

CORPORATE ENVIRONMENTAL PERFORMANCE AND CORPORATE FINANCIAL PERFORMANCE: A CONCEPTUAL PAPER

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Received: 16 November 2020

Accepted: 18 December 2020

Keywords: *corporate environmental performance, corporate financial performance, CEP-CFP relationship*

ABSTRACT

There is an ongoing debate on the relationship between corporate environmental performance (CEP) and corporate financial performance (CFP). This conceptual paper aims to contribute to the existing literature by integrating previous research on the CEP-CFP relationship and identifying the moderating effect of firm size on the relationship between these variables. It also proposes a new conceptual framework in which the positive relationship between the CEP and the CFP would be moderated by the firm size.

INTRODUCTION

There is an ongoing debate on the relationship between corporate environmental performance (CEP) and corporate financial performance (CFP) (Bansal, 2005). Some scholars claimed the positive relationship between the CEP and the CFP (Córdova et al., 2018; Feng et al., 2018; Uribe-Bohorquez et al., 2018). They asserted that the firms need to be sensitive to the customers who are concerned about an environmental friendliness in business practice. This sensitivity will push firms to pursue green products and improve their reputation on environmental conservation; CEP is a critical component of an advantage to incorporate business operations. Firms with good environmental performance also have advanced energy efficiency used that make cost more economy (Uribe-Bohorquez et al.,

2018). By contrast, other researchers claimed a negative association between the CEP and the CFP. If the firms want to improve the CEP, they would spend more money on environmental conservation (Fujii et al., 2013) and would reduce other budgets (Aragon-correa, 2003; Busch et al., 2011). They also claim different components of the CEP (carbon emission, environmental information disclosure, and other pollutions) would have no consistent linkage with the CFP (Shen et al., 2019).

Against such a background, this conceptual paper has two main objectives. Firstly, it aims to integrate existing literature on the relationship between the CEP and the CFP. The first research objective could be:

RO1: To examine the relationship between corporate environmental performance and corporate financial performance.

Despite numerous research on the CEP-CFP relationship (see Table 1), there is little literature that examines the impact of firm size on the relationship between these variables. Notable exceptions are some pioneer studies (Frank & Goyal, 2003; Moeller et al., 2004; Dang & Li, 2015) which paid due attention to the firm size. This conceptual paper proposes that the firm size would moderate the relationship between the CEP and the CFP. The second research objective could be:

RO2: To examine the moderating effect of firm size on the relationship between corporate environmental performance and corporate financial performance.

This paper consists of five sections. Following this introductory section, the second section would offer definitions and main characteristics of the main constructs. The third section is the proposed development. The fourth section would offer discussion and a proposed new conceptual framework. The final section is the conclusion.

Definitions of Key Constructs

Corporate Environmental Performance

Corporate environmental performance is taking more attention in the last few decades, but there is not a clear definition. Because of different criteria and requirements in different countries and industries, it is tough to make a consistent measurement of CEP, but for empirical studies, researchers are trying to measure CEP by some quantitative method. The ISO 14031 definition, "the measured result of an organization's management of its corporate environmental operational performance" (Trumpp & Guenther, 2015). There are multiple dimensions of CEP, such as environmental management performance (EMP), environmental operational performance (EOP), carbon emission, environmental information disclosure (EID), and environmental committee. Both dimensions are capturing a different aspect of CEP (Clemens & Bakstran, 2010; Xie & Hayase, 2007). CEP is a measure of environmental problem, resource consumption, and the company takes effort to decrease environmental pollution and carry out precaution. Also include green management, which demands green innovation, strict legitimacy, employee skills training, supply chain management, and stakeholder communication (Dragomir, 2018) environmental management, and sustainability studies have long faced the dilemma of how exactly to measure CEP, given the vast array of instruments available and the lack of an operational definition. Our aim was to propose a new conceptualization of CEP based on a comprehensive and critical review of three decades of dedicated research. First, in order to provide an operationalization of the multidimensional construct of CEP, several academic and industry-based CEP reporting inventories are reassembled into a large set of 140 indicators grouped into 14 functional categories, identified using the grounded theory approach. Second, the critical review proposes a classification and discussion of empirical contributions according to their data

sources, based on the content analysis of 172 empirical papers (published between 1980 and 2017). One recent work has found that firms' activities also can influence the natural environment (Walls et al., 2012), including two categories: input-based measurement (resources consumption and energy input) and output-based measurement (GHG emission and waste) (Shahgholian, 2019).

