

Pham Duc Cuong; Thi Ngoc Anh Do; Doan Thanh Nga; Nguyen Thi Xuan Hong; Thi Kim Yen Pham

Article

The impact of sustainability practices on financial performance: Empirical evidence from Sweden

Cogent Business & Management

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Pham Duc Cuong; Thi Ngoc Anh Do; Doan Thanh Nga; Nguyen Thi Xuan Hong; Thi Kim Yen Pham (2021) : The impact of sustainability practices on financial performance: Empirical evidence from Sweden, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 8, Iss. 1, pp. 1-19,
<https://doi.org/10.1080/23311975.2021.1912526>

This Version is available at:

<https://hdl.handle.net/10419/270268>

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To cite this article: Duc Cuong Pham, Thi Ngoc Anh Do, Thanh Nga Doan, Thi Xuan Hong Nguyen & Thi Kim Yen Pham | (2021) The impact of sustainability practices on financial performance: empirical evidence from Sweden, Cogent Business & Management, 8:1, 1912526, DOI: [10.1080/23311975.2021.1912526](https://doi.org/10.1080/23311975.2021.1912526)

To link to this article: <https://doi.org/10.1080/23311975.2021.1912526>



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Received: 01 January 2021
Accepted: 31 March 2021

*Duc Cuong Pham School of
Accounting and Auditing, the
National Economics University,
Vietnam
Email: cuongpd@neu.edu.vn

Reviewing editor:
Albert W. K. Tan, Asia Pacific
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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

The impact of sustainability practices on financial performance: empirical evidence from Sweden

Duc Cuong Pham^{1*}, Thi Ngoc Anh Do², Thanh Nga Doan¹, Thi Xuan Hong Nguyen³ and
Thi Kim Yen Pham⁴

Abstract: This study aims at empirically exploring the influence of sustainability practices on the financial performance of 116 listed Swedish companies in the year 2019. The research findings indicate a positive relationship between corporate sustainability and financial performance that is measured by earnings yield, return on asset, return on equity and return on capital employed. However, when it comes to a market-based financial measure, Tobin's Q, the result is inconclusive. Finally, to improve financial performance, firms are recommended to engaging in Dow Jones Sustainability Index, prepare their sustainability report in accordance with Global

ABOUT THE AUTHOR

Duc Cuong Pham

Cuong Pham is Associate Professor of Accounting at School of Accounting and Auditing- The National Economics University, Vietnam. His research interests include financial accounting, management accounting, financial statement analysis, earnings management, CSR, and accounting information system.

Thi Ngoc Anh Do

Anh Do was master student at Banking Academy of Vietnam. Currently, she is independent researcher. Her research interests include integrated reporting, sustainability and CSR.

Thanh Nga Doan

Nga Doan is an accounting lecturer at School of Accounting and Auditing- The National Economics University, Vietnam. Her research interests include financial accounting and reporting, management accounting, sustainability, and auditing.

Thi Xuan Hong Nguyen

Hong Nguyen is accounting lecturer at Hanoi University of Industry, Vietnam. Her research interests include financial accounting and reporting, management accounting, sustainability, and financial performance.

Thi Kim Yen Pham

Yen Pham is an accounting lecturer at Vinh University, Vietnam. Her research interests include financial accounting and reporting, management accounting, sustainability, and balanced scorecard.

PUBLIC INTEREST STATEMENT

We have been dealing with the need for sustainability- defined as development that meets the needs of the current generation without affecting future generations. Sustainable development requires economic entities to align sustainable development goals with operational strategies.

This study empirically explores the influence of green initiatives on the financial results of listed Swedish companies. The paper finds that there is a positive relationship between sustainability performance and financial success. From the results, the research calls on to firms' managers to conform to the sustainability practices. The microeconomic policies should aim to enhance sustainable growth rate towards the growth of the company with its performance. In addition, the government should define a target to keep track of the sustainable guidelines and foster a qualitative reporting by national companies. Stronger measures are bound to be introduced, and legislation with compulsory consequence analysis ought to be proposed, so that companies can follow.

Reporting Initiative (GRI) Standards, improve their sustainable growth rate, as well as keep a high position in the corporate social responsibility ranking.

Subjects: Accounting; Financial Accounting; Management Accounting

Keywords: sustainability; sustainable development; green initiatives; financial performance

JEL code: G18; G30; G32

1. Introduction

Sustainability is an emerging and rapidly growing interdisciplinary field of research, closely related to the economic implications of environmental issues for different industries and firms, and the need of transition to a sustainable economy. Yet, there is no denying that the practices of sustainable development have triggered transformation in a wide range of industries. In this regard, many companies are already aware of the significance of latest trends and are making use of go-green business models with integrated corporate social responsibilities, while larger, more established corporations are moving towards the production of more environmentally friendly and safe goods to meet social demands (Sauve, Bernard, Sloan (Sauve et al., 2016).

To deal with the consequences of climate change, human beings have been trying to find new ways of revolutionizing the economy. In the decades following World War II, development was defined primarily in economic terms and measured by growth in countries' gross domestic product (GDP) and per capita incomes (Harrison, 1996). Nevertheless, several authors in the late 1980s and early 1990s proposed a different theory about what constituted development, conceptualized as "human development" (Desai, 1991; Streeten, 1994). Accordingly, development needs to be about human well-being, expanding people's choices and freedom. Though important, economic growth is not sufficient for full development. Over the past three decades, in parallel with human development, another powerful concept—sustainable development—also attracts a great deal of attention from scholars and authors on the discussion of new economic models (Khasanov, 2016). These two mutually enrich each other and gradually confirm the idea that if not being sustainable, the development path cannot claim the title of human development. There may exist some difference in theoretical approaches, however, human being is at the center of these concepts.

