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ROLE OF INNOVATION IN RELATIONSHIP BETWEEN CORPORATE SOCIAL PERFORMANCE AND CORPORATE FINANCIAL PERFORMANCE

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ABSTRACT

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The focus of the thesis is an analysis of the influence of corporate social performance (CSP) on the corporate financial performance (CFP) of a firm and role of innovation in this relationship. The primary research problem is the fact that there is not established relationship between CSP and CFP and unspecified role of innovation in this relationship. Previous researches found mostly positive CSP-CFP relationship, but there is still lack of understanding in role of innovation, as most of studies, which explored role of innovation in CSP-CFP relationship, got a neutral result. To address this gap, the researched question formulated is: what is the effect of innovation and their interaction CFP? The data for this study was acquired from CSR Hub dataset, The Eikon datasetand Amadeus dataset, and it focuses only on 2017. The data includes 312 companies. The findings highlight that CSP has a positive impact on CFP; however, innovation shows negative influence in CSP-CFP relationship. The key theoretical contribution of the thesis is an attempt to build new theoretical framework to test CSP-CFP relationship, using currently established datasets such as CSRHub and The Eikon datasets. For practioners, it is concluded that it is more effective to a focus on either CSR or the innovation alone, or adjusting them to consider, include, and account for the complex interconnections and implications in both dimensions instead.

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LIST OF ABBREVIATIONS

CSR- Corporate social responsibility

CSP- Corporate social performance

CFP- Corporate financial performance

ESG- Environmental, Social, Governance

ROA- Return on assets

ROE- Return on equity

SG- Sales growth

PBT- Profit before tax

 CFO- Cash flows from operating activities

ECSR- Environmental corporate social responsibility

RMSE- Random mean squared error

1. INTRODUCTION

1.1 Background, concepts and research gap

The concept of sustainability is built around environmental, economic and social aspects. Environmental aspects focus on topics such as a climate change, biodiversity and ocean acidity. The economic aspect concerns a business seeking to be profitable and cost-effective. In addition, the third pillar, social sustainability, involves the internal and external stakeholders of the business and its supply chain.

Strategy managers usually faced with decision-making about allocation of corporate resources and the financial outcome of such decisions. High stakeholder expectations, regulatory shifts and environmental concerns make these choices more complex, as the society has become more demanding in terms of social responsibility of firms. CSR has gradually become an imperative of business practice in recent years. There is constant controversy over CSR - do CSR investments pay off for in the long term? This research includes some concepts such as CSR, investment in R&D activities and corporate financial performance (CFP).

Studies designed to show social responsibility with financial performance were made in the 1980s with two opposite cuts (Fredrik, 2006). One view is that the firm started with a compromise between social responsibility and financial performance. Those who follow this point of view offer to do not pay socially responsible actions. Financial ratios include Return on Equity (ROE), Return on Assets (ROA) and Tobin's Q Ratio (Van Horne, 2005).

Alshehhi (2018) reviewed some of the most used indicators of financial performance in studies investigating the CSP link and effects of sustainability in general, with indicators such as ROA, Return on Investment (ROI), ROE, stock price, market valuation etc. mentioned throughout as commonly used indicators of CFP. In general, CFP as a measure is considered the financial output arising from effects of CSP, typically these measures being either accounting based (e.g. ROA, ROE) or market-based (e.g. market returns) as suggested by Allouche (2005).

Carroll (1979) states that the social responsibility of a business involves economic, legal, ethical and discrete expectations that are relevant to organizations at given time. Wood (1991) classifies principles of social responsibility and social feedback as results,

financial indicators of which were one aspect of social efficiency. CSR is a concept, which states that companies combine social and environmental problems in their business operations and engage with interested parties on a voluntary basis. Stakeholder participation has become an important aspect of corporate volunteering (Lacy, 2010). In more recent studies, Siegel & Vitaliano (2007, 773) explored, how CSR is likely to be incorporated into a firm's product differentiation strategy, and their definition of CSR is CSR occurs, when firms engage in activity that appears to advance a social agenda which is more than it is required by law. Carrol (1979) makes a traditional classification of CSR in four components: economic, legal, ethical, and discretionary. Flemmer (2013) claimed that strategic CSR activities attract new customers, increase companies' profitability, and reinforce their competitiveness. Mackey, Mackey & Barney (2007, 820) suggested that managers should sometimes abandon efforts to maximize the present value of their firm's future cash flow in favor of socially responsible activities that reduce the value of those cash flows. In more modern context, Flemmer's (2013, 4) research suggests that a sustainable development program can motivate employees to do their job better, which is reflected in customer satisfaction and company outcomes.

As CSR overall is generally not a testable measure or variable, the concept of CSP and its varying operationalization can be used for a measuring the effects of the CSR activity (Marom, 2006; van Beurden, 2008). The concept of CSP may further be muddled by the more recent concept of CSP, utilized by some studies e.g. in reviews undertaken by Goyal (2013) and Alshehhi (2018).

Previous research indicates there still exists a debate about the effect of CSP on financial performance due to various critiques and the inconclusive nature of former findings. The relationship between CSP and CFP appears to be complex and difficult to measure. Furthermore, theoretical models of this effect are still not comprehensively defined or commonly accepted; hence, researchers are still working on multiple sub-streams and competing perspectives surrounding the phenomenon. The commonly understood form of the relationship assumed being positive does not offer a source for the successful CSP implementation, nor is the direction of the effect currently clear.

Investments made in R&D are considered as technical capital leading to knowledge enhancement, which in turn leads to the product and process innovation (David, 2008). Several studies found that innovation has a positive impact on the relationship between

CSP and CFP as a mediator (Karjalainen, 2008; Surroca, 2010; Guiral, 2012), creates intangible market-based assets which typically increase a long-term cash flows thereby leading to reductions of cash flow volatility (Luo, 2009). Furthermore, there is generally a time lag from the time an R&D investment is made until such receives a payoff (David, 2008). Ciftci (2011) also found that larger firms generally have a higher profitability from their R&D investments. The impact of innovation on CSP and CFP could be negative if stakeholders perceive that CSP investments are compromising the survival of the firm. Luo (2009) explain this 'dark side' of CSP as a potential tradeoff between an investing in innovation activities or in social initiatives, suggesting a possibly negative relationship – whereas these tradeoffs would logically lead from favoring one to the neglect of the other. Thus, managing these tradeoffs is seen as the balancing act between the securities provided by CSP initiatives (i.e. a reduction of risk in future cash flows) and the long-term cash flows and reduced volatility provided by R&D spend (Luo, 2009).

1.2 Research problem, objective, question

There are over hundred empirical studies published on the link between CSR and CFP (Margolis, 2007); the first studies in this respect hail from the 1950s (Stanwick, 1998) and the CSP-CFP link as a research topic has spurred over a dozen reviews (Barnett, 2012). However, CSR activities require considerable investments. To perform both social responsibility activities and R&D activities require a careful consideration and big investments.

The main research question of this paper is:

RQ: What is the effect of Corporate Social Performance (CSP), innovation and their interaction on Corporate Financial Performance (CFP)?

The main purpose of this research is investigating the influence of corporate social performance on the financial performance of a firm and role of innovation in this relationship.

Sub-questions of the research are:

SQ1 What is effect of CSP on CFP?
SQ2 What is effect of innovation on CFP?

SQ3 What is the effect of the interaction between CSP and innovation on CFP?

1.3 Methods

It was made the quantitative study. Analysis was done with two datasets: The CSR dataset and the Eikon dataset. Datasets include 312 observations, total of 134 observations for the CSR dataset and 178 observations for the Eikon dataset. The *Stata* was used to run the analysis. Two datasets for the analysis were chosen as these datasets use the different CSR measure methodology. The using of two datasets increases reliability of results. OLS regressions was used to run the analysis.

In terms of a measuring of CSP as the primary variable affecting CFP, it was used both the ESG index from the Eikon database and the CSR index from the CSR database. Using both indexes helps to get result that is more reliable and gives the foundation to compare. They were combined separately with financial data derived from the Amadeus database from 2017 and, companies' annual reports were used to check R&D expenditures. CFP was measured by current ratio, profit margin and ROA separately. In terms of an innovation, it was tested as R&D spend divided by operating revenue (i.e. turnover). As an industry classification is different in ESG and CSR datasets, it was reduced to one standard. The industry classification was derived from the CSR and the ESG databases. Firm Size was operationalized using indicators number of employees alone.

In the chapter 2, there is a literature review, which includes theoretical background and the explanation of CSP-CFP relationship, the time effect and the role of innovation in this relationship. Critiques of the existing theory about the CSP-CFP relationship. Based on theoretical background, the hypothesis were build. The chapter 3 covers the methodology of the research, its operationalization and the research model, data analysis methods, reliability and validity of the research. Main findings of the research were presented in chapter 4, including descriptive statistics of data, which was used in the research.

2. LITERATURE REVIEW

The theoretical part contains the theoretical explanation of the CSP-CFP relationship; also, it describes previous empirical evidences of this relationship. Furthermore, it discusses the role of the innovation in the CSP-CFP relationship. Then a time effect of the main relationship includes in the literature review. In conclusion, critiques of previous researches are presented.

