**

As you can see from the shown table, it is quite surprising that the results of the correlation between EBITDA and GLR is particularly varied, ranging from a very weak positive correlation at Kbank to a strong negative one at BBL.

For KBank, the correlation of 0.105 presents a weak positive correlation, showing that although its involvement in green loans has a slight positive association with its operational profitability, the relationship is not strong.

For SCB, the correlation of 0.303 presents a moderate positive correlation between its EBITDA and green loans. This means that SCB's strategy in green financing might be positively influencing its operational profitability more so than Kbank.

However, for BBL, the correlation of -0.744 presents a strong negative correlation. This means that an increased proportion of green loans in the bank portfolios is associated with a decrease in EBITDA.

This means that the relationship of green loans on profitability and performance may depend on the individual bank's approach and overall strategy. Another important point is that the profitability of issuing green loans is not that good, so most banks may not take it seriously. To add, one might say that banks may only issue green loans just to show their awareness about the environment in order to improve their image. Furthermore, GDP also contributes as one of the factors that affect the ability of the bank to generate profit each year. To illustrate, if there is an increase in GDP, it is likely that the profit of the bank will rise. Therefore, this might be another reason why the correlations still vary.

As the researcher would like to know more about why the results of EBITDA and GLR are varied that much. Hence, we have found that the bottom line is that the method chosen to provide green loans by environmental considerations carries significant implications for the overall portfolio. It affects the organization's goal of integrating a well-coordinated banking

company that seamlessly incorporates green loans. For example, Siam Commercial Bank's financial goals align with its commitment to offering financial services in various formats and to a wide range of customers, regardless of sustainability. The bank incorporates diverse offerings into its portfolio, targeting a broader group by establishing guidelines for loan issuance to SME entrepreneurs in four main categories. These categories include businesses focused on enhancing energy efficiency, pollution management, activities in transportation using clean energy, and support for women-owned businesses ("Green/ESG Products and Services," n.d.). When small and medium-sized enterprises have a broad customer base, this positively influences their capability. However, Bangkok Bank may still not be able to integrate green lending activities well enough into the overall portfolio, thus becoming an obstacle in operations. Fundamental risk assessment tools may view green lending as a separate activity, resulting in a negative relationship between green lending and EBITDA because this financing cannot yet be fully leveraged. It is considered that Bangkok Bank is committed to providing sustainable loans, but the scope of lending and risk assessment may not be in a business that aims to make a profit well enough. The amount that banks are able to provide to green loans is significantly lower than other banks. This is an indicator that banks are not integrating their portfolios well enough with the overall portfolio.

Conclusions

The results attained in the article may be useful to commercial banks, analysts, and investors to create their view on managing and investing in Green Financial Services and Developing the perspective of Green Financial Products among others. Green Banking could promote more sustainable business practices and reduce the negative environmental impact of banking activities by providing loans for environmentally friendly initiatives.

Limitations and Future Research

This research contains potential kinds of limitations. One limitation of this study is that the data are solely focused on three big banks in Thailand: KBANK, SCB, and BBL, which may have limitations on the received outcomes. Another limitation is that other bank performance measurements may also be influenced by green financial products as well. Consequently, the study contributed only six variables that influence EBITDA, other factors may also influence the bank's EBITDA. Additionally, the study of the correlation between bank's performance and green loans is difficult to find in the prior papers in Thai's study since the green loans were recently launched to the market in less than five years. So, the researcher barely found any papers that study directly about green loans and EBITDA. Next, as mentioned before, some data that needs to be calculated by hand. Each bank's financial annual report has different labels and implications on its data, it may affect the data collection method and prevent the research from being conducted to the full extent. The results may not be generalized, as each bank has a different meaning for each variable, but the author tried to collect the nearest data that holds similar meaning and value terms to the description.

Lastly, the study's result is limited to only one green financial product: Green Loan, which the outcomes can see only impact on one green financial product. According to the prior literature, the findings varied across the types of green financial products.

When conducting future research, it is essential to conduct a wider type of green financial product; for example, green bonds. Along with different potential measurements, such as ROA, ROE, and NPM, to ensure the accuracy and reliability of the findings which can lead to a new path of explanation of the relationship between a bank's performance and green finance products.

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