For years, responding to environmental issues has always been a no-win proposition for businesses (Walley & Whitehead, 1994). In this new world, both the businesses and the environment can be winning. Put it another way, going green is no longer an obstacle of doing business, as it is a catalyst for renovation and innovation, new market opportunities and the wealth maximization.

This paper is intended to contribute to the debate of assessing and forecasting the dynamics of a sustainable development in Sweden—a developed country in Northern Europe, especially where there have been a few researches about this relation in the contemporary era. Through integrating and expanding the previous theoretical framework of sustainability evaluation, the thesis aims at empirically quantifying the relationships among critical factors (economic development, social values, resources and environment) that affect the corporate financial performance. The research relevance is defined by the need of establishing a theoretical and empirical basis of sustainability practice for the transition era and identifying evaluative criteria for assessing its impact on business financial situation.

The paper includes five main parts. The first is introduction, then the literature review and hypothesis, the methodology, empirical results and analysis, and conclusion and recommendation.

2. Literature review and Hypothesis development

Although sustainability is a modern problem in the economies of developed world, the paper is successful in leveraging on certain past studies as a guide for variable selection as well as methodology. Some of these studies are briefly discussed as follows.

2.1. Defining sustainability and sustainable development

In this day and age, the concepts “sustainability” and “sustainable development” have become buzzwords. However, it is a challenge to universally define sustainability, sustainable development and other related terms. This section discusses the definition of these phrases from previously published literature, gives a brief summary of some components of the definition, and explains the meaning of the terms in this research.

From 1970s to the 1990s, sustainability was primarily linked to environmental concerns. Remarkably, a global action programme for sustainable development was established at 1992 UN Conference on Environment and Development (UNCED). One of the vital outputs was Agenda 21 which offered guidance and practices on sustainability with the focus on environmental aspects (Drexhage & Murphy, 2010).

Furthermore, today’s modern business world greatly contributes to the debate on sustainability concerns. From entrepreneurial perspective, sustainability talks about a corporation’s willing and capacity to last in time in terms of financial performance and resource management. According to Doane and MacGillivray (2001), business sustainability is the business of staying in business.

These three pillars cover many areas of development, from urban to agriculture development, transportation, infrastructure, energy consumption, water access and electricity availability. They are (1) Economic sustainability, (2) Environmental sustainability and (3) Social sustainability. It is of great importance for strategic leaders and officials to be constantly aware of the interactions, complementarities and trade-offs among the pillars. Only then will they be able to ensure responsible human behaviors and actions at individual, regional, national, international levels.

The origin of the “sustainable development” concept dates back to more than 50 years ago. For the first time in 1969, the term appeared in an official document which was signed by 33 African countries, under the auspices of the International Union for Conservation of Nature (IUCN) (Uribe et al., 2018). Sustainable development was described as the “economic development that may have benefits for current and future generations without harming the planet’s resources or biological organisms” in the law that made up the National Environmental Policy Act (NEPA) (Green, 2017).

Up to here, one might wonder, how does sustainable development differ from sustainability? There is no fine line between one thing and the other, of course. Yet sustainability is often considered a long-term goal or vision, for example, a sustainable enterprise or a sustainable world, while sustainable development consists of several approaches, processes and pathways to achieve that target, for instance, crop rotation, sustainable agriculture and forestry, well-structured governance, technology advances, usage of recycled materials or renewable resources, construction of a new community in a previously undeveloped area without destroying the ecosystem or harming the environment, etc. (UNESCO, 2020).

Financial performance is understood as the degree to which financial targets have been accomplished. Measuring financial performance has become a central issue in both academia and business world, as enterprises are challenged to produce effective outcomes. Most corporate strategy analysis applies either accounting- or market-based measures to operationalize firm financial performance: (1) an accounting indicator is the company’s net profit, and (2) the market measure is market value of the firm at the end of the fiscal year (Belkaoui & Picur, 1993).

2.2. The relationship between sustainability and financial performance

Though definitions are a good tool to understand the notions, several attempts have been made to go beyond such simple definitions and determine a series of principles or interconnections.

On the negative impact between sustainability and financial performance, as argued by Friedman (1970), there exists exactly one social responsibility of business: to manage its resources

and involve in activities aimed at enhancing profits. Companies participating in sustainability practices are incurring more expenses, thus aggravating these firms' ability to demonstrate positive financial results. On that account, it is supposed that if leaders make any investment which is not advantageous to staff, shareholders or clients, they are abusing the company's resources. Preston and O'Bannon's (Preston & O'Bannon, 1997) managerial opportunism hypothesis suggest social responsibility in companies has an adverse effect on financial performance. To specify, if financial results show positive trends, managers reduce social expenditure to enrich their personal gains. In contrast, they may seek to compensate for dissatisfactory financial results by taking part in ostentatious social programs.

