

The Factors Affecting the Effectiveness of Controlling Green Credit Operations at Vietnamese Commercial Banks



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ABSTRACT: In this paper, factors affecting the effectiveness of controlling green credit operations at Vietnamese commercial banks are investigated based on the COSO Committee's internal control framework as well as related theories and expert interviews in the research field. With 511 valid respondents, the obtained results show that the factors "Risk Management", "Macroeconomic Factors", "Monitoring Activities" and "Information and Communication" affect the effectiveness of controlling green credit operations at Vietnamese commercial banks, in which "Risk Management" was formed by three components including "Control Environment", "Risk Assessment" and "Control Activities". Additionally, "Risk Management" was the most influencing factor, followed by "Macroeconomic Factors", "Monitoring Activities" and "Information and Communication". From this research, recommendations are proposed to promote the effectiveness of controlling green credit operations at Vietnamese commercial banks.

KEYWORDS: effectiveness, internal control, green credit, risk management, control environment, risk assessment, control activities, monitoring activities, information and communication, macroeconomic factors

I. INTRODUCTION

Vietnamese economy has been transformed from a centrally planned economic model to a socialist-oriented market economy one coupled with strong scientific and technological advancements, which have contributed to boosting the development of Vietnam's economy. From 2002 to 2018, Vietnam's gross domestic product per capita (GDP per capita) was increased by 2.7 times, reaching over USD 2,700 in 2019 and more than USD 3,500 by 2020, and the percentage of the poor fell drastically from over 70% to less than 6% with more than 45 million people who have been lifted out of poverty (World Bank, 2020). However, the rapid growth and industrialization, along with the passive focus on economic development and pursuing the immediate economic profit target have brought serious consequences that negatively affect the living environment as well as worsen environmental pollution. Therefore, one of the effective solutions to protect the environment while sustainably ensuring economic development is green growth. Credit is one of the activities where most potential risks arise. Therefore, with the aim of ensuring that credit operations at commercial banks are developed efficiently and stably as well as minimizing risks, increasing the effectiveness of internal control at commercial banks is an urgent solution. Inheriting the characteristics of ordinary credit operations, green credit is a new field but has brought about many benefits to banks in particular and the society in general. Therefore, to maximize the effectiveness of this activity, it is imperative to increase the effectiveness of controlling green credit operations. In this paper, factors affecting the effectiveness of controlling green credit operations at Vietnamese commercial banks are investigated.

II. THEORETICAL BASIS AND RESEARCH HYPOTHESIS

A. Theoretical Basis

As reported by the COSO 2013, internal control is a process dominated by an entity's managers, board of directors and employees. It is designed to provide reasonable reassurance to fulfill aims including ensuring the reliability of financial statements, compliance with laws and regulations, and effective execution of operations. The internal control is found to be effective when it meets two standards at the same time. First, the five factors of internal control (including control environment, risk assessment, control activities, information and communication, and monitoring activities) and related control principles must both exist and function in practice. Second, the five factors must work together as one.

Accordingly, the effectiveness of green credit control is assessed through three criteria. The first criterion is to evaluate the effectiveness of the five components that make up the internal control system in green credit practice. The second criterion is to evaluate whether the five factors operate consistently and in compliance with their functions. The third criterion is to ensure the

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objectives in green credit practice including the reliability of financial statements, conformity with laws, especially with environmental safety regulations, outstanding debt target, bad debt target, profit target being implemented according to plan. That green credit control is effectively applied in practice will contribute to reducing negative impacts on the environment, improving the quality of the ecosystem as well as improving the effectiveness of green credit practice such as credit growth, reduction of the ratio of bad debts, overdue debts,...

Approaching the COSO 2013 report in improving the effectiveness of green credit control, the author builds up five factors constituting the effectiveness of controlling green credit operations that are control environment, risk assessment, control activities, communication and information, and monitoring activities. In addition, the authors proposed a new factor which is a macroeconomic factor to keep a tight rein on group interest, add diverse forms of encouragement and assess the impact of factors in the macro-environment on control activities, thereby encouraging employees to best fulfill their assigned tasks as well as improving the effectiveness in internal control of green credit practice.