2.1 Theoretical explanation of CSP-CFP relationship

There are different theories, which explain a positive, negative or neutral link between CSR and CFP. Some authors have already provided important studies about the CSP-CFP relationship (for example, Hillman, 2001; Ruf, 2001; Bansal, 2005; Surroca, 2010). In

Table 1 it can be seen different theories, which explain the CSP-CFP relationship.

Theory	Explanation of CSP-CFP relationship
Institutional theory	CSR activities get support from key stakeholders, and it leads to increase of CFP
RBV theory	The CSR activity helps managers develop the best skills, and companies develop intangible assets that contribute to improving economic performance
Transaction costs theory	Companies with good perceptions of CSR have low cost requirements, while companies with poor perceptions of CSR are more likely to face precise explicit claims
Stakeholder theory	Firm's commitment to a social activity contributes to its financial well-being
Trade-off theory	Managers perceive both a compromise and synergistic capabilities between the objectives of responsibility and profitability

The detailed description of this relationship is presented in this chapter.

Table 1 Theories explaining CSP-CFP relationship

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The analytical orientation of institutional perspectives is based on social legitimacy, which relates to the firm adopting its social environment, its external composition. Non-compliance with critical, institutionalized norms of receptions can be put under the influence of its legitimacy, resources and, ultimately, survival. This view implies that companies will strategically respond to institutional norms and changes in their social sphere in order to obtain or maintain legitimacy, as they have determined that they have improved access to resources (Suchman, 1995; Bansal, 2005).

The institutional theory predicts that enterprises use specific inputs to gain access to resources and support from key stakeholders (Doh, 2010). In fact, the social environment, in which firms operates, consists of interested parties, and the legitimacy depends on their expectation's satisfaction (Bansal, 2002). Post (2002, p.8) defines the company's stakeholders as individuals and voters who contribute voluntarily or unfairly to wealth creation activities and, accordingly, are potential beneficiaries and / or risk carriers. The

CSP can be evaluated from the point of view of the company, the responses to the demands of many stakeholder groups (Ruf, 2001).

Participation in corporate social (CS) activities, when it is expected to be very useful to the company, is a behavior that can be investigated through the prism of the resource-based view (RBV) (Branco, 2006; McWilliams, 2006; Siegel, 2009; Gallego-Alvarez, 2010; Hussainey, 2010; Surroca, 2010). The resource-based approach implies the positive impact of CSR on CFP. In terms of this approach, companies interpret requirements of stakeholders as strategic investments (Russo, 1997; Ruf, 2001).

Other researchers have put forward arguments about transaction costs and resource-based views to demonstrate why the firm may strive to meet the requirements of stakeholders (Jones 1995; Ruf, 2001; McWilliams, 2006).

The recent literature emphasizes strategic importance of CS participation (for example, Maxfield, 2008; Vallaster, 2012). These studies argue that, following a resource-based firm viewpoint, CSR practice has the potential to receive both tangible and intangible benefits. The RBV assumes that companies create sustainable competitive advantages by effectively controlling and manipulating their resources that are valuable, rare, cannot be completely simulated and for which there is no perfect replacement (for example, Barney, 1999; Bowman, 2003; Kraaijenbrink, 2010; Pertusa-Ortega, 2010). By investing in such a strategy, organizations develop valuable, rare and irreplaceable elements such as leadership and positive social reputation. These assets lead companies to competitive advantages and potentially to more profits (Barney 1991; Luo and Bhattacharya 2006). Thus, from the resource point of view, it is argued that the CSR activity helps managers develop the best skills, and companies develop intangible assets (such as trademarks) that contribute to improving economic performance (Wernerfelt, 1984; Russo, 1997).

The theory of transaction cost economies states that firms will try to meet needs of stakeholders to minimize potential transaction costs (Williamson, 1985). Although shareholders and holders of debentures have clear claims to the firm, other stakeholders (such as clients, government and community) make implicit claims to the firm. When a firm is not able to act in a socially responsible manner, other stakeholders will have doubts as to whether the company will meet its concealed requirements. These interested parties

are likely to translate inexpensive, implicit contracts into costly explicit demands. Thus, the cost-of-transaction economy means that companies with good perceptions of CSR have low cost requirements, while companies with poor perceptions of CSR are more likely to face precise explicit claims (Cornell, 1987; Pelosa, 2006).

The stakeholder theory may also be supplemented by the RBV, since firms may consider meeting requirements of stakeholders as strategic investments that require commitments that go beyond minimum needed to meet stakeholders (Ruth, 2001). The stakeholder theory (Freeman 1984) was the most important approach to explaining how investing in CSR leads to an increase in CFP; that is, as the firm's commitment to the social activity contributes to its financial well-being. This theory postulates that it is not enough for managers to focus solely on the perceived needs of shareholders (McWilliams, 2006). In this regard, firms must meet requirements of important stakeholders, other than shareholders (Ruf, 2001). With regard to firm commitment to social activities, the stakeholder theory supports the company's investment in CSR to improve its relationships with customers, employees and shareholders. For example, Greening (2000) suggests that people can react to a company's investment in CSR, looking for work in the firm, and not just buying products from it. Thus, the impact of CSR on financial performance of a company or its value can be viewed from different points of a view.

It is believed that the company faces a trade-off between social responsibility and financial performance. Those who hold this view suggest that firms incur costs for socially responsible actions. Even as part of these sustainability initiatives, managers faced with another compromise between growing choices and environmental pressure (Walley, 1994).

Over time, literature has spread to the search for compromises in the practical application of the CS (at the application level) in three different areas of the CS, namely, in the field of sustainable supply chain management, the reporting and the evaluation (the measuring and the disclosing of information) and operations (the improving of the product and the process). Examples of such studies include Handfield (2002), who proposed a supplier decision model that incorporates the environmental criteria (which may conflict with the traditional criteria of a financial supplier). Joseph (2012), who presented a conceptual discussion of conflicts arising in the process of reporting on sustainable development as a part of a global reporting initiative. Driessen (2013), who conducted a

qualitative study of problems faced by companies, trying to balance conflicting issues of interest to participants in the development of environmentally friendly products.

Epstein (2014) uses a case-study approach to study the managerial perception of the concept of triple results in several top companies. Authors found that in these firms, managers follow a new "paradoxical perspective" of compromises, when win-lose and win-win can coexist in one firm. Interviewed managers said that they decided in favor of financial indicators when financial indicators and sustainability are in conflict, but they actively choose "to avoid actions that are truly harmful to sustainability. Authors found that these decisions were based on predetermined boundary conditions determining the minimum acceptable irresponsible behavior. In a decision-making process, these conditions define free zones from compromises when management decisions are made. Here, managers did not evaluate trade-offs financially, but made automatic decisions in favor of sustainable development. Varenova (2013) conducted a similar study for managers in the UK with using of a mixed method. The results show that managers perceive both the compromise and synergistic capabilities between objectives of responsibility and profitability. Under certain circumstances, it was believed that these goals are synergistic. The authors found that companies that have a narrow view of stakeholders increase the likelihood of synergy, being strategically selective with respect to the initiatives that they carry out under certain circumstances.

To summarize, there is plenty of theories, which describe the CSP-CFP relationship. Furthermore, there is plenty of reasons, which scientists offer to explain the CSP-CFP relationship. They will be discussed in chapter 2.2.

2.2 Reasons for CSP-CFP relationship

The deeper explanation of reasons for the CSP-CFP relationship is presented in this chapter. Main conclusions can be found in Table 2.

Table 2 Reasons for CSP-CFP relationship

Reasons	Scientists, which support following reasons
Reputation	Roberts, 2002; Orlitzky, 2003;Branco, 2006;Curran,2007; Orlitzky, 2008; Kurucz,2008; Consolandi, 2009;

	Doh,2010;Gallego-Álvarez,2010;Hussainey, 2010; McWilliams, 2010; Cheung, 2011;Peloza, 2011;Robinson,2011;Tang 2012;
Customer loyalty	Brown, 1997; Marin, 2009; Luchs,2010;Green, 2011; Chernev,2015;
Cost reduction	Dowling, 2001; Roberts, 2002; Kurucz,2008;Lee,2009;
Competitive advantage	Fombrun,2000; Dowling, 2001;Adam,2004; Porter,2006; Gardberg, 2006; McWilliams, 2006;Kurucz,2008;
Employees loyalty	Solomon, 1985; Brammer, 2007; Vitaliano, 2010; Lourenco, 2012;
Legality	Kurucz,2008; Godfrey, 2009;
Lower risk	Lourenco,2012;

The social reputation and profitability of the company eluded scientists (Peloza, 2011; Tang 2012). Kurucz (2008) identifies four categories of benefits that companies can obtain by the exercising of CSR:

- cost reduction;
- competitive advantage;
- the development of reputation and legality;
- search for win-win results.

These benefits of CSR activities are described below. The external advantages of CS are related to its influence on the reputation of companies (Orlitzky, 2003; Branco, 2006; Orlitzky, 2008; Gallego-Álvarez, 2010; Hussainey, 2010). Reputation of companies has been identified as one of the most important intangible resources offering a sustainable competitive advantage (Roberts, 2002). Companies with good reputation in CS can improve relationship with external players, such as customers, investors, bankers, suppliers and competitors. Some studies, such as Curran (2007), Consolandi (2009), Doh (2010), Cheung (2011) and Robinson (2011), examine whether sustainability indices (such as FTSE4Good UK 50) are removed in these data or of them. The index, the Stoxx Dow Jones Sustainability index, the Dow Jones Sustainability World Index and the Calvert social index have positive (negative) consequences. In terms of

resources, a company's CSR creates a company's reputation or image, which is valuable, rare and unique resources that can strengthen a company's competitive position (McWilliams, 2010). Roberts (2002) argues that companies with good reputation in their communities are better able to assert a superior result compared to other companies because of intangible nature makes a replication by competing companies much more difficult.