Jensen (2002) argued that business managers who seek sustainability solutions would interfere with the goal of firm value maximization. Empirically investigating 50 largest US and Japanese companies, Ho and Taylor (2007) recognized that TBL (triple bottom line) reporting decreased with firm profitability, measured by ROA. López et al. (2007) analyzed a sample of 110 companies, using DJSI (Dow Jones Sustainability Index) and DJGI (Dow Jones Global Index). They concluded that corporate social responsibility (CSR) and firm performance, calculated as Profit before tax (PBT) growth, were negatively correlated in the short term. The link between performance indicators and DJSI is also found to be negative.

On the positive impact between sustainability and financial performance, Montabon et al. (2007) analyzed the relationship between sustainability management practices and such business financial measures as return on investment (ROI) and sales growth. The study demonstrates that a wide range of environmental management practices (EMPs) is positively associated with multiple firm performance measures. The finding is supported by the slack resource theory and good management theory (Waddock & Graves, 1997). Applying questionnaire-based survey research, Fauzi and Idris (2009) studied items representing variables like corporate financial performance, business strategy, organizational structure, control system, etc., thereby affirming a positive relationship between corporate financial performance and corporate social performance. In their analysis, López et al. (2007) showed a connection between Dow Jones Sustainability Index (DJSI) and corporate social responsibility policies.

In 2010, Kapoor and Sandhu took Indian companies for their research and confirmed a positive impact of sustainability performance and return on sales (ROS), return on asset (ROA), and return on equity (ROE), but insignificant impact on growth.

Amouzesh et al. (2011) examined the relation between sustainable growth rate and firm performance for a sample of 54 firms listed in the Iran financial market in a 4-year period from 2006 to 2009. The study reveals that the deviation of actual growth rate from sustainable growth rate is having significant association with ROA and P/B ratios.

Conducting on a global scale, a research by Ameer and Othman (2012) examined 100 sustainable global companies in 2008. It found that companies which put more emphasis on sustainable practices achieve higher financial performance represented by ROA, profit before tax (PBT), and cash flow from operating activities than those without such commitments.

One year later, Strand (2013) demonstrated that a corporation with a management team putting more emphasis on corporate social responsibility is three times more likely to be engaged in Dow Jones Sustainability Index (DJSI). Pan et al. (2014) analyzed 228 mineral firms in China and concluded that sustainability had a positive impact on firm's profits, measured by ROA, ROE and Earnings per share (EPS).

In 2017, Rahim investigated a case study in Malaysia with the data consisting of 226 companies from all sectors (except for a financial sector) of Bursa Malaysia from 2005 to 2015. The author found out a significant relationship between debt ratio, equity ratio, total asset turnover and size of the firm with sustainable growth rate.

Finally, regarding the neutral link between sustainability and firm financial performance, Aupperle et al. (1985) described a surprising result. In an article published in *The Academy of Management Journal*, they observed no statistically significant interactions between sustainable development and financial performance. Accordingly, having a corporate social responsibility committee does not ensure that a firm is more profitable than others. In their research, Alexander and Buchholz (1978) deepened the issue by considering the performance of a group of market shares. They did not find any significant relationship between CSR and either of these two variables, indeed.

Inoue and Lee (2011) conducted a study about companies operated in four tourism-related industries (hotel, restaurant, airline and casino), and CSR were divided into five different dimensions. From that, the authors saw various impacts of each sustainability dimension on each industry: not all five dimensions had positive effects on both short- and long-term profitability of the companies, assessed by ROA and Tobin's Q. Focusing on the energy sector and banking sector, Nunes et al. (2012) indicated that there were no differences between sustainable companies and the others when they were evaluated by the accounting variables such as ROA, ROE, asset turnover, and net margin.

Hussain et al. (2018) analyzed the sustainability reports of the 100 best-performing US firms, using sustainable disclosure indexes which are environmental, social and governance (ESG parameters). Their findings reveal that no ESG parameter is significantly related to financial performance, estimated using both the accounting performance (ROA and ROE) and the market-based performance (Tobin's Q). Oftentimes, sustainable activities are perceived as a waste of organizational resources that could be better invested in other projects, ventures, or distributed to shareholders (McWilliams et al., 2006).

2.3. Hypothesis development

Based on the previous literature it can be observed that studies have concentrated on the effect of sustainability and financial performance. However, the previous results representing inconsistency. Some scholars believed that the sustainability affect positively to financial performance (Ameer and Othman, 2012; Amouzesh et al., 2011; Kapoor & Sandhu, 2010), meanwhile some others had reverse relation (for instance, Hussain et al., 2018; Inoue & Lee, 2011). And surprisingly, some authors reported the no link between sustainability and firms' financial performance (Aupperle et al., 1985). Therefore, to confirm about this relationship, the current study proposes the following hypothesis:

H1: Sustainability is positively related to corporate financial performance.

It is defined that the sustainability has various dimension, including DJSI (Dow Jones Sustainability Index), GC (Global Compact), GRI (Global Reporting Initiative), CSRD (Corporate Social Responsibility Disclosure), RANK (Corporate Social Responsibility Ranking) and RATE (Sustainable Growth Rate) (Fernandez, 2016). Thus, from Hypothesis 1 we derive the following sub-hypothesis:

H1.1 (DJSI). Companies included in the DJSI achieve better financial performance.

H1.2 (GRI)). Companies obtaining a higher rating in the GRI index achieve better financial performance.

H1.3 (CGRD). The greater disclosure of Corporate Social Responsibility the better the financial performance.