According to Ramos (2004), control environment is the foundation of consciousness and culture of an organization, which reflects its general nuances and impacts the sense of control of all members in the organization. It is the foundation for other parts of the internal control system to develop the right principles and operating structures. Establishing and maintaining a tough control environment will contribute to improving the bank's resilience to internal and external pressures. Simultaneously, the lack of a control environment will be a favorable condition for fraud to develop (Noland & partners, 2013). Therefore, establishing a strong control environment is foundational for building effective internal control, and the proposed research hypothesis is as follows: The control environment has a positive impact on the effectiveness of controlling green credit operations at Vietnamese commercial banks (denoted by hypothesis H1).

According to Lannoye (1999), risk assessment is the identification, analysis and management of potential risks that can threaten the achievement of organization's objectives so that risk management can be controlled. A management board cannot eliminate the risk, but can only put the risk to an acceptable level and try its best to alleviate it. The research team found that the management board regularly assesses risks; analyzing existing and potential risks is a prerequisite for reducing credit risks and improving the effectiveness of controlling green credit operations. Therefore, the proposed research hypothesis is as follows: Risk assessment has a positive impact on the effectiveness of controlling green credit operations at commercial banks in Vietnam (denoted by hypothesis H2).

As reported by COSO, control activities are a set of supporting policies and procedures that help ensure that the management board's instructions are implemented. Control activities exist in all units of every level and every activity. Without exception, green credit is still a new field in the bank's credit operations, so there are many unpredictable risks leading to the ineffectiveness of green credit control. Therefore, through risk assessment, the development of appropriate control policies and procedures is a measure to enhance the effectiveness of this activity, and the proposed research hypothesis is as follows: Control activities have a positive impact on the effectiveness of controlling green credit operations at Vietnamese commercial banks (denoted by hypothesis H3).

An information system is a centralized data warehouse, containing a full range of information including internal regulations, State Bank's provisions and relevant laws (Truong Nguyen Tuong Vy, 2018). Hevesi's research (2005) identified media as a significant factor affecting the effectiveness of internal control practice. Specifically, within the green credit control's area, the information and communication system plays the role of providing data and basis to support staff in the process of appraisal and approval to issue green credit, and at the same time identifying, evaluating and managing risks in green credit practice. Therefore, constructing a complete, accurate, timely and up-to-date information and communication system will contribute to improving the effectiveness of controlling green credit operations and the proposed research hypothesis is as follows: Information and Communication has a positive impact on the effectiveness of controlling green credit operations at Vietnamese commercial banks (denoted by hypothesis H4).

According to Springer (2004), monitoring is the final process of the internal control system. Monitoring and control activities always have a close relationship with each other. The monitoring activities is performed to evaluate the establishment and implementation of control procedures and is a process of evaluating the quality of the internal control system over time. In such a process, detected deficiencies will be reported to higher levels and adjusted as needed. Therefore, monitoring plays a very crucial and active role in ensuring the effectiveness of internal control practice and the proposed research hypothesis is as follows: Monitoring Activities have a positive impact on the effectiveness of controlling green credit operations at Vietnamese commercial banks (denoted by hypothesis H5).

According to PEST analysis, macro factors include factors related to legal institutions (political), economics, social culture, technology. All activities of organizations are influenced by macro environmental factors. These factors can have both positive and negative impacts on green credit operations. However, in the research, the macro factors will be evaluated based on positive criteria. Specifically, macro factors that directly affect green credit operations could include awareness of environmental protection and green consumption demand. When these factors are enhanced, the effectiveness of controlling green credit will be ensured and the

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proposed research hypothesis is as follows: Macroeconomic Factors have a positive impact on the effectiveness of controlling green credit operations at Vietnamese commercial banks (denoted by hypothesis H6).