In addition, company's reputation for social responsibility tends to reduce consumer sensitivity to prices and increase their loyalty to the brand (Marin, 2009; Green, 2011). According to Luchs (2010), people tend to believe that companies that give a priority to sustainability create superior products, because an ethical business is perceived as softer. Chernev (2015), through CSR, can help consumers better assess the effectiveness of business products and creates stronger customer relationships (Brown, 1997) Adam (2004) and Kurucz (2008) suggest that companies adopting sustainable strategies should give them a competitive advantage over other companies if they don't. Porter (2006) also believes that participation in sustainable development activities is increasingly being analyzed as a source of competitive advantage for the company. A more inimitable competitive advantage increases the efficiency of innovative products, an implementation and sales efficiency, increasing of cash flow and profitability (Dowling, 2001). Effective and reliable contracting with suppliers, employees and creditors should also lead to lower costs for contracting and monitoring of company's sustainability compared to other companies (Roberts, 2002). Overall, Lourenco (2012) suggests that higher CSPs are the subject to the lower economic uncertainty, predictable returns and the lower risk for investors. CSR activities create channels through which environmental methods influence economic performance (for example, Sharma, 1998; Lopez-Gamero, 2009). Lee (2009) suggests that leading in CSR activity companies actively manage their CSR profile and achieve lower capital costs, suggesting that financial markets value CSR.

Investing in social and environmental awareness has intrinsic advantages, helping the company develop new resources and opportunities related to know-how and the corporate culture. These investments are essential for creating or removing core intangible resources, especially those related to employees (Lourenco, 2012). Corporate sustainability has been shown to have a positive effect on employee motivation and morale, as well as their commitment and loyalty to the company (Brammer, 2007). In addition to performance

benefits, companies also save on hiring and training new employees (Vitaliano, 2010). CSR can be viewed as a form of strategic investment, similar to the form of research, development, and advertising (Gardberg, 2006; McWilliams, 2006). Fombrun (2000) argues that CSR activities serve as a protective net to protect companies from accidental negative events. Godfrey (2005) showed that CSR acts as a kind of insurance policy for companies that create risks and create positive "moral capital", which can directly affect the company's market value, improving employee morale and productivity (Solomon, 1985). In addition, CSR activities reinforce the joint option of the government intervention, thereby improving a future revenue growth (Godfrey, 2009). By implementing pollution prevention measures, reporting on sustainable development or other initiatives, a company can reduce operating costs, emissions and a resource use and improve its reputation, operating license, stakeholder engagement and, ultimately, its competitive advantage (Porter, 1995; Vogel, 2005; Ambec, 2008; Vilanova, 2009; Minoya, 2012).

There are theories and reasons, which explain the CSP-CFP relationship. Previous evidences of the CSP-CFP relationship will be discussed in chapter 2.3.

2.3 Previous empirical evidences of CSP-CFP relationship

While reviewing theoretical antecedents of the phenomenon investigated, it was found that there are many researchers, who are willing to understand whether CSP affects a firms' financial performance. A theoretical framework of the previous relationship is presented in

Table 3. This framework was chosen based on citations of researches.

Lopez (2007) states that changes in management practices should be reflected in the profit and loss account as a business volume increases, implying an increase in sales only in those companies that have adopted sustainable practices. In general, firms have a duty to maximize the profit for shareholders; on the other hand, firms should not ignore the importance of other stakeholders including suppliers, employees, and customers (Mackey, 2007). A culmination of these ideals generally falls under the concept of CSR.

There are over hundred researches of the CSP-CFP relationship. Some of these claim conclusive findings in support of a positive effect (Allouche, 2005; Lo, 2007; vanBeurden, 2008; Consolandi, 2009; Doh, 2010; Wagner, 2010; Cheung, 2011; Robinson, 2011). A positive but weak correlation between them was found in following researches (Roman, 1999; Margolis, 2003; Orlitzky, 2003).

Wagner (2011) argues that integrating of environmental aspects and sustainability into overall management affects both economic performance and environmental performance. Artiach (2010) in his study of the determinants of CSP found that the leading CSP companies are much larger and generate higher returns on capital than non-CSP companies.

Ameer (2012) identified significantly higher SG, ROA, PBT and CFO averages for some of the 100 most sustainable companies compared to control companies for the period 2006-2010. He formed the list of the 100 most stable companies operating in the industrial sector, meaning that these companies have significantly higher revenue growth rates than control companies in the same sector, as they were engaged in CSR activities. More significant impact of CSR activities was found in consumer services and telecoms sectors, whose companies have a significantly higher ROA compared to control sample companies in the same industry.

Based on these previous researches, which found, that CSP positively affects CFP, first hypothesis was developed; nevertheless, there are studies with the negative and not clear tendency relationship.

H1: Corporate social performance positively affects financial performance

There are several studies, which found the negative effect of CSR on CFP. One of these if Lopez (2007), who checked the relationship between sustainability and business efficiency through multidimensional design based on economic, environmental and social indicators. Lopez (2007) used a sample of 55 companies from the Dow Jones Index of Durability (DJSI) and compared them with 55 companies from the Global Dow Jones Index (DJGI) for the period 1998-2004. In addition, he modeled the direction of the causal link from the variable CSR to profit before a tax after controlling the size, leverage and other factors of the company. He found a negative coefficient for the variable CSR. The impact of CSR on perceived product characteristics is also seen as an argument that these effects may be negative rather than positive (Ottman, 1998; Pickett-Baker, 2008). The existing empirical data on the impact of the CSP on the CPF were ambiguous. For example, Bird (2007) found a negative correlation between excessive company profits and a one-year delay compared to CSP. Anatomy Quatva's meta-analysis (2010) shows that the empirical data based on the results of 37 studies are still ambiguous regarding the association of ECSR and CFP. Marsat (2011) uses the MSCI ESG ecological rating and recently had a negative impact on the Tobin Q factor. It is also often reported that even CSR activities have a negative impact on the CFP. Fisher-Vanden (2011) reported significant negative profits for companies that have announced voluntary membership of the EPA Climate Leaders program. Using data similar to this article, Bird (2007) also document negative effects, and their interpretation of this conclusion is that although the market sees the need to use corporate resources for coercive or a proactive government regulation to avoid future litigation, costs will not be reimbursed by this. However, the strengths of CSR may also affect other variables that affect the CPF. Verwijmeren (2010) and Bae (2011) came to the conclusion that companies with good employee welfare experience have less impact to CFP.

There are also studies, which did not find clear tendency (Ullman,1985; Aupperle,1985; Wood, 1995; Pava,1996; while others remain inconclusive (Goyal, 2013); and no relation between CSR and CFP at all (Curran, 2007; Garcia-Castro,2010; Surroca, 2010). There are even studies which concluded that the CSR-CFP relationship are complex and beyond the direct causal relationship (Hull, 2008; Wang, 2011). Thus, there still exists a doubt as to whether a firm with strong CSR has more resources to spend on CSP, or

whether such firms use resources better than others thereby resulting in a higher financial outcome (Waddock, 1997, 304).

Past studies revolving around the link between CSP and CFP have utilized data from external institutions such as Risk Metrics, Fortune 500, Kinder, Lyndenberg, and Domini (KLD), Standard & Poor's Compustat, and Center for Research in Security Prices (CRSP). In addition, researchers have used various differing scaling methods for CSR, such as Social Involvement Disclosure (SID) (Aupperle, 1985), Corporate Reputation Index (Stanwick, 1998), KLD Large Cap Social Index (LCSI) (Siegel, 2007), and the North American Industrial Classification System (NAICS) (Siegel, 2007). It was observed that some studies have historically focused on indexes of social sustainability (Aupperle, 1985) and others more heavily on the financial indicators (e.g. Siegel, 2007); while others were utilizing mixed approaches (e.g. Stanwick, 1998).

CSP on the other hand is building on foundations of CSR and stakeholder theories (Marom, 2006) and could be treated as the operational shorthand for CSR activity, arising from concrete business operations while carrying within objectively measurable qualities (van Beurden, 2008) suitable for research purposes.