H1.4 (GC). Companies that sign the Global Compact achieve better financial performance.

3. Research methodology

3.1. Research design

The main aim of the work is to define whether it is possible to boost financial results by integrating environmental strategies into the business operations.

It is possible to generalize the methodology of research through three phases. First of all, data is collected for research purpose. The study selects a research sample of 116 listed companies in Sweden in the year 2019. Then, a combination of analytical methods is applied to conduct analysis. These are methods of descriptive statistics, correlation analysis, hypothesis testing and multiple regression analysis. A multiple regression model will be built up that can shed light on the relations across social, economic and environmental indicators. Finally, conclusions are drawn and the results would therefore include relative data comparison and conclusive support for future research.

The following generic model is used to test the hypotheses:

Financial performance = f(Dow Jones Sustainability Index, Global Compact, Global Reporting Initiative, Corporate Social Responsibility Disclosure, Corporate Social Responsibility Rank, Sustainable Growth Rate, Asset, Sales, Number of Employees).

3.2. Financial performance measurement

Generally, researchers often make use of accounting and market-based measures which provide an appropriate and more comprehensive evaluation of firms.

Many have found that accounting-based metrics, such as ROA, ROE, and profit margin, are applied for the firm's short-term performance while the firm's market-based result is calculated using Tobin's Q and stock returns as indicators of potential long-term growth.

Financial measurements used in this research is presented in [Table 1](#).

3.3. Sustainability measurement

From the concept of sustainability to the formation of sustainability indexes, there are several approaches to assess how firms, communities and countries are going on with the principles of sustainable development. It is essential to be eco-friendlier, in every area of our lives, but how are we supposed to assess the company's environmental sustainability? Though there have been many previous works on sustainability, there is still little agreement about how to measure sustainability within companies. As maintained by Montiel and Ceballos (Montiel & Delgado-Ceballos, 2014), there are two

Table 1. Financial variables (financial performance used as dependent variables)

Financial variables		Description
Market-based	Tobin's Q	Tobin's Q = Market Capitalization/ Total Assets
	EY	Earnings Yield = Earnings per Share for the most recent 12-month period/Current Market Price per Share
Accounting-based	ROA	Return on Assets = Net Income/ Total Assets
	ROE	Return on Equity = Net Income/ Shareholder's Equity
	ROCE	Return on Capital Employed = Profit/Loss before Tax/ Capital Employed

key data collection approaches to value sustainability results. The first method is to rely on secondary sources for some sustainability indexes to measure corporate sustainability. Among the most widely used indicators are, say, the Dow Jones Sustainability Index (DJSI), the Global Sustainability Leaders Index (GSLI), the FTSE4Good Developed Index, the Supplier CSR Rating, the Ethibel Sustainability Index (ESI), Global Reporting Initiative Index (GRI), etc. (Diez-Cañamero et al., 2020).

Since many Swedish companies are included in the sustainability rating databases and thanks to available accessibility and appropriateness, it is apt to apply secondary databases. Sustainability measurements used in this research is presented in Table 2.

3.4. Control variables

When analyzing the relation between corporate sustainability performance and financial performance, it is necessary to take into consideration the factors that can provide insight and affect the result of a company. Failure to do so could lead to bias in the outcome (Saunders et al., 2012), or endogeneity—a serious issue for scholars (Darnell, 2017).

Some of the most common control variables employed by authors are industry/sector, risk, leverage level and firm size (which is an effort to control for the possibility that CSR is a luxury good). Firm size can be measured in a range of ways, including natural log of sales and natural log of total assets.

3.5. Sample and data collection

For the empirical analysis, the work formulates a multivariate regression model. To conduct the statistical analysis, the thesis uses the econometric software Eviews 11, which is widely used in the empirical research world, to run the OLS regression.

The population consists of Swedish companies listed on the OMX in the year 2019. The information was obtained from the Osiris Bureau van Dijk, accessed by my UWE account. The initial number is 801 companies; however, it is understandable that not all financial and non-financial data of these firms are available. For example, there is missing data when no value is stored for such variables as return on asset, return on equity, return on capital employed, number of employees, sustainable growth rate, etc. The population is reduced to 359 firms. In light of the content analysis of CSR disclosure, Dow Jones sustainability index or Global Compact engagement, because the data had to be collected manually, the paper has excluded the companies that have no relevant information. All data were secondary data. The final sample consists of data from 116 companies.

3.6. Research model

Following the literature review, the thesis will derive sub-hypotheses and focus on testing statistically the relationship between sustainability and financial performance.

The equation is as follows:

$$FP = c + \theta_1 * DJSI + \theta_2 * GC + \theta_3 * GRI + \theta_4 * CSRD + \theta_5 * RANK + \theta_6 * RATE + \theta_7 * LNASET + \theta_8 * LNEMP + \epsilon$$

Financial performance (FP) is the dependent variable, which is represented by Tobin's Q, ROA (Return on Assets), ROE (Return on equity), ROCE (Return on Capital Employed) and EY (Earnings Yield).

Independent variables like DJSI (Dow Jones Sustainability Index), GC (Global Compact), GRI (Global Reporting Initiative), CSRD (Corporate Social Responsibility Disclosure), RANK (Corporate Social Responsibility Ranking) and RATE (Sustainable Growth Rate) define different dimensions of sustainability. LNASET is used as control variables which consider company size by taking the natural logarithm of the assets.