Figure 1 shows the proposed research model with the affecting factors considered

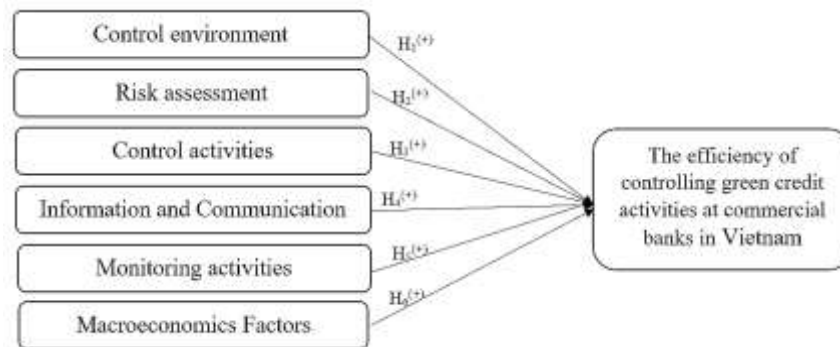


Figure 1. Proposed research model

Source: Authors, 2021

B. Research Methods

The survey was conducted at Vietnamese commercial banks throughout the country territory from February 8, 2021 to February 28, 2021. In this research, the overall respondents are employees and leaders who are working in divisions and departments in charge of credit operations, especially green credit. Additionally, the authors also target lecturers in the fields of banking and green credit. Survey data was collected through online questionnaires. Also, the questionnaires were distributed on social networking platforms and at the same time, emailed to the employees and leaders working at the branches and head offices of Vietnamese commercial banks. The obtained results were 531 respondents, of which 511 were valid and officially put into data processing.

The raw processed data will be processed in SPSS 20.0 software. Descriptive statistical methods are used to analyze frequency statistics and describe the characteristics of the sample, including: gender, age, position and group of banks. Data of the remaining variables of the study are analyzed through the following steps: scale reliability test (Cronbach's Alpha), exploratory factor analysis (EFA), correlation analysis and linear regression analysis.

III. RESEARCH RESULTS

A. Current Situation Of Controlling Green Credit Operations At Vietnamese Commercial Bank

In Vietnam, according to Directive No. 03/CT-NHNN dated March 24, 2015 on promoting green credit growth and managing environmental and social risks in credit operations, the State Bank requests commercial banks to promote green credit for projects with clear objectives on environmental protection and to encourage eco-friendly business activities. Thanks to the orientation and direction from the State Bank as well as efforts made by credit institutions, green credit has been receiving more and more attention through noticeable credit packages and investment limits that are improved day by day.

According to the State Bank's data, although the proportion of green credit outstanding in Vietnam is quite small in the total outstanding credit, it tends to increase rapidly and promote remarkable efficiency, contributing to sustainable growth and environmental protection. To be more specific, in 2015, green credit scale accounted for only 1.5% of the total outstanding credit. By 2019, the scale of green credit had increased to 4.1%. In addition, by the end of the second quarter of 2019, green credit balance had reached VND 317,600 billion, having increased by 29% compared to the end of 2018, of which, medium and long-term loans accounted for 76% of outstanding loans in green credit (The State Bank's Department of Credit for Economic Sectors, 2019). Specifically, the green agriculture sector was accounted for 46% of the total green credit balance; renewable energy and clean energy sectors accounted for 15%; sustainable water management sector in urban and rural areas for 11%; sustainable forestry sector for 5%; and other sectors for 23%. Besides, the interest rate is very attractive which represents 5% to 8% per year for short-term green sectors and 9% to 12% per year for medium and long-term sectors.