Table 3 Previous studies of CSP-CFP relationship

Author	Year	N	CSP measure	CFP measure	innovation measure	Controls	Database	CSP-CFP	innovation in CSP-CFP
Aupperle	1985	228	forced-choiced survey index	ROA		-	forced-choiced survey	neutral	
McWilliams	2000	524	Awards from U,S, Dept, of Labor for exemplary equal employment opportunities	ROA, ROE	R&D expenditures / total sales	firm risk, firm size, industry	KLD database	neutral	make CFP neutral
Garcia-Castro	2010	658	KLD ratings	ROA, ROE, MVA, Tobin's Q			KLD and Datastream	biased	
Ameer	2012	100	ESG	Sales, ROA, PBT, CFO		Industry	Thomson Reuters	+	
Artiach	2010	107	DJSI	ROE		Totalassets, Industry	S&P 500 index	+	
Bernan	1999	486	Employees and customers index	ROA			US Fortune	+	
Bird	2007	380	KLD ratings: employee concerns and employee strengths	PE		market capitalization, debt-to-total assets ratio, market-to-book ratio	KLD database	+	
Cheung	2011	177	index inclusion event	abnormal stock returns, risk measures and liquidity		Industry	DJSWI	+	

Consolandi	2009	58	DJSS	Avg. daily returns			top 20% DJ Stoxx	+	
Doh	2010	125	Calvert social index	operating income/total asset		Industry	SecurityPricesdailydatabase	+	
Hull	2008	85	CSR hub	ROA	R&D expenditures	firm risk, firm size, industry	CSR hubdatabase	+	+
Lo	2007	349	DJSGI	Tobin's Q		firm size,debt to equity ratio, ROA, sales growth, industry	Compustatdatabase	+	
Pava	1996	53	CEP evaluation	ROA, ROE, PE			CEP	+	
Robinson	2011	318	DJSI	cumulative abnormal return			DJSI World Index	+	
Surroca	2010	599	KLD ratings	Tobin's Q	R&D expenses / number of employees	size, risk, industry, country, year	Sustainalytics Platform database	+	+
Waddock	1997	469	KLD evaluation	ROA, ROE, ROS			KLD data	+	
Wagner	2010		KLD evaluation	Tobin's q	R&D expenditures	firm size	KLD data	+	neutral
Wang	2011	2765	Corporate giving	market-to-book ratio, ROA		Firm advertising intensity, firm size, age, and debt-to-asset ratio	CSMAR dataset	+	
Bae	2011	9023	Employee Treatment Index	debt ratio	R&D expenditures / total sales	Total assets, sales, market value,ROA	KLD database	-	-

Previous findings of the effect between CSP and CFP showed that there are different results of researches. In chapter 2.4 possible moderating variables, which can influence the relationship between CSP and CFP, will be presented.

2.4 Theoretical background of innovation in CSP-CFP relationship

In recent years, investors, lenders and financial analysts have started to emphasize the importance of corporate responsibility to other stakeholders, and not just shareholders. The relevance of the relationship between CSR and innovation can be derived from official documents (European Commission, 2001; 2006; 2011; BIAC - OECD Business and Industry Advisory Committee, 2008; Ministry of Foreign Affairs of Norway, 2009) to a wider academic debate on the interdependence between indicators of sustainability, business competitiveness and economic performance (Schaltegger, 2006). Nature of relationship between innovation and CSP is presented in Table 4.

Table 4 Nature of relationship between innovation and CSP

innovation-CSP relationship	Authors, which support following statement
Interdependence	Schaltegger, 2006;
CSR is engine of innovation	Kanter, 1999; Hart, 2004;EuropeanCommission, 2006; Nidumoluet, 2009; Miles,2009;Hiwick, 2011;
innovation has impact on CSR	Mohrho,2009;
CSR contributes innovation process	Sharma, 1998;
CSR is tool to reduce risk in innovation process	MacGregor,2008;

Ratajczak (2016), based on the analysis of scientific works, concludes that there is no scientific consensus on many aspects of the studied relations. It was anticipated that CSR would have an impact on the effectiveness of innovation, and on the contrary, it is anticipated that innovation will affect the company's CSR. Nidumoluet (2009) finally pointed out that CSR is the main engine of the innovation. Others argue that CSR can contribute to sustainability while at the same time boosting corporate competitiveness by stimulating the innovation (European Commission, 2006). Some authors even argue that

CSR and the innovation are currently the cornerstone of a business competence (Rexhepi, 2013).

There are different studies, which try to define relationship between CSP and innovation. It is summarized in Table 5. The results presented by Bocquet (2013) show that firms that have a strategic CSR orientation are more innovative in terms of their products and processes. Kim (2014) argues that CSR is more related to short-term rather than R & D investment. Lober (1998) argues that companies do not perceive pollution prevention as an opportunity because of the rare recognition of its potential. Miles (2009) found that sustained corporate entrepreneurship could lead to innovative results. Mohrho (2009) has shown that each company has a significant impact of CSR in each area of activity, as well as on the efficiency of innovation. Hiwick (2011) has shown that implementing CSR in a cluster can stimulate the aspiration for innovation. Tsai (2012) reports that CSR is not promoting innovation in products and services of the company. On the one hand, McWilliams (2000) confirms that CSR and R & D are closely interrelated. On the other hand, in the Gallego-Alvarez (2011) article, the results showed that there is no bilateral link between CSR practice and innovation.

Table 5 Previous findings of CSP-innovation relationship

Link between innovation and CSP	Authors, which support following statement
Positive	Porter, 1995; Jaffe,1997;Mohrho,2009;Bocquet,2013;
Negative	Tsai,2012;
No relationship	Gallego-Alvarez,2011;

Theories and empirical results have contributed significantly to the positive signs of the CSR-CFP relationship. At the same time, they led to different interpretations. Barnett (2007, p. 801) argues that now we understand the influence of individual parts of the general puzzle, ceteris paribus, but the points remain linked to any theoretical structure. Orlitzkiy (2003) shows that there is a large number of unclear variance between the

studies. These differences between studies point to the potential presence of interim / moderator variables, such as the company's investment in intangible assets (McWilliams, 2000; McWilliams 2006; Barnett, 2007; Surroca, 2010; Guiral, 2012; Blanco, 2012). Some studies about intangible assets (Lichtenberg, 1991; Amir, 1996; Lev, 1999; Trueman, 2000; Demers, 2001; Xu, 2007) show that traditional financial reports do not reflect the value of a business in a modern high-tech environment. In this information technology environment, knowledge-based corporate values are becoming an important factor in determining of a company value. For companies in such high-tech industries as the internet, biotechnology and computers, the constant innovation of their products is one of the most important factors in their growth potential. A significant part of the investment of high-tech companies is therefore geared to research and development.

Based on these previous researches (Table 6), which found, that the innovation positively affects financial performance as the moderating variable with CSP, second hypothesis was developed.

Since R & D and the innovation are likely to correlate positively with an enterprise value, any impact of CSR on R & D will have an indirect (positive) effect on the CFP. Consequently, a better empirical analysis of the relationship between corporate and CSR issues should provide an opportunity to reflect both direct and indirect impacts on the global impact of CSR problems. Jaffe (1997), for example, shows that delays in environmental footprinting have a positive impact on the future research and development of companies. Heyes (2011) provides the supervisory authority with the necessary conditions to maintain this effect. As far as CSR is concerned, this has long been associated with better R & D efficiency and therefore with the best innovations (Porter, 1995). It therefore seems natural to accept increasing the efficiency of R & D as a mechanism for translating the positive effects of CSR on a company's financial performance. Of course, the importance of research and development in the literature about CSR has been extensively studied. Many researchers, such as McWilliams (2000), McWilliams et al. (2006), Porter (2006), Barnett (2007), Hull (2008), Ortiz (2008), point out that innovation positively influences the relationship between CSP and CFP.

H2: innovation positively affects CFP.

Table 6 Impact of innovation in CSP-CFP relationship

Impact of innovation in CSP-CFP relationship	Authors, which support following statement
Positive	Sharma, 1998; McWilliams,2000;Hart, 2004;McWilliams,2006;Orsato, 2006;Porter,2006;Barnett,2007;Hull,2008; Ortiz,2008;Surroca, 2010;Hasted,2015;Mitani,2016;
Neutral effect	McWilliams and Siegel,2000; Wagner, 2010;

McWilliams and Siegel (2000) argue that many companies that are actively involved in social activities also have a differentiation strategy that includes additional strategic investments in intangible resources. One such intangible tool is investing in research and development to improve continually a company's products. As a result, it would be very difficult to isolate the effect of CSR on CFP without simultaneously controlling investment in the innovation (as determined by research and development). These authors also argue that investments in R & D and CSR are positively correlated, since many aspects of CSR lead either to a product innovation, or a process innovation, or both (McWilliams and Siegel, 2000). McWilliams (2000) suggested that excluding the intensity of innovation from analyzing CSR-CFP relationships could affect empirical results. McWilliams and Siegel (2000) actually found that CSR had a neutral impact on CFP from 1991 to 1996 in terms of innovation. Surroca et al. (2010) also indicate that there is no direct link between corporate responsibility and financial performance, but only indirect relationships based on the intermediary effect of the company's intangible resources. McWilliams (2000) insists that control over R & D is important when considering the impact of CSR on an enterprise value, since it is an important source of corporate heterogeneity (although they also have industrial dummies). Interestingly, R & D replaces CSR, which becomes statistically insignificant, although it has a negative sign. Domini 400 index, it is CSR index, which is weighted index of the CSR categories covered by KLD in the form of Waddock (1997). Wagner (2010) also proposed the use of CSR interactions with R &D, but found that the interaction conditions in different configurations are not

statistically significant. Mitani (2016) adds additional value to trade between innovation and CSP and concludes that research and development have a greater impact on CFP than on CSP. McWilliams (2000) also showed that the relationship between CFP and CSP would disappear in economic models with the introduction of more precise variables, such as the R&D strength, into the economic models.