Table 2. Sustainability variables (sustainability performance used as independent variables)

Sustainability variables	Description	Value
DJSI (Dow Jones Sustainability Index)	It is a measurement of sustainability performance of companies trading publicly, acted under a strategic cooperation between S&P Dow Jones Indices and RobecoSAM. The universality and credibility as a sustainability index allow it to be a strong indicator for measuring CSR.	It takes value 1 if the company belongs to the DJSI, and 0 otherwise. The review results about companies belonging to the DJSI can be seen in the 2019 SAM Corporate Sustainability Assessment which is available on the RobecoSAM website.
GC (Global Compact)	It reveals whether an organization has signed the Global Compact. As it was emphasized in a forum of CSR experts of the Ministry of Labor (2005), along with others like GRI, this indicator has been chosen as one of the CSR measures.	It takes value 1 if the company has signed the The United Nations Global Compact, and 0 otherwise. The data proceed from The United Nations Global Compact network.
GRI (Global Reporting Initiative)	It publishes the level of involvement that a company has in terms of sustainability and promotes the drafting of sustainability reports in adherence to global standards (Alejandro and Santos, 2016). In this research, variable GRI is used because of its wide recognition in Europe and its capability of classifying companies.	Based on the GRI index valuation, the following numerical values are suggested: A+: 1; A: 0.9; B+: 0.8; B: 0.7; C+: 0.6; C: 0.5; and, if no GRI index: 0. The information is gathered from the GRI official database.
CSRD (Corporate Social Responsibility Disclosure)	It's a mechanism by which companies provide information to stakeholders about their corporate activities related to environmental, ecological and other social issues (Abdulwahab et al., 2018). Mathews (1993) described CSRD as a voluntary disclosure of qualitative and quantitative information released by firms to educate or affect a variety of stakeholders.	It takes value 1 if the company chooses to disclose CSR in a sustainability report, and 0 otherwise. The information is collected from the company's official website.
RANK (Corporate Social Responsibility Ranking)	It provides perspective by rank ordering a company's ratings against all other ratings. CSR Ranking is primarily about perception and the findings of surveys are simply an indication of which companies' customers feel are socially responsible (Strauss, 2016).	CSRHub takes information from its data sources and transforms it into a 0 to 100 scale.
RATE (Sustainable Growth Rate)	It is the maximum growth rate that a firm can sustain without having to rely on financial leverage or borrowings (Todd et al., 2014). It is critical for a firm to achieve long-term success by being more environmentally and socially aware, reliable and accountable for the impact that they may have on the general community (Miller, 2018).	The data is provided by Osiris Bureau van Dijk Database.

Finally, ε is the error term (disturbance term) which represents all other factors (unpredictable elements or omitted variables) that are not included in the model.

We have the following sub-models:

$$(1) \text{TobinQ} = c + \theta_1 \text{DJSI} + \theta_2 \text{GC} + \theta_3 \text{GRI} + \theta_4 \text{CSR} + \theta_5 \text{RANK} + \theta_6 \text{RATE} + \theta_7 \text{LNASSET} + \varepsilon$$

$$(2) \text{EY} = c + \theta_1 \text{DJSI} + \theta_2 \text{GC} + \theta_3 \text{GRI} + \theta_4 \text{CSR} + \theta_5 \text{RANK} + \theta_6 \text{RATE} + \theta_7 \text{LNASSET} + \varepsilon$$

$$(3) \text{ROA} = c + \theta_1 \text{DJSI} + \theta_2 \text{GC} + \theta_3 \text{GRI} + \theta_4 \text{CSR} + \theta_5 \text{RANK} + \theta_6 \text{RATE} + \theta_7 \text{LNASSET} + \varepsilon$$

$$(4) \text{ROE} = c + \theta_1 \text{DJSI} + \theta_2 \text{GC} + \theta_3 \text{GRI} + \theta_4 \text{CSR} + \theta_5 \text{RANK} + \theta_6 \text{RATE} + \theta_7 \text{LNASSET} + \varepsilon$$

$$(5) c + \theta_1 \text{DJSI} + \theta_2 \text{GC} + \theta_3 \text{GRI} + \theta_4 \text{CSR} + \theta_5 \text{RANK} + \theta_6 \text{RATE} + \theta_7 \text{LNASSET} + \varepsilon$$

4. Empirical results and analysis

4.1. Descriptive statistics

Table 3 shows the results of the company's performance level in general statistical measurements such as mean, standard deviation, and variance respectively.

In terms of sustainability performance, corporate responsibility rankings of firms range from a low of zero to a high of 99 with a mean score of 77.5. The sustainable growth rates recorded by Osiris, as the second measure of CSR, range from -274 to 210 with a slightly positive mean of 5.4. Finally, the rating in GRI standard, whose score ranges from 0 to 1, presents a mean of 0.30.

The mean value of dummy variables ranges from 0 to 1 in the summary statistics. Mean of CSR shows that about 85% firms annually prepare sustainability reports or sustainability disclosures while the other 15% do not, which implies that the majority of Swedish firms use sustainable reports to review their sustainability activities.

The mean value of DJSI reveals that only about 14% Swedish companies are related to the index. Approximate a half (51%) of the sample firms have signed the Global Compact (GC) since it was launched in 2000.

Finally, as for financial indicators, the maximum and minimum values of ROA are 97.61 and -34.83; for ROE, they are 210.53 and -73.62; and, for ROCE these are 57.36 and -59.53. The respective mean values are 6.18, 13.99, and 10.34.