B. Sample Descriptive Statistics

The research samples used to analyze frequency statistics and describe the characteristics of the sample are shown in Table 1

Table 1. Descriptive Statistics for the Research Samples

Characteristics		Frequency	Percentage (%)
Gender	Male	226	44.2
	Female	285	55.8

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Age	18 - 22 years old	22	4.31
	23 - 30 years old	108	21.14
	31 - 40 years old	240	46.97
	41 - 50 years old	126	24.66
	51 - 59 years old	15	2.94
Position	Head office leader	77	15.07
	Branch leader	93	18.20
	Head office staff	106	20.74
	Brand staff	200	39.14
	Others	35	6.85
Group of banks	State commercial bank	99	19.4
	Joint-stock commercial bank	412	80.6

Source: Investigated by authors in 2021

C. Evaluate The Scale By Cronbach's Alpha Confidence Coefficient

Table 2 shows the Cronbach's Alpha analysis results in which all the Cronbach's Alpha coefficients are greater than 0.6 so that the scale used in the research is well evaluated. The variable correlation coefficient is checked to eliminate variables with unsatisfactory correlation coefficients. In addition, the results show that all variables have the correlation coefficients greater than 0.3. Therefore, the authors conclude that the scale can be evaluated and suitable for further analysis and evaluation.

Table 2. Results of Reliability.

Factors	Items	Cronbach's Alpha	The minimum value of corrected item-total correlation
Control Environment	6	0,928	0,718
Risk Assessment	4	0,912	0,783
Control Activities	4	0,895	0,741
Monitoring Activities	4	0.913	0.735
Information and Communication	4	0,904	0,710
Macroeconomics Factor	8	0,926	0,676

Source: Investigated by authors in 2021

D. Explore Factor Analysis EFA

EFA factor analysis for independent variables:

The results of the KMO and Bartlett's Test showed that the value of the KMO coefficient was equal to 0.950 and the Bartlett's Test was 17269.874 with the coefficient Sig. equal to 0.000. The obtained values of the extraction sums of squared loadings as well as those of the initial eigenvalues were larger one. The cumulative value of the extraction sums of squared loadings for four components was 74.559% which satisfies the requirement of greater than 50%. In addition, all the variables used have the values of factor loadings greater than 0.5, indicating a practical significance.

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The results obtained after analyzing twice showed that the observed variables in the original model had the elimination and the aggregation of a few observed variables, which lead to the formation of four variables. Specifically, the observed variable MF2 in the factor "Macroeconomics" is excluded from the model because the loading coefficient is smaller than the standard loading coefficient. "Control Environment", "Control Activities" and "Risk Assessment" have been merged into a group called "Risk Management".

EFA factor analysis for dependent variables:

The results of the KMO and Bartlett's Test showed that the value of the KMO coefficient was equal to 0.860 and the Bartlett's Test was 1669,244 with the coefficient Sig. equal to 0.000. The cumulative value of the extraction sums of squared loadings for four components was 72.925% which satisfies the requirement of greater than 50%. In addition, all the variables used have the values of factor loadings greater than 0.5, indicating a practical significance.

The results of exploratory factor analysis to evaluate among 29 initial observed variables showed that there is a separation and aggregation of a few variables of different components, leading to the formation of four new groups of factors affect the effectiveness of controlling green credit operations so that the authors will continue to analyze, explain and name the new groups of factors.

E. Correlation Analysis

Table 3 shows that most of the independent variables are correlated with the dependent variable. Specifically, the correlation coefficients of the variable "Risk management", "Macroeconomic Factors", "Monitoring Activities" and "Information Communication" are 0.750, 0.682, 0.580 and 0.601, respectively. At below 1%, it showed that positive correlation is pretty close between independent variables and dependent variable "Effectiveness". There is a relatively high correlation between the independent variables but not exceeding 0.8.

F. Regression Analysis

Table 3. Statistical Analysis of Regression Coefficient

Independent variable	Unstandardized coefficients		Standardized coefficients	T-value	Sig.	Multi-collinearity	
	B	Standard deviation	Beta			Multi-collinearity	VIF
Constant	0.184	0.135		1.367	0.172		
RM	0.394	0.039	0.396	10.060	0.000	0.390	2.562
MF	0.324	0.034	0.308	9.672	0.000	0.596	1.679
MA	0.073	0.033	0.075	2.235	0.026	0.542	1.846
IC	0.079	0.030	0.090	2.628	0.009	0.521	1.918

Source: Investigated by authors in 2021

Table 3 shows the results of statistical analysis of regression coefficients for four variables "Risk Management" (RM), "Macroeconomics Factors" (MF), "Monitoring Activities" (MA) and "Information and Communication" (IC). As a result, all four variables have their standard deviations less than 0.05 which indicates that the variables are significantly correlated with the effectiveness of controlling green credit at Vietnamese commercial banks.