MacGregor (2008) believe that CSR is a tool to reduce the risk of innovation processes, because CSR and the innovation process compensate for the innovation in terms of risk assessment. Pavel (2008) believes that the content of CSP innovation is influenced by a number of company and industry characteristics, such as the size and age of a company, market presence, government regulation, sources and types of innovation, as well as sources of funding. However, there are other explanations for the impact of the innovation on CFP. For example, Hasted (2015) believes that a continuous innovation leads to increased strategic positioning. innovation in both processes and products is crucial for creating social and economic value for companies in competitive markets (Orsato, 2006). Hart (2004) originally wrote about "continuous improvement" in terms of the impact of general quality management capabilities on environmental management. This article follows Sharma (1998) with the term "ccontinuous innovation" and corrects it to demonstrate the company's ability to experiment and continually improve social projects, influence, and relationships with stakeholders. This innovation allows the company to take a market position as a leader in value or product differentiation (Porter, 1980).

Based on these previous researches, which found, that synergy effect of the innovation and CSP positively affects CFP, the third hypothesis was developed; nevertheless, there are studies with the negative relationship.

H3: Synergy effect of innovation and CSP positively affects CFP.

As was stated, there is the research, which confirms the close link between research and development and CSR (McWilliams, 2000; Porter, 2011). However, the direction of causality seems to be in both directions. On the one hand, companies can use social goals to motivate the innovation in products and processes (Kanter, 1999; Hart, 2004). The General Electric (GE) Healthy Imagination and Ecomagination initiatives are investing billions in research and development to achieve social and environmental goals. In

addition, social and environmental programs can contribute to the development of competitive resources and skills for agriculture (Sharma, 1998). On the other hand, companies that have the ability to continually innovate to develop new products and services for the market are more likely to use the same opportunities in other arenas, for example, in changing of social expectations and problems that will allow a company to create economic value.

The innovation and the interaction between innovation and CSP have some impact to CFP. However, scientists argue about time effect of this relationship. Critiques of previous researches will be discussed in chapter 2.5.

2.5 Critiques of previous researches

One of the core issues with respect to analyzing a firms' CSP is how to measure the degree of CSR activity; this can lead to the situation where researchers tend to create their own measures rather than to use one of the many pre-existing definitions in the literature (Aupperle, 1985). Some of the studies are missing critical analyses and details on reliability and validity as noted by Garcia-Castro (2010), while others have relatively small sample sizes (Alloucheand, 2005). Further, the measures for both CSP and CFP vary considerably across studies (Waddock, 1997; Alloucheand, 2005; van Beurden, 2008).Orlitzky (2008) claims that though many studies have found a positive relationship between CSP and CFP. In the models employed by these studies there generally remains significant unexplained variance, suggesting that models may include confounding variables, such as firm size (van Beurden 2008).

A role of leadership has also been found to have an influence. Aupperle (1985, 461) found that CEOs interviewed about CSR activities are tempted to respond with fitting ideologies rather than observed or practiced truths in their companies. There is also the possibility that CEOs implementing CSR strategies are generally more talented which may in turn affect firm performance positively (Garcia-Castro, 2010;Flemmer, 2013), leading to possibly unobserved effects and endogeneity (Garcia-Castro, 2010). Flemmer's (2013) results suggest that CSR improves CFP, if analyzing shareholders voting results (2,729 CSR proposals) which were marginally accepted or rejected (Flemmer, 2013, 27).

The positive interaction between CSP and CFP is generally established in spite of measurement, methodological and theoretical issues (Wood, 2010). Harrison (2013) argues

that not all CSP actions lead to increases in CFP and improved value creation, sometimes it may even reduce a firm's financial performance. Cheng (2014) supports Harrison's (2013) suggestion and explains a positive relationship typically exists only when CSP is combined with higher levels of stakeholder engagement. Bridoux (2014) echoes the suggestion that the positive effect is greater in firms consistently and highly engaged with their stakeholders. Chun (2013) argues that such positive effects are more controlled by a firm's internal collective stakeholder groups rather than external groups of stakeholders, such positive effects resulting from corporate ethics and organizational commitment of employees. Koh (2014) further suggests CSP can be treated as an insurance mechanism mitigating the consequences of negative events (e.g. in the face of negative publicity) a company may face per the reputation gains associated with CSP activity acting as a barrier against lost value. A study by Garcia-Castro et al. (2010) found a possibly negative, or at least a non-significant, relationship using a fixed effects model accounting for endogeneity, which may suggest causality within the phenomenon is possibly not thoroughly established. Wang (2012) claims a negative impact arising from CSP to CFP, especially in newly formed companies, while Barnett and Salomon (2012) suggest the relationship is u-shaped i.e. both on the low and high ends of CSP firm performance increases, but the middle ground of the CSP curve receives no credit in this regard.

Per the conflicting nature of the previous research especially given the conflicting review results, whether the positive link between CSP and CFP is sufficiently established seems still to be at the discretion of the researcher as evidence can be found to support either/or positions.

To improve existing understanding about the CSP-CFP effect, the own research was constructed with following methodology, which will be explained in chapter 3.

3. METHODOLOGY

The methodology chapter contains following sub-chapters: sub-chapter 3.1 describes sample and data collection process; sub-chapter 3.2 will cover the research model and measure of variables; as well as the data analysis methods used in chapter 3.3; in chapter 3.4 there exists explanation of reliability and validity of research.

3.1 Sample and data collection

This sub-chapter explains the data collection process, sample forming and describes datasets, which are used in this research. The CSP data and the ESG data were combined separately with the financial data derived from the Amadeus database, which includes data from around 21 million companies in Europe (Amadeus 2019). In addition, companies' reports were used to check R&D spending's. Two separate data files were combined in the Excel including only duplicate values found in both; as Amadeus reports financials based on the previous year reported, and as this year keeps changing per updates, the data was exported both 2017- and 2018-year reports. These reported figures were then normalized in Excel using a basic IF-function to ensure all the variables cover only the correct year - that being 2017. There was not special industry or the country criterion for sample. The sample includes companies, which were scored in the Eikon or the CSRhub databases and have ESG index or CSR index and R&D spending in 2017. This process yielded a total of 134 observations for the CSR dataset and 178 observations for the Eikon dataset, with some available data being in a non-numeric format from Amadeus (e.g. "n.a.") resulting in a few further omitted observations in subsequent testing. This approach allowed retaining only observations including the relevant data from both files. As the industry classification is different in the ESG and the CSR datasets, it was reduced to one standard.

The treated master data was imported to the Stata program, which was used to run the analysis. Chapter 3.2 contains information about measures of all variables in research model.

3.2 Research model and measures of variables

In terms of measuring CSP as the primary variable affecting firm performance, it was used both the ESG index and the CSR index. Using both indices helps to get more result that is reliable and gives foundation to compare.

The CSP measure is derived directly from the CSRHub database. The CSRHub maps attributes to central themes, a categorization, which produces centralized data under four main topics: community, employees, environment, and governance. The data points are converted to a 0-100 -point scale where 100 is the most positive score; the scores are triangulated between sources in order to remove biases, and subsequently normalized, weighted, and aggregated first at the level of twelve sub-categories, which then compound and aggregate under the four primary themes. The data is then trimmed (i.e. companies with insufficient data are eliminated) and the remaining companies' industries categorized. The four primary themes are then further aggregated into one overall score per annum - our measure for CSP is this CSRHub overall index score.

The results of the Thomson Reuters ESG serve to transparently and objectively measure the relative effectiveness, commitment and effectiveness of a company in 10 key issues (emissions, innovation in environmental products, human rights, shareholders, etc.). Ratings are available to more than 7,000 companies worldwide, with time-series data referring to the year 2002. These are easily understandable percentile rank scores (available in percent and letters from D to A +) compared to the industry group Thomson Reuters Business Classification (TRBC). In all ecological and social categories as well as on the points "contradiction" and "land" in all management categories. The combined ESG results provide a comprehensive assessment of the company's ESG performance based on the information contained in the ESG columns and overlapping ESG contradictions stemming from global media sources. The main objective of this indicator is to reduce the evaluation of the effectiveness of ESG based on negative media reports. This is achieved by including the influence of significant ESG inconsistencies in the overall combined ESG score. When companies are involved in an ESG controversy, the combined ESG score is calculated as a weighted average of the ESG scores and ESG scores for the reporting period, with the most recent controversies relating to the last completed period. If companies were not involved in ESG disputes, the combined ESG score equals the ESG score.

Operationalization of the variables also changed with respect to the indicators, in this research, in order to improve construct validity and expand the scope of the effect studied, it was further added the measures *current ratio*, *profit margin*, *ROA* as relevant performance indicators. Similar measures have been employed by Kang (2014), Chien

(2012), Tippayawong (2015), and Nor (2016), each using *profit margin;* and Torugsa (2013) and Rodgers (2013) using liquidity. These three indicators were grouped into a single summated scale as an overall score representing a firm's performance. To check for internal consistency and reliability of the scale, a Cronbach's α was produced, an acceptable value for which typically falls in the range of .65-.80 (Vaske, Beaman &Sponarski 2017, 165). The resulting *α* for the scale *Corporate Firm Performance* equaled - 0.64 for CSP dataset, 0.31 for the Eikon dataset and 0.34 for combined dataset. It means that variable Firm Performance has weak reliability and it cannot be used as measure of firm performance and firm performance is measured separately by *ROA, current ratio and profit margin.*

In terms of the innovation, operationalization strived for a more inclusionary approach than a standard R&D spend as an input - to this end our vision was to incorporate output metrics such as number of patents and number of trademarks as balancing acts to the standard input. However, unavailability of this data forced to abandon these metrics in favor of slightly more meaningful statistical results. Thus, measure for the moderating variable innovation remained as R&D spend divided by operating revenue (i.e. turnover).