When it comes to market-based financial measurements, the average Swedish firm has an earnings yield of 12.54%, which is relatively low since the range of the figure is from 6.3% to 265%. Tobin's Q value demonstrates a minimum of 0.03 and a maximum of 11.85, while the mean of which is only 1.32.

4.2. Autocorrelation test

The Durbin-Watson (DW) test has been conducted to check the autocorrelation within the proposed data. Theoretically, DW statistic lies between 0 and 4, with each circumstance giving different meanings. Generally, an acceptable range is 1.50–2.50 (Durbin-Watson).

From the results in Table 4, the dependent variables have DW values ranging from 1.978 to 2.251. This reveals that there is almost no autocorrelation within the variables of the study.

Table 3. Descriptive statistics for the sample

	CSR	DJSI	EY	GC	GRI	LnAsset	RANK	RATE	ROA	ROCE	ROE	TobinQ
Mean	0.85	0.14	12.54	0.52	0.31	13.97	68.37	5.38	6.18	10.35	14.00	1.33
Median	1.00	0.00	6.29	1.00	0.00	13.79	77.50	8.45	5.40	10.31	13.90	0.91
Maximum	1.00	1.00	264.99	1.00	1.00	17.85	99.00	210.53	97.61	57.36	210.53	11.88
Minimum	0.00	0.00	1.17	0.00	0.00	10.40	1.00	-274.3	-34.8	-59.5	-73.62	0.03
Std. Dev.	0.36	0.35	31.25	0.50	0.37	1.59	27.09	36.20	12.12	12.40	25.32	1.61
Skewness	-2.00	2.10	6.71	-0.07	0.57	0.04	-0.89	-2.64	3.38	-1.04	3.43	4.64
N	116	116	116	116	116	116	116	116	116	116	116	116

Table 4. Test for autocorrelation

Dependent variables	Durbin-Watson value
Tobin's Q	2.128
EY	1.979
ROA	2.251
ROE	2.152
ROCE	1.978

4.3. Heteroskedasticity test

In the first four models, $p\text{-value} < \alpha = 5\%$, so we should reject the null hypothesis, meaning then we have heteroskedasticity. In the last model, $p\text{-value} > \alpha = 5\%$, therefore heteroskedasticity is not present and we do accept the null hypothesis.

Since there is heteroskedasticity presence in the regressions that are carried out, we can get better estimators of the coefficients if we can correct for the heteroskedasticity using Weighted Least Squares. After correcting heteroskedasticity for the first model, all models do not present problems of heteroscedasticity.

4.4. Correlation between variables

Table 5 displays the correlation matrix for all non-dummy variables in the regression model for the sample Swedish firms in this research.

Tobin's Q shows a weak positive relationship with sustainable growth rate at 10%. Earnings yield and sustainable growth rate show a significant positive correlation at 33%. This support the hypothesis that there is a positive relationship between corporate sustainability activities and financial performance.

Moreover, ROA, ROE, and sustainable growth rate have a positive correlation at 57% and 63%, respectively. This could further support the idea that firms with higher sustainable growth rate achieve higher returns on asset and equity. Dow Jones Sustainability Index (DJSI) is also a sustainable sign of a better financial result. Besides, Global Compact commitment and sustainable growth rate matter a lot when it comes to Return on Capital Employed (ROCE), with the correlations being 19% and 26%, respectively.

4.5. Regression results

After correcting heteroskedasticity for the first model, the output is presented in the following Table 6.

P-value of the regression coefficients of the independent variables CSRD is less than 0.05, so this variable is meaningful in explaining the dependent variable at 95% confidence level.

The regression coefficient of CSRD is less than 0; thus, it has the opposite directional impact on the dependent variable.

$$\begin{aligned} \text{TobinQ} = & 3.2329 + 0.2276\text{DJSI} - 0.3246\text{GC} - 0.0019\text{GRI} - 1.1817\text{CSRD} - 0.0035\text{RANK} \\ & + 0.0041\text{RATE} - 0.0391\text{LNASSET} + \varepsilon \end{aligned}$$

Briefly, CSRD affects the firm's financial result while GC, GRI, RANK and RATE do not affect the firm's Tobin's Q value.

Table 5. Correlation between social responsibility and financial performance

	TobinQ	EY	ROA	ROE	ROCE	DJSI	GC	GRI	CSR	RANK	RATE	LnAsset
TobinQ	1	-0.16	0.34	0.23	0.42	-0.02	-0.15	-0.13	-0.30	-0.16	0.10	-0.15
EY	-0.16	1	0.39	0.41	-0.12	0.14	0.05	0.06	0.09	0.18	0.33	0.12
ROA	0.34	0.39	1	0.96	0.52	0.26	0.03	0.10	-0.07	0.05	0.57	0.17
ROE	0.23	0.41	0.96	1	0.52	0.25	0.08	0.11	-0.09	0.08	0.63	0.19
ROCE	0.42	-0.12	0.52	0.52	1	0.05	0.20	0.00	-0.21	-0.06	0.27	0.20
DJSI	-0.02	0.14	0.26	0.25	0.05	1	0.14	0.22	0.10	0.27	-0.02	0.40
GC	-0.15	0.05	0.03	0.08	0.20	0.14	1	0.30	0.09	0.41	0.10	0.39
GRI	-0.13	0.06	0.10	0.11	0.00	0.218	0.30	1	0.28	0.53	0.12	0.42
CSR	-0.30	0.09	-0.07	-0.09	-0.21	0.10	0.09	0.28	1	0.24	-0.09	0.27
RANK	-0.16	0.18	0.05	0.08	-0.06	0.27	0.41	0.53	0.24	1	0.05	0.41
RATE	0.10	0.33	0.57	0.63	0.27	-0.02	0.10	0.12	-0.09	0.05	1	0.09
LnAsset	-0.15	0.12	0.17	0.19	0.20	0.40	0.39	0.42	0.27	0.41	0.09	1