a. Carbon Emission

The critical part of CEP is carbon emission, which means firms make carbon into the atmosphere during business activities. Companies destroy our environment through operations, productions, and other activities (Busch et al., 2011). Carbon emission is the main component of GHG emission (Brander, 2012), Carbon emission reduction of a firm is under social and government pressure. A firm with bad carbon performance will face high pressure from the government and market, and these firms will have more incentive to improve carbon performance to change public perception (He et al., 2013) carbon performance, and the cost of capital. Because unobservable overall strategic decisions by management affect each of these outcomes and phenomena, we used a simultaneous equations model to analyse our data. We used data from S&P 500 firms that participated in the Carbon Disclosure Project (CDP). The carbon emission level is also associated with the firms' risk and opportunities due to customer loyalty (Rahman, Rasid, & Basiruddin, 2014).

b. Environmental Information Disclosure

Environmental disclosure is that firms need to communicate with stakeholders, to fulfil its responsibility of firms' activities, and provide useful environmental-related information to relative stakeholders. According to the general reporting principles, environmental disclosure is a statement of the environmental burden and ecological efforts such as establish

the environmental policy, objectives, and action plans of environmental activities in the organization's activities, publish and report this information to the public (Environmental Reporting Guidelines, Ministry of Environment, Japan, 2003). Establish an excellent environmental-related information disclosure system is essential for a firm to attract environmentally friendly stakeholders.

c. Environmental Management Performance

By following the environmental protection trend, firms increase the use of environmental management systems as a benchmark of CEP (Environmental and Initiative, 1998). Environmental management often used environmental strategy, and environmental issues are proactive in the strategic process, environmental practice, product initiative, and other management systems that can reduce environmental pollution (Molina-Azorín et al., 2009). Lots of sensitive firms are following ISO 14001 certification rules under government policy.

d. Environmental Operational Performance

Companies need more green management to improve sustainable products and practices. In recent years, environmental degradation and environmental externalities of business are concern more of our society, and firms are more motivated to find a way to mitigate the impact of the environment (Porter & Reinhardt, 2007). Environmental operation performance means that they pursue good environmentally friendly production, companies that need to design green technology or strategy that can mitigate the impact on the environment. Such as implementing a new efficient system to improve the green management of the production process. Environmental and research expenditure that in lots of organizations is improve the environmental-related operation and reduce substantial risks, for example, government penalty of pollution.

e. Environmental Committee

Larger boards of directors and environmental expert are more likely communicate and connect with key stakeholders (Eberhardt-Toth, 2017), so companies with the environmental committee is responsible for ease approach to primary financial resources as well as giving them more economic leeway to follow environmental plans (Villiers & Van Staden, 2011). The fact that any rules do not mandate an environmental committee or CSR committee, it is voluntary depends on firms (Dixon-Fowler et al., 2012). Environmental and CSR committee plays an essential role for decision-makers efficiency (Spira & Bender, 2004), and helpful to building an environment and social legitimacy, accountability and constructed strategic systems (Harrison et al., 1987). There are more and more CSR committee had formed in recent years. An environmental committee on the board may pursue proactive or reactive environmental strategies to manage firm environmental issues.

Corporate Financial Performance

Corporate Financial Performance usually measure captures include accounting-based CFP and market-based CFP (Earnhart, 2018). CFP is "an economic outcome resulting from the cooperation among an organization's attributes, actions, and environment" (Combs et al., 2005). CFP typically comes in different dimensions (Trumpp & Guenther, 2015); these are "liquidity, profitability, growth, and stock market performance" (Hamann et al., 2013). Most of the researchers used profitability and market value to measure CFP (Orlitzky et al., 2003). Trumpp and Guenther (2015) found that liquidity and growth dimensions do not take into account existing studies in the literature. Hence, CFP is revealed by financial indicators from the firm financial report as all these indicators that reflect corporate economic outcomes in a passed fixed period.

a. Accounting-Based Corporate Financial Performance

Accounting-based CFP measures focus on revenues and costs, such as profit, return on sales (ROS), return on equity (ROE), return on assets (ROA) and return on investment (ROI) have also been studied (Menguc & Ozanne, 2005; Rexhäuser & Rammer, 2014). Such the difference in measures, comprehension, and viewpoints can lead to different outcomes. Return on sales (ROS) reveals operational margin (Feng et al., 2018). Return on equity (ROE) measures the profit of a business related to equity (Miroshnychenko et al., 2017). Return on assets (ROA) reveal the revenue by the total asset (Lucas & Noordewier, 2016; Qiu et al., 2016), and return on investment (ROI) evaluate the efficiency of an investment (Ganda & Milondzo, 2018).

b. Marketing-Based Corporate Financial Performance

Marketing-based CFP measures refer to firm market value (Filbeck & Gorman, 2004), or to be done through stock prices to calculate a stock return, and market to book value (Petitjean, 2019). Tobin's q is measure as the market value divided by the firm's replacement costs (Muhammad et al., 2015; Shen et al., 2019) environmental problems have occurred frequently in China, and the relationship between environmental performance (EP. Security analyst earnings forecasts take to be the proxies for the market's prediction of outcome (Cordeiro & Sarkis, 1997).