From the obtained results, we can obtain the Effectiveness Factor (EF) that directly affects the effectiveness of green credit control at Vietnamese commercial banks through standardized linear regression equations as follows: $EF = 0.396 RM + 0.308 MF + 0.075 MA + 0.090 IC$.

IV. CONCLUSIONS AND RECOMMENDATIONS

Through the research process, the authors have realized that all four factors affect the effectiveness of controlling green credit operations at commercial banks; however, risk management is the highest positive impact factor. This shows that improving green credit control has become an imperative issue that Vietnamese commercial banks need to pay attention in order to ensure effective implementation of credit packages for the environment as well as to contribute to improving the quality of management in the commercial banks.

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Some commercial banks have learned about regulations and guidelines of the government, ministries and sectors related to green growth or green credit, and there are also banks that have implemented green credit issue policies. Nevertheless, this remains a novel activity in the banking and finance sector which means that there is a high chance of rising credit risks. In addition, most commercial banks do not have a separate green credit appraisal process or set up a department responsible for environmental risk management and green credit development. More importantly, projects having environmental impacts and developing towards environmental sustainability have not yet been identified as green credit by banks.

From the research results obtained, the authors would like to recommend several possible solutions for Vietnamese commercial banks as follows:

First, the commercial banks need to establish and use quality information systems to support controlling green credit operations. There should be at least one department with primary responsibility in synthesizing, screening and processing data from the inside and outside into appropriate information to meet the needs, and support each of the staff because the quality of information affects the effectiveness of the internal control system on the whole. Modernizing information technology, developing internal management systems to serve the selection and management of appropriate and useful information sources in accordance with the objectives and operation modes of commercial banks are extremely essential.

Second, for the reason that green credit practice is highly risky, the internal control system should be continuously monitored and examined through the close supervision from the remote monitoring department and by the management staff, periodic monitoring department. In addition, the commercial banks need to strengthen control procedures and control activities in the control system to maintain the effectiveness of green credit operations.

Third, in order to promote green credit operations at commercial banks, some environmentally safe solutions can be suggested such as raising the community's awareness of environmental protection, building green consumption habits of households, saving energy, actively using renewable energy and natural energy. Furthermore, increasing people's income will help improve the general economic potential of society, and people will also pay more attention to green consumption. Preferential policies on capital sources or support for domestic commercial banks in accessing preferential capital sources, financing green projects should be supplemented so that manufacturers will not compromise the ecological environment.

Fourth, because commercial banks still identify "green" policies as credit operations, the General Meeting of Shareholders needs to clearly quantify the plan targets and responsibilities for green credit operations. Next, commercial banks need to have policies to recruit and train qualified human resources, in which it is necessary to focus on resources serving green credit practice. Based on the success of issuing bank credit handbooks, the State bank needs to continue to study and complete legal regulations guiding environmental risk assessment for the field of green credit.

Apart from the scientific and practical gains, certain limitations remain in the research. For example, the scale of the components of controlling green credit was based on a one-time interview with experts in the banking sector, in addition to being built according to the COSO and BASEL models as well as previous studies. Moreover, some employees participating in the inquiry into green credit practice did not understand the questions and answered hurriedly, having little consideration or were not in consistency with their thoughts when conducting the quantitative research. For the scope of the study, the authors only work on commercial banks and have not yet expanded to branches of foreign banks, policy banks, cooperative banks, people's credit funds, so the research result may only be of practical value at Vietnamese commercial banks.

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