The control variables were mainly undertaken in robustness checks to account for potential magnitude of effect within the models ran. *Firm Size* was operationalized using indicators *number of employees*alone. *Industry* classification was derived from the CSR and the ESG databases. Overall, the research model contains mainly continuous variables (e.g. *CSP*); but also, ratio scales (e.g. *R&D spend/operational revenue %*).

The operationalization of variables is captured in the research models one, four and seven, which show the relationship between control variables investigated and the position of the individual indicators under their parent constructs. Model 2, 5 and 8 include main relationship between CSP and CFP, and measure of moderating variable's influence, the *innovation*, and control variables, such *as industry* and *firm size* as well. Model 3, 6 and 9 which are shown in **Error! Reference source not found.**, includes main relationship between CSP and CFP, and the measure of moderating variable's influence, *innovation*, synergy effect of *innovation* and *CSP*, and control variables, such as *industry* and *firm size* as well.
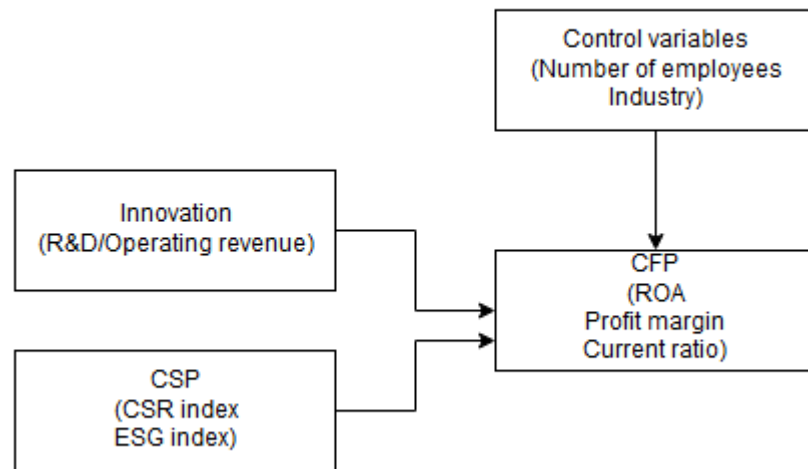
Figure 1 Research Model 3 incl. operationalization of variables

All three models were used to check hypothesis of research. For each dataset (the CSR dataset, the Eikon dataset and whole dataset), it was tested following nine models. Overall, 27 models were tested with following methods, which were described in chapter 3.3.

Table 7 Research models

Models	ROA as CFP	profit margin as CFP	current ratioas CFP
Models with effect of control variables on CFP	ROA=industry+number of employees	profit margin=industry+number of employees	Current ratio=industry+number of employees
Models with CSP and innovation on CFP	ROA=CSP+ industry+number of employees+innovation	profit margin =CSP+ industry+number of employees+innovation	current ratio=CSP+ industry+number of employees+innovation
Models with the interaction effect	ROA=CSP+ industry+number of employees+innovation+CSP&innovation	profit margin =CSP+ industry+number of employees+innovation+ CSP&innovation	current ratio=CSP+ industry+number of employees+innovation+ CSP&innovation

3.3 Data analysis methods

In terms of testing, it was conducted a series of linear regression models using the program Stata. First, the model was run in its most basic form omitting the CSP, CFP and moderating variables. Series of robustness checks was ran, introducing each of the controls individually, and some compoundly, into the model to understand the effect of the control variables. It was further tested for heteroscedasticity, linearity, omitted variables, multicollinearity; as well as ran diagnostics for influential observations. It was also tested for effect sizes, and for partial and semi partial correlations.

Regarding basic assumptions, it was tested for heteroscedasticity using the White test and Breusch-Pagan test. The White test is a non-graphical way to check assumption of constant variance of the error terms (H_o = homoscedasticity) which measures equality of variance for single pairs of variables (Hair 1998, 175). When variances for all observations are not the same, heteroscedasticity exists (Hill 2008, 198). The H_o for the Breusch-Pagan test is constant variance. To check for omitted variables in the model, we conducted a Ramsey test for each model (H_o = no omitted variables). Normality of the error term distribution was checked for both models using histograms, quantile-quantile plots, and the Shapiro-Wilks statistical test for normal distribution (H_o = normal distribution). Independence of the error terms means the variables should not be correlated with each other i.e. they are not autocorrelated (Brooks 2008, 139). Autocorrelations said to exist when circumstances lead to error terms that are correlated (Hill 2008, 264). In order to test for autocorrelation, we conducted a Durbin-Watson test (H_o = no autocorrelation) for each reported model. To test for non-linearity, unequal error variances, and diagnostics for significant outliers, we used fitted-values vs. residuals plots and leverage-versus-squared plots as graphical inspections of the models. In the multivariate model it was further tested for multicollinearity using variance inflation factors analysis (VIF).

The regression results are reported as standardized beta coefficients due to the summated scales present in the model. The statistical significance of the variables in the model is reported at alpha levels *$p<0.1$;** $p < 0.05$; *** $p < 0.01$; and **** $p < 0.001$, and the *n* for each model is reported separately. Further reported items are for degrees of Freedom (df), F statistic and the R^2 of each model, as well as the change in R^2 between the models (each case compared to its preceding model).

Reliability and validity of chosen data analysis methods will be discussed in next sub-chapter.

3.4 Reliability and validity of research

There are few matters what might hinder the reliability and validity of this research. First, the financial indicators used are very sector specific and thus influenced by the sector. In this study the sectors influence to financial indicators was not controlled.

Also when calculating the *profit margin, current ratio* and *ROA*, it was not converted in foreign currencies as this is not currency dependent variables. The research focuses only to 2017, and lengthening the research distance and using time series data might offer more visible results and actual progress.

The observations of 312 companies are enough for applying quantitative methods, which prove the reliability of the research. Wide variety of industry and countries, which includes in sample, shows that this is a reliable sampling.

Furthermore, the correlation matrix shows that not all variables correlate with each other and it is not across-the-board statistically significant correlation where almost everything significantly affects everything. This fact supports reliability of the research.

Maximum of RMSE for the models is 0.84. The closer to zero the value the better the model fit, meaning the lower multivariate model value suggests a better overall fit. It can be concluded that there is no problem regarding model fit.

Table 8 RMSE of models, which include whole dataset

Model	RMSE	Model	RMSE	Model	RMSE
model 1	0.11	model 4	0.24	model 7	0.83
model 2	0.11	model 5	0.13	model 8	0.84
model 3	0.11	model 6	0.13	model 9	0.84

In linear regression models, the result of basic assumption's testing was not ideal. Models from one to six are suffered from biases; further, the residuals were not normally distributed in all models. While none of these alone may destroy the entire model, the combined effect may well warrant calling in question any true significance of the tests run, especially as it was not attempt to re-specify the model in order to verify their validity. In

addition, models with the interaction effect further suffered from multicollinearity, which is explained by nature of the interaction effect. Methodology, which explained above, gives following results in chapter 4.

4. FINDINGS

This section covers the descriptive statistics of the sample (in sub-chapter 4.1) and the main reporting of the linear regression models run under sub-chapter 4.2. For main regression results, refer to Table 21.

4.1 Descriptive statistics

The data collection method resulted in 134 observations in the CSR data set and 178 observations in the ESG data set. However, datasets suffer from a rather limited range of countries as demonstrated in Table 9. As it can be seen, half of companies from sample are registered in Great Britain (49.36%). In addition, significant part of companies from European countries is represented, such as Sweden (12.5%), Germany (8.65%), Denmark and France (both 3.21%). European countries present a remarkable part of the sample (about 80% of sample). Companies from USA (7.69%), Japan (3.85 %), Korea (1.92%) and Taiwan (1.6%) also include in sample.

Table 9 Distribution of countries

Countries	The CSR dataset		The Eikon dataset		Total	
	N	%	N	%	N	%
Great Britain	91	68	63	35.39	154	49.36
Sweden	23	17	16	8.99	39	12.5
Germany	11	8	16	8.99	27	8.65
USA	0	0	24	13.48	24	7.69
Japan	0	0	12	6.74	12	3.85
France	3	2	7	3.93	10	3.21
Korea	0	0	6	3.37	6	1.92
Taiwan	0	0	5	2.81	5	1.6
Switzerland	0	0	5	2.81	5	1.6
Australia	0	0	2	1.12	2	0.64
Netherlands	0	0	2	1.12	2	0.64
Denmark	5	4	5	2.81	10	3.21
Italy	0	0	3	1.69	3	0.96

India	0	0	1	0.56	1	0.32
Ireland	0	0	1	0.56	1	0.32
Finland	0	0	1	0.56	1	0.32
Turkey	1	1	2	1.12	1	0.32
Brazil	0	0	1	0.56	1	0.32
Philippines	0	0	1	0.56	1	0.32
Greece	0	0	1	0.56	1	0.32
Thailand	0	0	1	0.56	1	0.32
Luxembourg	0	0	1	0.56	1	0.32
Singapore	0	0	1	0.56	1	0.32
Malaysia	0	0	1	0.56	1	0.32
Total	134	100	178	100	312	100

As it can be seen in industry distribution (Table 10) of the sample size biggest industry group contains companies from software& IT services (20, 19%) industry. It is explained by industry specifications as in these industries R&D is valuable for survival and attracting investors, and companies report about it more often than in food&tobacco (9.94%) industry. This is a lot of attention in R&D also in companies from pharmaceuticals (11.86%) industry, from machinery, tools, and heavy vehicles, trains (11.54%) industry, from automobiles & autoparts (8.33%) industry. Companies from these five industries, which were mentioned below, are significant part of sample (61.86%).