Proposition Development

Corporate Environmental Performance and Corporate Financial Performance

Research on the CEP-CFP relationship has been studying since 1970 (Friedman, 1970; Trumpp & Guenther, 2015). Last few decades, lots of investigations about the CEP and CFP show inclusive results (Albertini, 2013; Córdova

et al., 2018; Petitjean, 2019; Shen et al., 2019). Allouche and Laroche (2005) study the link between socially responsible behaviour and CFP, most of them are positive relationships, a small part of them are negative relationships and mixed relationships, and no significant association.

a. Carbon Emission and Corporate Financial Performance

Firms with poor carbon performance have more incentive to improve environmentally and attempt to change public perception (He et al., 2013) carbon performance, and the cost of capital. Because unobservable overall strategic decisions by management affect each of these outcomes and phenomena, we used a simultaneous equations model to analyse our data. We used data from S&P 500 firms that participated in the Carbon Disclosure Project (CDP). Corporate carbon performance is more likely to enhance CFP (Liu et al., 2017). The environmental strategies related to mitigating carbon emission is the benefit of market value (Böhringer et al., 2012). The customer's response to firms' CO₂ emission reduction is significant positively to the CFP measured by ROS (Rokhmawati et al., 2017). One recent work has found that carbon performance is correlating with financial debt in Europe (Córdova et al., 2018). Another study by Zhou et al. (2018) found a U-shaped relationship between carbon performance and the cost of debt financing in China. Ganda and Milondzo (2018) support that carbon emission is significantly reduced to the CFP (measured by ROE, ROI, ROS) in South Africa. Clarkson et al. (2015) have found that carbon emission performance tends to benefit the firm value of European firms under EU ETS.

b. Environmental Information Disclosure and Corporate Financial Performance

A good CEP can help a firm to build a good reputation and improve corporate brand (Bebbington et al., 2008). In stakeholder

theory, making a good reputation and good relationship with stakeholders can enhance the competitive advantage of firms, increase revenue and profit growth, also can attract new investors and customers. If the firm disclosure more information about environmental performance and management, the firm will less influence on the adverse event (Blacconiere & Patten, 1994). From Germany's evidence, improve environmental disclosure will reduce the cost of firm operation (Aerts et al., 2008; Cormier & Magnan, 2007). A similar result from USA evidence environmental disclosure quality is the positive influence the firm value based on five environmental-sensitive industries such as pulp and paper, chemicals, metals and mining, oil and gas, and utilities (Clarkson et al., 2013).

c. Environmental Management (Operation) Performance and Corporate Financial Performance

Rokhmawati et al. (2017) documents that the customer's response can strengthen the influence of CEP on CFP. In most areas, the customers become more aware of the firm's environmental impact, and they need more eco-friendly products than before (Smith and Perks, 2010). The firm is well to disclose some environmental transparency information that will help to enhance the firm return of assets but not significant to related to the cost of the firm (Clarkson et al., 2013). But other research revealed that consumer prefers to use product depend on the quality of products not related to the environment (Hibiki & Managi, 2010), an environmentally friendly firm is not more competition because of the more burden of environmental expenditure and cost. So, environment performance improved cannot bring profit for the company but decrease the profit margin (Fujii et al., 2013). Thus, it is still unclear the extent that environmental disclosure influences CFP. Some researches studies on the Chinese corporate environmental responsibility practices can help the company to improve resources