Table 6. Regression coefficients after correcting heteroskedasticity for models 1, 2, 3, 4, and 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Model 1: Tobin's Q is dependent variable				
C	3.2329	1.4956	2.1617	0.0328
DJSI	0.2276	0.4635	0.4910	0.6244
GC	-0.3246	0.3335	-0.9732	0.3326
GRI	-0.0019	0.4885	-0.0040	0.9968
CSR	-1.1817	0.4398	-2.6868	0.0084
RANK	-0.0035	0.0068	-0.5104	0.6108
RATE	0.0041	0.0041	0.9936	0.3226
LNASSET	-0.0391	0.1159	-0.3369	0.7368
Model 2: EY is dependent variable				
C	-12.3073	28.1530	-0.4372	0.6629
DJSI	10.5152	8.7258	1.2051	0.2308
GC	-3.7310	6.2783	-0.5943	0.5536
GRI	-10.1397	9.1962	-1.1026	0.2727
CSR	8.4926	8.2792	1.0258	0.3073
RANK	0.2190	0.1288	1.7007	0.0919
RATE	0.3072	0.0774	3.9708	0.0001
LNASSET	0.3258	2.1819	0.1493	0.8816
Model 3: ROA is dependent variable				
C	-0.015692	9.242842	-0.001698	0.9986
DJSI	9.370384	2.864748	3.270927	0.0014
GC	-1.923992	2.061215	-0.933426	0.3527
GRI	0.102353	3.019185	0.033901	0.9730
CSR	-1.858167	2.718108	-0.683625	0.4957
RANK	-0.012896	0.042278	-0.305028	0.7609
RATE	0.190973	0.025403	7.517756	0.0000

(Continued)

Table 6. (Continued)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNASSET	0.523403	0.716343	0.73066	0.4666
Model 4: ROE is dependent variable				
C	-3.851438	18.03257	-0.213582	0.8313
DJSI	18.3285	5.589056	3.279354	0.0014
GC	-1.848222	4.021383	-0.459599	0.6467
GRI	-1.505745	5.890358	-0.255629	0.7987
CSR	-5.255763	5.302965	-0.991099	0.3239
RANK	-0.012108	0.082484	-0.14679	0.8836
RATE	0.442189	0.049561	8.922208	0.0000
LNASSET	1.408355	1.397568	1.007718	0.3158
Model 5: ROCE is dependent variable				
C	-7.788427	10.95121	-0.711194	0.4785
DJSI	0.327853	3.394243	0.096591	0.9232
GC	4.312566	2.442192	1.765859	0.0802
GRI	-1.016376	3.577224	-0.284124	0.7769
CSR	-7.854182	3.2205	-2.438809	0.0164
RANK	-0.0839	0.050093	-1.674896	0.0968
RATE	0.074495	0.030098	2.475055	0.0149
LNASSET	2.019695	0.848746	2.379624	0.0191

For the second model, it is clear that p-values of all variables except RATE are higher than 0.01, meaning they are insignificant in illuminating the firm's earnings yield. The regression coefficient of RATE is positive, which reveals directional effects on the dependent variable which is EY.

We arrive at the following regression equation:

$$EY = -12.3073 + 10.5152DJSI - 3.7310GC - 10.1397GRI + 8.4926CSRD + 0.2190RANK \\ + 0.3072RATE + 0.3258LNASSET + \varepsilon$$

Regarding ROA, when p-value of the regression coefficients of the independent variables DJSI and RATE are smaller than 0.01, the result is trumpeted as significant at 99% confidence level.

The coefficients of variables GC, CSRD and RANK are all negative, hence it means that there is an inverse relationship between the two parameters tested. A positive coefficient of RATE means that for every unit increase in sustainable growth rate, we expect a 19% increase in ROA, holding all other variables constant.

We only accept the hypothesis that companies having a higher sustainable growth rate achieve a higher return on assets. We arrive at the following regression equation:

$$ROA = -0.015692 + 9.370384GC - 1.923992GC + 0.102353GRI - 1.858167CSRD - 0.012896RANK \\ + 0.190973RATE + 0.523403LNASSET + \varepsilon$$

Looking at the regression result of model 4, one can see that the p-value of the regression coefficients of such variables as DJSI and RATE are less than 0.01, so these variables are proved to be statistically significant for the model at the corresponding confidence level of 99%.

The coefficients of DJSI, RATE and LNASET are positive, meaning they have a direct connection with the outcome variable. On the contrary, other variables are negatively related to ROE value. The interpretation is that for every 1-unit increase in either rating in DJSI or sustainable growth rate, ROE will increase by either 18.32 or 0.44 times, respectively, holding constant all of the other predictors in the model.