Table 10 Industry distribution

	CSR dataset		The Eikon dataset		Total	
Industry	**N**	**%**	**N**	**%**	**N**	**%**
Software&IT services	8	4,49	55	41,04	63	20,19
Pharmaceuticals	17	9,55	20	14,93	37	11,86
Machinery, tools, heavy vechicles, trains	28	15,73	8	5,97	36	11,54

Food&tobacco	10	5,62	21	15,67	31	9,94
Automobiles&autoparts	15	8,43	11	8,21	26	8,33
Computers,phone and household electronics	2	1,12	9	6,72	11	3,53
Semiconductor&semiconductor equipment	9	5,06	0	0,00	9	2,88
Healthcare equipment&supplies	8	4,49	0	0,00	8	2,56
Beverages	4	2,25	6	4,48	10	3,21
Banking services	3	1,69	0	0,00	3	0,96
Residential&commercial REIT's	5	2,81	0	0,00	5	1,60
Aerospace&defense	5	2,81	0	0,00	5	1,60
Chemicals	7	3,93	0	0,00	7	2,24
Industrial conglomerates	5	2,81	0	0,00	5	1,60
Personal&household products	7	3,93	0	0,00	7	2,24
Metals&mining	4	2,25	0	0,00	4	1,28
Telecommunications services	2	1,12	2	1,49	4	1,28
Professional&commercial service	3	1,69	0	0,00	3	0,96
Real estate operations	3	1,69	0	0,00	3	0,96
Containers&packaging	2	1,12	1	0,75	3	0,96
Electronice quipment&parts	3	1,69	0	0,00	3	0,96
Insurance	4	2,25	0	0,00	4	1,28
Office equipment	2	1,12	0	0,00	2	0,64

Oil&gas related equipment and services	3	1,69	0	0,00	3	0,96
Specialty retailers	3	1,69	0	0,00	3	0,96
Biotechnology&medical research	1	0,56	0	0,00	1	0,32
Communications&networking	2	1,12	0	0,00	2	0,64
Freight&logistics services	1	0,56	1	0,75	2	0,64
Leisure products	2	1,12	0	0,00	2	0,64
Oil&gas	1	0,56	0	0,00	1	0,32
Renewable energy	2	1,12	0	0,00	2	0,64
Homebuilding&construction supplies	2	1,12	0	0,00	2	0,64
Hotels&entertainment services	1	0,56	0	0,00	1	0,32
Investment banking&investment services	1	0,56	0	0,00	1	0,32
Media&publishing	1	0,56	0	0,00	1	0,32
Textiles&apparel	1	0,56	0	0,00	1	0,32
Transport infrastructure	1	0,56	0	0,00	1	0,32
	178	100	134	100	312	100

Table 11 sums up the mean, the standard deviation, t values for each variable included in the research. According to Hair (1998, 166) to ensure the possibility of generalizing results an optimal sample size should be representative -for independent variables this size ranges from 15 to 20. Number of observations of model is 312.

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Wide range of companies can be seen through mean of *CSR index* of observations (68.66), and mean of *CSR index* (70.13) and *ESG index* (67.56) is close to each other. Mean of firm size (*number of employees*) variable is 17348.76 employees. Furthermore, mean of *number of employees* in the Eikon dataset (21958.49) is twice higher than mean of The CSR dataset (11214.02). Mean of *innovation*, which is R&D spending divided by operating revenue, is equal to 0.19. Moreover, mean of *innovation* (R&D intensity) is 4% in CSR dataset, which is 8 times lower than in the Eikon dataset (32%). Mean of *ROA* is equal to 0.1, and mean of *ROA* (0.12) in the CSR dataset is close to mean of *ROA* (0.09) in the Eikon dataset. The same situation with *current ratio*(mean is 1.77), where mean of *Current ratio*(1.84) in The CSR dataset is close to mean of *current ratio*(1.72) in the Eikon dataset. There is a big gap in mean of *profit margin* (mean is 0.16) in the CSR dataset (0.11) and in the Eikon dataset (0.2)

Table 11 Descriptive statistics of variables

Variable	CSR Hub		Eikon database		t-test		Total	
	mean	s.d.	mean	s.d.	t	p	mean	s.d.
CSR	70.13	24.76			1.0411	0.29	68.66	21.52
ESG			67.56	18.71				
Number of employees	11214.02	42175.31	21958.49	48270.34	-2.0462	0.04	17348.76	45993.07
R&D	226753.8	830119.4	1675.84	7702.78	3.3545	0.01	106764.5	577182.7
innovation(R&D intensity)	0.04	0.05	0.32	0.72	-4.3946	0	0.19	0.55
ROA	0.12	0.13	0.09	0.1	2.0453	0.04	0.1	0.11
Current ratio	1.84	0.89	1.72	0.79	1.2509	0.21	1.77	0.83
profit margin	0.11	0.11	0.2	0.36	-2.8863	0.004	0.16	0.28

Table 12 presents the correlation matrix of variables, which was used in models. There is the significant positive relationship (0.16) between *innovation* and *CSP*. It was predictable that *current ratio* and *profit margin* have the positive significant correlation with *innovation*, as the higher profit companies have, the more opportunity they get to invest in R&D activities, the more innovative they are. However, there is negative

statistically significant correlation between *ROA* and *innovation*. Due to correlation matrix, it can be stated that the bigger companies are, the higher *CSP* they have, as there is the statistically significant correlation between *number of employees* and *CSP,* which support McGuire's (1988) and Ulman's (1985) findings that the bigger the size of the firm, the more the firm engages in CSR activities. There is statistically significant positive correlation between *CSP* and *profit margin* in 5 % confidence interval, but there is statistically significant negative correlation between *CSP* and *current ratio* in 1% confidence interval, and between *CSP* and *ROA* in 10% confidence interval.

Table 12 Correlation matrix

Variables	**CSP** *Total CSR Eikon*	**Number of employees** *Total CSR Eikon*	**R&D** *Total CSR Eikon*	**innovation** *Total CSR Eikon*	**ROA** *Total CSR Eikon*	**Current ratio** *Total CSR Eikon*	**profit margin** *Total CSR Eikon*
CSP	1.0						
Number of employees *Total* *CSR* *Eikon*	0.18*** 0.17** 0.2**	1.0					
R&D *Total* *CSR* *Eikon*	0.16*** 0.18** 0.15*	0.51**** 0.88**** 0.03	1.0				
innovation *Total* *CSR* *Eikon*	0.16*** 0.03 0.31*** *	0.07 0.06 0.05	-0.04 0.26* * 0.07	1.0			
ROA							

Total	-0.1*	-0.05	-0.01	-0.14***			
CSR	-0.08	-0.05	-0.04	0.02	1.0		
Eikon	-0.14*	-0.03	-0.06	-0.19**			
Current ratio							
Total	-0.16***	-0.05	0.06	-0.09	0.14***		
CSR	-0.15*	0.02	0.06	0.18**		1.0	
Eikon	-0.17**	-0.09	0.09	-0.12	0.09 0.17**		
profit margin							
Total	0.13**	-0.004	-0.01	0.06	0.26***	0.05	
CSR	0.05	-0.01	0.06	0.16**		0.27***	1.0
Eikon	0.21**	-0.03	0.08	0.01	0.75*** 0.21**	0.01	

*$p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$*

4.2 Results of regression analysis

Models should be built based on hypothesis, which were formed by the literature review analysis. The main result can be found in Table 21. Sub-chapter 4.2.1 describes linear regression results for whole dataset; otherwise, sub-chapter 4.2.2 explains linear regression results for separate datasets.

H1: Corporate social performance positively affects financial performance.

H2: innovation positively affects financial performance.

H3: Synergy effect of CSP and innovation has positive moderating effect on CSP-CFP

4.2.1 Linear regression results for whole dataset

This sub-chapter describes 9 models, which contain effect *CSP*, *innovation,* the interaction effect of *CSP* and *innovation* and control variables *(number of employees, Industry)*on different variables of CFP*(ROA, current ratio, profit margin)* for whole dataset.

Model 1 includes only effect of control variables on ROA. The subsequent models introduce moderating variable *innovation* and hypothesized explanatory variable *CSP*

(Model 2), the interaction effect of *CSP* and *innovation* (Model 3). For more than 100 observations, typically the R² value should be 0.12 to reach a significance level of 0.05, and for a significance level of 0.01 the minimum R² is 0.16 (Hair 1998, 165). In these models R^2 is enough to generalize result. Model 1 explains 15% of the data variation within the sample observations, but the model is not statistically significant. Model 2 and 3 explain in 1 % higher variation of data within sample observations, and models are statistically significant in 10 % confidence interval.