used and energy-saving, thus reduce cost and improve CFP (Ambec & Lanoie, 2008; Lai & Wong, 2012). Such as the green supply chain has been documented as a benefit for CEP and CFP (Zhu et al., 2018). Firms with good CEP are more incentive to disclose the environmental-related information to stakeholders to reduce information asymmetry and avoid negative attention from customers and other stakeholders (Villiers & Van Staden, 2011). A firm with good CEP and environmental legitimacy is helpful to obtain stockholders' trust, some academics think that trust capital can generate financial benefit (economic growth and cost-saving) and non-financial benefit (reputation, business potential) (Qin et al., 2019). Environmental strategies make the company reduce ecological pollution through pro-active ways (Lee & Min, 2015; Porter & Reinhardt, 2007). From the resource-based review, firms need to improve CFP through improving environmental performance, such as reduce carbon emission and other pollutions (Córdova et al., 2018; Fujii et al., 2013; Gallego-Álvarez et al., 2015; Ganda & Milondzo, 2018; He et al., 2017; Iwata & Okada, 2011), improve the corporate environmental management system, and used friendly environmentally activities and strategies leading to materials more efficiency (Orlitzky et al., 2003; Vlasov et al., 2014). Regardless of whether environmental research and development expenditure is a legitimizing tool, this environmental attitude can be used as improving environmental management motivation for protecting the environment.

d. Environmental Committee and Corporate Financial Performance

The environmental committee is expected to improve CEP, in advance, enhances the firm reputation and firm value. So, the environmental committee is a critical ecological strategy to improve corporate business competition. The ecological plan also includes CSR attitude, energy consumption attitude, and other environmental initiative activities. This activity also needs financial support, indicated that

with good CFP, the companies have more support to achieve the ecological goals with environmental protection activities. The environmental committee is interchangeably called the sustainability committee (Biswas et al., 2018). There is much research had study environment committee or sustainability committee in the board have influenced the CEP. The environment committee in the board is services to design strategies to manage social and environmental issues, improve environmental management implementation (Biswas et al., 2018). The company satisfies stakeholders need high sustainability; firms need to set a sub-committee to improve CEP (Eccles et al., 2014), such as an environmental committee that enhances the corporate GHG emission disclosure (Liao et al., 2015). Even though some research studies on the environment committee influence on CEP, but there is rare research to study the relationship between the environmental committee and CFP. The environment committee is an unexplored area of business study; the impact of the CEP-CFP relationship in detail suggested that need to further study of this element (Kolev et al., 2019). The environmental committee plays a direct role in improving the CEP and then capture custom loyalty. Hence, the environment committee is an element to enhance firm revenue. There is some research study on the board committee and CFP, but most of them study on remuneration committee (Fich et al., 2011), a nominating committee (Faleye et al., 2011), and audit committee (Beck & Mauldin, 2014). There is not any study about board environmental committee influence on CFP, even though some articles document the board's environmental committee's impact on environmental performance (Liao et al., 2015; Peters & Romi, 2012). By stakeholder theory, high sustainability firms are more likely to form the environmental committee (Eccles et al., 2014), and increase the transparency of GHG emission disclosure (Peters & Romi, 2012). Thus, a rare number of studies to examine the untraditional committees and CFP, the environmental committee was documented can enhance environmental transparency,

enhance CEP (Peters & Romi, 2012; Walls et al., 2012), and decrease the penalty (Gilley et al., 2000), thus, benefit the CFP. The environmental committee reveals the right environmental attitude and is an excellent point to attract outside stakeholders.

In a nutshell, a systematic review of existing literature on the CEP-CFP relationship reveals that the CEP would have a positive impact on the CFP. The first proposition could be formulated as:

P1: Corporate environment performance would be positively related to corporate financial performance.

Moderating Effect of Firm Size

a. Firm Size and Corporate Environmental Performance

Larger companies are more visible and more sensitive to social reactions (Lin et al., 2019). Romero et al. (2018) found that large firms are more at risk of penalties; the size of the company producing the pollution plays a significant role in the penalty received; this means the large firms are harmful to firm environmental performance and financial performance to some extent. Herbohn et al. (2014) suggest that the large firm is more accountable for ecological disclosure and more pressure from stakeholders. Lyon and Maxwell's (1999) analysis from the perspective of regulations, voluntary environmental protection plays an essential role in firm strategies. The cost of new rules will be leading small firms are a force to exit from specific industries, but large firms may benefit from the regulations that industry-wide compliance is low.