The regression equation is:

$$ROE = -3.851438 + 18.3285DJSI - 1.848222GC - 1.505745GRI - 5.255763CSRD - 0.012108RANK \\ + 0.442189RATE + 1.408355LNASET + \varepsilon$$

Looking at the p-values of CSRD, RATE and LNASET, we can assume that these indicators are significant at 95% level of confidence.

The coefficients of all variables are positive, describing a direct relationship between the two measures. To illustrate, a positive coefficient of RATE means that for every unit increase in sustainable growth rate, we expect a nearly 1.5% increase in ROCE, with all other variables being constant.

We can conclude the following regression equation:

$$ROCE = 0.4785 + 0.9232DJSI + 0.0802GC + 0.7769GRI + 0.0164CSRD + 0.0968RANK + 0.0149RATE \\ + 0.0191LNASET + \varepsilon$$

The main results are:

- higher sustainable growth rate leads to a greater value for EY
- greater sustainable growth rates and engagements in DJSI lead to greater ROA and ROE

- greater values in sustainable growth rate and corporate social responsibility disclosure lead to a greater ROCE

5. Conclusions and recommendations

The goal of this analysis was to examine the connection between corporate sustainability success and financial results among Swedish companies. In addition, the study adds to the current corporate sustainability literature by considering other financial result measures, with earnings yield (EY) being a market-based indicator and return on capital employed (ROCE) being an accounting-based one. Hence, managerial decisions should be constantly focused on sustainability concerns.

Accordingly, a positive association between organizational sustainability success and financial results has been expected. The exploratory results confirm that the adoption of some specific sustainability practices is significantly and positively associated with EY, ROA, ROE and ROCE. Nevertheless, further tests have indicated that the relationship is more complex than initially thought, i.e., there are positive relationships for such indicators as DJSI and RATE, and a negative relation for CSRD.

It is evident that investment in sustainable growth and the subsequent inclusion of Swedish enterprises, beyond promoting access to financial resources and enhancing its reputation, offer economic merits that affect the firm value. Indeed, a company's inclusion in the DJSI, which is a proxy for environmental and social efficiency, would result in higher financial returns. The CSRD is a type of voluntary disclosure, which is used by corporations to promote public awareness, boost their reputation, and shield themselves from society blaming. A sustainability report may include offers extensive and in-depth statistics on the sustainable development of the business in a well-structured and objective way, allowing investors to gain new insights into the results of the company.

With CSRD, a company can legitimize its behavior and affect expectations of various stakeholders (Haniffa & Hudaib, 2006). Logically, having a good reputation greatly contributes to enhancing Swedish firms' earnings yield.

Broadly speaking, the research draws attention to the added values for Swedish managers to conform to the sustainability practices. It is critical for the Board of Directors to recognize that social and environment initiatives are an important part of the policy.

As regards to sustainable growth rate, microeconomic policies should aim to enhance sustainable growth rate, as the decision in managing the financial and operating activities towards the growth of the company is related to its performance. Some firms, for example, implement environmental, or water, or waste management schemes to leverage cost efficiencies and thereby boost their bottom line. Since such programs would usually be seen as embracing sustainable practices to help achieving economic success, there arises a question whether a company would expect to gain a real competitive advantage merely by adopting them. Indeed, by applying common practices, a firm can benefit by being recognized as legitimate, or in other words, being the same as its peers.

Some sustainability practices, namely, sustainability report preparation, are simply becoming "best practice" of the industry and are thus required. However, it is obvious that certain businesses are building a real competitive edge by embracing environmental policies that their rivals cannot easily follow. The results suggest that sustainability can be both a necessity and a differentiator.

In order to improve business sustainability, the most frequent opinion in this matter is that the Swedish government should bring in a target to keep track of the sustainable guidelines and foster a more qualitative reporting by national companies. Stronger measures are bound to be introduced, and legislation with compulsory consequence analysis ought to be investigated and proposed, so that companies operating in distinct areas and sectors can follow.

Despite these promising results, there are also certain limitations in need of reflection, including limited geographical and temporal scope; predominantly with a geographical focus at Sweden level; the complicated measurement of corporate sustainability; and possible risk of biased results due to subjective interpretations of the outcomes and not only of the methodology.

Future research should aim to extend this research to both European and international contexts, given the availability of the data required for the empirical analysis. Moreover, it would be of great use to analyze whether the results obtained are confirmed or not for broader time horizons. Certainly, both accounting-based and market-based measures of financial performance should be used as they are more appropriate for long-term financial performance analysis.

Funding

The authors received no direct funding for this research.

Author details

Duc Cuong Pham¹
 E-mail: cuongpd@neu.edu.vn
 Thi Ngoc Anh Do²
 Thanh Nga Doan¹
 Thi Xuan Hong Nguyen³
 Thi Kim Yen Pham⁴

¹ School of Accounting and Auditing, the National Economics University, Vietnam.

² Banking Academy of Vietnam.

³ Accounting Faculty, Hanoi University of Industry, Hanoi, Vietnam.

⁴ Economics Faculty, Vinh University, Vinh, Vietnam.

Citation information

Cite this article as: The impact of sustainability practices on financial performance: empirical evidence from Sweden, Duc Cuong Pham, Thi Ngoc Anh Do, Thanh Nga Doan, Thi Xuan Hong Nguyen & Thi Kim Yen Pham, *Cogent Business & Management* (2021), 8: 1912526.

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