Konar and Cohen (2000) found that the largest firms are most likely to reduce emissions under the pressure of information disclosure to the public. Arora and Timothy (1995), Khanna and Damon (1998) suggest that large firms are more likely to join the Environment

Protection Agency (EPA) programme than smaller firms. Patten (1992) indicated that the firm size improves corporate environmental disclosure. Gray et al. (1995) examine the UK firms gives the conclusion that large firms are more likely to exposure more mandated and voluntary ecological information. Clarkson et al. (2008) conclusion that large firms tend to disclosure environmental-related information and larger firms are less affected by social responsibility with more social buffering (Meznar & Nigh, 1995). Large organizations are related to higher-level finances significantly affect their commitment to environmental initiatives (Johnson & Greening, 1999). Different company-level attributes affect CEP. Therefore, it is crucial to understand these effects because these companies can develop strategic value from green strategies (Hörisch et al., 2015; Madden et al., 2006). Large companies are better at using environmental plans to create profits (Hörisch et al., 2015). But other studies give different opinions. Lin et al. (2019) reveal small firms invest in green innovation and bring more profit than large firms. Madden et al. (2006) indicate that small and medium enterprises prefer to avoid cash donations, are more willing to support local causes, and will benefit from the development of best practice guidelines.

b. Firm Size and Corporate Financial Performance

Large companies with more market concentration, this is more efficient and better for firms' profitability (Gichura, 2011; Kakani et al., 2011). Merikas et al. (2006) found that the firm size (logarithm of the total assets) positively influence financial performance (profit). Tarawneh (2006) point out that barriers to entry and company strategy are the advantage of a big firm that makes them have more competition to overcome other competitors; therefore, positively influence CFP. Glen et al. (2003) found that big firms are more strong competitive capability than a small competitor; these differences make

big companies' superior access to resources and financial support. Hall and Weiss (1967) concluded that large companies have more options than small companies. Also, large firms can enter the capital market quickly by the big scale of economics, while small companies are excluded from the capital market, thereby increasing profitability. Big firm size improves firms' ability to produce high technological products, which in turn leads to the concentration and supplies market. Therefore large firms have accessed the more market segment and significantly improve the CFP (Agiomirgianakis et al., 2006). Adams and Buckle (2003) suggested that concentration is positive with the market but negative with the profit margin ratio. Amato and Amato (2004) suggested the cubic relationship between firm size and CFP (measured by ROA), the large firm with more significant differentiation and specialization strategies, and make operation more efficient, then able to take advantage of economies of scale and good CFP.

Firm size is also a critical infector of bank CFP (Bashir, 2003); big companies are believed to benefit from economies of scale and reduce information costs (Clarkson et al., 2011). Chen and Wong (2004) revealed that firm size is significant to improve the firm financial health of Asian companies. Hill (1985) demonstrate that large firms are more diversification and had acquired market leader of more areas; this enables the firm to make more profit and financial performance. Large firms often get access to resource assignments and dominate the market, this ability of the large firms to obtain better deals in economic as well as products and other area and positive influence on CFP (Kakani et al., 2011). There is possible that large firms have more opportunities for globalization.

Tarawneh (2006) suggested that lots of studies that firm size enhance the CFP that not consider the possible factors such as entry barriers, firm strategies; Whittington (1980) suggest there are the negative firm size and CEP relationship from a sample of UK firms.

Large firms need more coordination process, which makes operation management difficult and decreases efficiency (Jermanis, 2006), bureaucratization phenomena also exist in big firms that lead the decision-making process more slowly, and low productivity (Liargovas & Skandalis, 2008). Goddard et al. (2006) documented that there is no clear evidence that firm growth and CFP relationship, Mariuzzo et al. (2003) found large firms with market power but not the same as market value and firm size is not the decisive factor of the CFP. Agustinus and Rachmadi (2008) show that company size affects the profitability of specific industries but not the similar situation of all sectors. Therefore, if the relevant conditions are not providing, the assumption that the size is indeed essential cannot be provided. Hagedoorn and Clodt (2003) suggested that firm size is not the critical factor of CFP, moreover, Amato and Wilder (1985) using the data from the US manufacturing sector and concluded that there is no proof to support the relationship between firm size and CFP. Geroski et al. (2003) use 147 UK firms as the sample, suggested that the firm size is not helpful for firm growth.

Previous studies have shown mixed results of firm size influence on CEP and CFP. Firm size influence on the CEP is inconsistent, some scholars suggest the large firm tend to disclosure more environmental information (Hörisch et al., 2015), but others reveal the opposite opinion, that small firms are incentive to pursue green innovation and generate high profit (Lin et al., 2019; Romero et al., 2018). Even though lots of corporate environmental studies include firm size, but most of them show the firm size as a control variable, and rare to make an empirical result. This study will examine the firm size role that influences the CEP and CFP. Most previous studies have shown that large companies pay more attention to environmental protection and have more resources to achieve this goal, and form an environmental management system and set up an environmental committee to address

the environmental issues and relationships with external stakeholders, the reputation of a large company is more important than a small company. Furthermore, there is the inconsistent result of firm size and CFP, most of them suggested the firm size positively impacts the corporate profit performance (Gichura, 2011; Kakani et al., 2011; Merikas et al., 2006), and also others demonstrated the negative (Banz, 1981; Tarawneh, 2006) and no relationship (Amato & Amato, 2004; Goddard et al., 2006) between firm size and CFP. Therefore, firm size is a critical element that prompts firm concern about environmental issues, and also an unexplored area that is the CEP influence on

CFP under the moderating effect of firm size. But most of the previous researches are focus on the firm size on firm profit and ROA, but not too much study on the firm size influence on market-based CFP.

In short, a systematic review of existing literature on the impact of firm size on the CEP-CFP relationship reveals that the firm size would have a moderating effect. The second proposition could be formulated as:

P2: The positive relationship between corporate environmental performance and corporate financial performance would be moderated by the firm size.

Table 1 Summary of literature

	Country	Sample size	Environmental variables	Financial variables	Relationship
Mikael Petitjean (2019)	US	S & P 500	Environmental disclosure the score, GHG emission reduction, environmental quality management	ROA, Profit margin, Three market-based indicators	None
Feng Shen et al. (2019)	China	Heavily polluting industry	USF (unit sewage fee)	Tobin's Q	Mix
Carmen et al. (2018)	EU	16 countries 4,223 firm-year	Carbon emission	Financial debt	Positive
Isabel-María García-Sánchez & Jennifer Martínez-Ferrero (2018)	Global	3,594 companies	CSR strength CSR concern	Tobin's Q	Positive
Mengying Feng et al. (2018)	China	126 automobile manufacturers	Green supply chain	ROS	Positive
Yasir Shahab et al. (2018)	China	749 firms	Environmental rating scores	Reduce financial distress	Positive
Zahra Borghei et al. (2018)	Australia	174 companies of Australian Stock Exchange	Voluntary GHG disclosure	ROA	Positive
Jorge A. Romero et al. (2018)	US	Received penalty firms	EPA penalty	Earnings	Negative
Zhifang Zhou et al. (2018)	China	191 Chinese A-share listed firms	Carbon risk (carbon violations)	Cost of debt financing	U-shape
Fortune Ganda & Khazamula Samson Milondzo (2018)	South Africa	63 Africa CDP firms	Carbon emission	ROE, ROI, ROS	Negative
Matthias Damert et al. (2017)	Global	45 largest GHG emission firms	1. Carbon intensity and exposure 2. Carbon competitiveness	ROA, ROE	Mix
Fortune Ganda (2017)	South Africa	South Africa CDP firms	Carbon emission disclosure	ROA, MVA (market value added)	Mix
Yu He et al. (2017)	US	620 firms	Emission reduction	Tobin's Q	Positive

Miroshnychenko et al. (2017)	Global	3,490 public-traded firms	Green practice ISO 14001	Tobin's Q ROE	Mix
Andewi Rokhmawati et al. (2017)	Indonesia	134 listed manufacturing firms	CO ₂ intensity	ROS	Positive
Yan Qiu et al. (2016)	UK	FTSE 350 INDEX	Environmental disclosure	ROA ROE ROS	None
Yang Stephanie Liu et al. (2016)	UK	100 firms	Carbon emission	ROE ROA	Negative
Juhyun Jung et al. (2016)	Australia	78 firms	Carbon risk (GHG emissions) Carbon risk awareness	Cost of debt	Mix
Marilyn T. Lucas & Thomas G. Noordewier (2016)	USA	941 publicly-traded manufacturing	Environmental ratings	ROA	Positive
Noor Muhammad et al. (2015)	Australia	76 from 6 industries	Pollutant release Transfer registers	ROA, Tobin's Q	Mix
Pereira-Moliner et al. (2015)	Global	53 firms	Voluntary disclosure	Cost	Positive
Christoph Trumpp & Thomas Guenther (2015)	Global	696 firms	CO ₂ /Sales Waste intensity	ROA Market value	U shape
Ki-Hoon Lee & Byung Min (2015)	Japan	Manufacturing firm	Green R&D investment	Tobin's Q	Positive
Isabel et al. (2015)	Global	89 companies	GHG emissions reduction	ROA, ROE	Positive
Marlene Plumlee et al. (2015)	US	Five industries	Environmental disclosure	Future cash flow & cost of equity	Mix
Li Chang et al. (2015)	China	Most polluting listed industries	Environmental capital expenditure	Tobin's Q	Mix
Peter M. Clarkson et al. (2014)	EU	EU ETS	Carbon intensity	The market value of common equity	Negative
Yavuz Agan et al. (2014)	Turkish	314 firms	Environmental supplier development	product cost Product quality ROI long-term profit	Positive
Hidemichi Fujii et al. (2012)	Japan	3256 observations	CO ₂ emission	ROA ROS Capital turnover	Positive
Yu He et al. (2013)	US	S&P firms participated in CDP	Voluntary carbon disclosure	Cost of equity capital	Negative
Peter M. Clarkson (2013)	US	117/2003 119/2006	Environmental disclosure	ROA, Cost of capital	Positive Negative
Iwata & Okada, (2011)	Japan	268 firms	Carbon emission reduction	ROS, ROE, ROA, ROI, ROI, Tobin's q-1, Ln (Tobin's Q)	Mix
Heras-Saizarbitoria et al. (2011)	Spain	7,500	ISO14001 certification	ROA	None
Delmas et al. (2011)	Germany	152	Environmental disclosure	Cost-saving	Positive
Zeng et al. (2010)	China	614	Clean production	Profit ROE	Positive
Galdeano-Gomez (2008)	Spain	56	Environmental behaviour	profit	Positive
Wahba (2008)	Egypt	156 firms (84 certified ISO 14001)	ISO certification	Tobin's Q	Positive
Clarkson et al. (2008)			disclosure		Negative
Earnhart & Lizal (2007)	Czech	436 firms	pollution control	ROA ROE ROS	None

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Cormier & Magnan (2007)			Disclosure		None
Aragón-Correa & Rubio-Lopez (2007)	UK	140 food factories	Carbon emission	ROI ROE	None
Nakao et al. (2007)	Japan	278 firms	Environmental management performance index	ROA, ROE, Tobin's Q, Earnings per share	Positive
Montabon et al. (2007)		45	Environmental practices	ROI Sales growth	Positive
Cañón & Garcés (2006)	Spain	80	ISO 14001 certification	Stock price	Negative
Ann et al. (2006)	Malaysia	45	ISO 14001 certification	Customer satisfaction Market position	Positive
Link & Naveh (2006)	Israel	77 firms	Emission of pollution Use of recycled materials	Profit margin	None
Murray, Sinclair, Power & Gray (2006)	UK	168	disclosure	Share return	None
Menguc & Ozanne (2005)	Australia	140 manufacturing firms	Environmental behaviour	Market share Sales growth and profit	Positive
Wagner (2005)	EU	571	Pollution air emissions	ROS ROE ROCE	Negative
González-Benito & González-Benito (2005)	Spain	63 chemical firms 96 electronic firms 27 furniture firms	Environmental management	ROA	Positive
Al-Tuwaijri et al. (2004)	US	198 firms from S&P 500	Recycled percentage	Annual stock return	Positive
Carmona-Moreno et al. (2004)	Spain	268 hotel	Environmental management	Profitability Occupancy rate	Positive
Watson et al. (2004)	US	Companies with environmental system	Environmental behaviour	ROA Profit margin	Positive
Filbeck & Gorman, (2004)	US	24 electric companies	Carbon emission	profit	Negative
King & Lenox (2002)	US	614 manufacturing firms	Pollution reduction	ROA Tobin's Q	Positive
Konar & Cohen (2001)	US	321 manufacturing firms	Toxic chemical disclosure	Tobin's Q	Positive
King & Lenox (2001)	US	625 manufacturing firms	Total emission	Tobin's Q	Positive
de Burgos & Céspedes (2001)	US	196 US firms	Environmental issues management	ROI, earning growth	Positive
Karagozoglou & Lindell (2000)	US	83 high-tech & manufacturing firms	Environmental strategy	Profit margin Market share	Positive
Lang & Lundholm (2000)			disclosure		Positive
Gilley et al. (2000)	Global	71 environmental initiatives	39 process-driven 32 product-driven	Stock returns	None
Khanna & Damon (1999)	US	123 firms in the chemical industry	Emission of toxic chemicals	ROI	Mix
Judge & Douglas (1998)	US	196 US firms	Environmental issues management	ROI, earning growth	Positive
Sharma & Vredenburg (1998)	Canada	99 oil and gas firms	Proactive environmental strategy	cost	Positive

Edwards (1998)	UK	51 environmentally proactive firms	Carbon emission	ROE Return on capital employed	Positive
Russo & Fouts (1997)	US	243 firms	Environmental ratings: expenditures & waste reduction	ROA	Positive
Cordeiro & Sarkis (1997)	US	523 firms	TRI release	Earning-per-share growth	Negative
Klassen & McLaughlin (1996)	US	US firms with environmental awards and crisis	Chemical/oil spills Gas leaks or explosions	Stock market return	Positive
Hamilton (1995)	US	463 firm	TRI emissions	Stock price	Positive
Cohen et al. (1995)	US	S&P 500 firm	Less pollution	ROA ROE	Positive

DISCUSSION

A systematic review of the existing literature on the CEP-CFP relationship in the current study indicated two main points. Firstly, previous studies indicated there would be a positive relationship between the CEP and the CFP. It means that the firms make more attention to stakeholders' requirements that will be improving the firms' reputation, marketing occupation, and therefore enhance financial performance (Uribe-Bohorquez et al., 2018). Secondly, previous studies also indicated that the CEP-CFP would be moderated by the firm size. Larger firms are more likely to occupy the market and resource advantage than smaller firms. Therefore, large firms are more consider environmental legitimacy and follow the rules than smaller ones (Lin et al., 2019; Romero et al., 2018).

a. Theoretical Contribution

The positive relationship between the CEP and the CFP is in line with the stakeholder theory (Berthelot & Robert, 2011; He et al., 2013; Llana et al., 2007; Qin et al., 2019). The stakeholder theory is based on the legal right of different groups (such as employees, customers, suppliers, government, and environmental-related groups) (Donaldson & Preston, 1995; Friedman, 1970). When facing environmental issues, on the one hand, firms need to expenditure cost to improve CEP to satisfy stakeholders, on the other hand,

firms may increase reputation via better CEP and stakeholder responsiveness, for example, customers may like the products and improving the sales of the company. To achieve corporate environmental targets, an organization needs to improve CEP and show responsibility to its stakeholders. From this, the firm can legitimize its CEP with stakeholders, such as enhance the loyalty of customers and reputations, ultimately increase CFP to ensure sustainable development (Qin et al., 2019). Firms need to satisfy the stakeholders with appropriate CEP, particularly the government sustainability development requirement is the primary highest level of power (He et al., 2017; Marquis & Qian, 2014). Considering the stakeholder's fulfilment of CEP, the firms need to meet the compliance of the level of government environment standard (Buysse & Verbeke, 2003).

b. New Conceptual Framework

Based on the first and second propositions, this study proposes a new conceptual framework showed in Figure 2. The corporate environmental performance are popularly explored with EMP, EOP, CO2 emission, environmental disclosure, and environment committee should include in CEP, based on stakeholder theory, the environmental disclosure will give a singling that the company green operation, it is suitable for the environmental protection policy and customer required. Previous studies of top management team responsibility are the

most focus on shareholder, even though the stakeholder theory research, they aim to examine some more influential stakeholders, such as shareholder and investors. However, less study investigates the less powerful stakeholder (such as employees, customers, and NGOs) or unvoiced stakeholders (environment and residents, and animals). But now, under the seriously environmental all over the world, traditional corporate functions face more challenges, they need to take more consideration on the less power or no voice stakeholders, the stakeholder theory gives more attention to environmental-related parties, ordinary people and investors will see more concern on CEP.

Figure 2 Conceptual framework

This new conceptual framework indicated a fact that large firms with more leverage ability would have more expenditure on green research and development. Therefore, big firms are more likely to have a stronger relationship between CEP and CFP. The stakeholder theory is based on the firm affected by the stakeholders of the business operational. However, stakeholder theory could not take systematically account of firm size. In other words, a new conceptual framework would incorporate firm size as a moderator, and this new variable may contribute to circumvent a shortcoming of the stakeholder theory.

CONCLUSION

There is a debate on the relationship between corporate environmental performance (CEP) and corporate financial performance (CFP). This conceptual paper aims to contribute to the existing literature by integrating previous research on the CEP-CFP relationship and identifying the moderating effect of firm size on the relationship between these variables. There are two main findings in the current study. Firstly, a systematic literature review on the CEP-CFP relationship in the current study indicated there would be a positive

relationship between the CEP and the CFP. The secondly, literature review also showed the firm size would moderate the CEP-CFP relationship.

Based on these findings, the current study proposes a new conceptual framework in which the positive relationship between the CEP and the CFP would be moderated by the firm size. From a theoretical perspective, the stakeholder theory could explain why there is a positive CEP-CFP relationship. However, it could not take account of firm size in this theoretical model. In this context, the inclusion of the firm size as a moderator could contribute to circumvent a shortcoming of the stakeholder theory. In future research, researchers may use this conceptual framework for empirical analysis. The findings from this conceptual framework would offer an interesting insight into the relationship between environmental and financial performance in the firms.

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