As can be seen in Table 14, the hypothesized effect between *CSP* and *ROA* receives no statistically significant support being negative (-0.07 and -0.09) in models two and three. Impact of *innovation* on *ROA* was found as negative (-0.15 in model 2 in 5 % confidence interval and -0.77 in model 3), but the result of model 3 is not statistically significant. The beta coefficient is the degree of change in the outcome variable for every 1- standard deviations of change in the predictor variable. If the beta coefficient is positive, the interpretation is that for every 1- standard deviations increase in the predictor variable, the outcome variable will increase by the beta coefficient value (Hill 2008, 27).As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *innovation*, *ROA* will decrease by 0.15. Notable that *CSP* and *innovation* have more effect on *ROA*, when the interaction effect exists in model, but this result is not statistically significant. Interaction effect of *innovation* and *CSP* influence positively (0.63) on *ROA* in model 3, which supports hypothesis 3, however result is not statistically significant, it means that the result cannot be generalized.

According to the analysis of effect size in Table 13 *CSP* has almost the similar effect (4%) on *ROA* with *innovation* (3%) in model 2. But when the interaction effect presents in model 3, *innovation* has the higher effect on *ROA (7%),* however *CSP* has same effect (4%) in models 2 and model 3. The the interaction effect of *CSP* and *innovation* has only 2% effect on *ROA*.

Table 13 Effect size results of model 2 and 3

Variable	Effect in model 2	Effect in model 3
CSP	4%	4%
innovation	3%	7%

Interaction effect	-	2%
Industry	10%	10%
Number of employees	2%	0.2%

Number of employees, which is a control variable, does not get statistically significant support being negative. Notable that *number of employees* has less effect on ROA in model 2 and in model 3, when *CSP, innovation* and the interaction effect exist in model.

There is a positive statistically significant relationship between biotechnology industry and *ROA* (0.23), comparing the reference industry aerospace and defense, but this industry contains only one observation, and result can not been generalized. There is a positive statistically significant relationship between the leisure industry and *ROA* (0.19) comparing the reference industry aerospace and defense, but this industry contains only two observations, and this result can not been generalized.

Overall, due to analysis of linear regression results for ROA, it can be concluded that *innovation* effect on *ROA* in model 2 does not support the hypothesis 2, that *innovation* has a positive effect on *CFP*.

Table 14 Linear regression results for ROA

N=313	Model 1		Model 2		Model 3	
Variable	**b**	**t**	**b**	**t**	**b**	**t**
CSP			-0.07	-1.13	-0.09	-1.18
innovation			-0.15**	-2.33	-0.77	-0.5
CSP*innovation					0.63	0.69
Number of employees	-0.2	-0.41	-0.001	-0.02	-0.002	-0.04
Industry						
Software&IT services	0.04	0.19	0.05	0.28	0.06	0.29
Pharmaceuticals	0.02	0.16	0.04	0.28	0.05	0.29
Machinery,Tools, Heavy Vechicles, Trains	0.02	0.14	0.05	0.3	0.04	0.29
Food&Tobacco	0.07	0.46	0.07	0.45	0.06	0.44
Automobiles&Auto Parts	-0.02	-0.16	-0.01	-0.11	-0.01	-0.1

Computers, Phone and household electronics	0.05	0.5	0.06	0.61	0.06	0.62
Semiconductor&Semiconductor equipment	0.05	0.53	0.08	0.8	0.08	0.83
Healthcare equipment&supplies	0.02	0.32	0.04	0.43	0.04	0.44
Beverages	-0.01	-0.26	0.8	0.85	0.08	0.85
Banking services	0.002	0.04	0.002	0.04	0.002	0.04
Residential&commercial REIT's	-0.07	-0.87	-0.07	-0.87	-0.07	-0.87
Chemicals	-0.03	-0.44	-0.02	-0.2	-0.02	-0.2
Industrial conglomerates	-0.05	-0.62	-0.05	-0.63	-0.05	-0.65
Personal&Household products	-0.01	-0.06	0.04	0.46	0.03	0.4
Metals&Mining	-0.02	-0.22	-0.001	-0.01	-0.001	-0.02
Telecommunications services	-0.04	-0.53	-0.03	-0.4	-0.03	-0.4
Professional&CommercialService	-0.01	-0.11	-0.01	-0.15	-0.009	-0.15
Real estate operations	-0.05	-0.75	-0.02	-0.36	-0.02	-0.38
Containers&Packaging	-0.04	-0.6	-0.04	-0.54	-0.04	-0.53
Electronic equipment&Parts	0.01	0.14	0.006	0.09	0.005	0.07
Insurance	-0.09	-1.13	-0.04	-0.7	-0.04	-0.69
Office equipment	-0.03	-0.46	-0.03	-0.39	-0.03	-0.4
Oil&Gas related equipment and services	-0.09	-1.23	-0.09	-1.29	-0.09	-1.3
Specialty retailers	-0.02	-0.22	-0.04	-0.61	-0.04	-0.62
Biotechnology&Medical research	0.21****	3.52	0.23****	3.57	0.23***	3.55
Communications&Networking	0.05	0.79	0.05	0.71	0.05	0.77
Freight&Logistics services	-0.03	-0.5	-0.04	-0.54	-0.04	-0.55
Leisure products	0.18***	2.78	0.19**	2.77	0.19**	2.74
Oil&Gas	0.01	0.15	0.02	0.39	0.02	0.33
Renewable energy	0.03	0.05	0.01	0.18	0.01	0.17
Homebuilding&Construction supplies	-0.02	-0.44	-0.02	-0.25	-0.02	-0.24

Hotels&Entertainment services	0.03	0.53	0.04	0.56	0.04	0.56
Investment banking&Investment services	-0.05	-0.74	-0.05	-0.74	-0.05	-0.74
Media&Publishing	-0.03	-0.48	-0.03	-0.48	-0.03	-0.48
Textiles&Apparel	-0.04	-0.38	-0.02	-0.24	-0.01	-0.23
Transport infrastructure	-0.04	-0.69	-0.04	-0.69	-0.04	-0.69
F	$(40,269)=1.15$		$(37,248)=1.26$		$(38,247)=1.23$	
d.f.	309		285		285	
p	0.2577		0.1		0.1	
R^2	0.146		0.158		0.158	
ΔR^2			0.012		0	

*p <0.1; ** p<0.05; *** p<0.01; **** p< 0.001*

Model 4 includes effect of control variables on *profit margin*. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 5), the interaction effect of *CSP* and *innovation* (Model 6). In these models R^2 is enough to generalize the result. Model 5 explains 36% of the data variation within the sample observations, and the model is statistically significant. Model 6 and 7 explain the lower variation of data within sample observations (25% и 26%), and these models are statistically significant in 1 % confidence interval.

As can be seen in Table 16, the hypothesized effect between *CSP* and *profit margin* receives statistically significant support being positive (0.09 and 0.11) in models five and six in 10% confidence interval, and it supports hypothesis 1. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *CSP*, *profit margin* will increase by 0.09, when *innovation* presents in model, and by 0.11, when *innovation* and the interaction effect of *CSP* and *innovation* presents in model. An impact of *innovation* on *profit margin* was found as positive in model 5 (0.01) and in model 6 (0.98), but result of models is not statistically significant. Notable that *CSP* and *innovation* have more effect on *profit margin*, when the interaction effect exists in model. The the interaction effect of *innovation* and *CSP* influence negatively (-0.87) on *profit margin* in model 6, which supports hypothesis 3, however the result is not statistically significant; it means that the result cannot be generalized. *Number of employees*, which is

control variable, does not get statistically significant support being positive (0.01) in models from four to six.

According to an analysis of effect size in Table 15 *CSP* has almost the similar effect on *profit margin* in models 5(4%) and model 6, but it is higher in 1% than in model 5 because existing of the interaction effect in model 6. There is the same situation with *innovation*, as effect size in model 6 (3%) is in 2% higher rather than in model 5. The the interaction effect of *CSP* and *innovation* has 3% effect size on *profit margin* in model 6, which is almost equal to result of *number of employees* on *ROA* in model 3 (2%).

Table 15 Effect size results of model 5 and 6

Variable	Effect in model 5	Effect in model 6
CSP	4%	5%
innovation	1%	3%
Interaction effect	-	3%
Industry	23%	23%
Number of employees	1%	0.2%

Software& IT services has 63 observations and negative statistically significant relationship (-0.27) comparing the reference industry aerospace and defense in 10% confidence interval, so it can be generalized that when *CSP, innovation* exist in model, Software& IT services industry demonstrates negative influence to *profit margin*. There is a positive statistically significant relationship between banking industry and *profit margin* (0.45) comparing the reference industry aerospace and defense, but this industry contains only three observation, and result can not been generalized. Additionally, there is a positive statistically significant relationship between residential & commercial REIT's industry and *profit margin* (0.3) comparing the reference industry aerospace and defense, but this industry contains only five observations, and this result can not been generalized. Furthermore, there is a positive statistically significant relationship between metals and mining industry and *profit margin* (0.16) comparing the reference industry aerospace and defense, but this industry contains only four observations, and this result can not been generalized. Also, there is a positive statistically significant relationship between real

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estate industry and *profit margin* (0.09) comparing the reference industry aerospace and defense, but this industry contains only three observations, and this result can not been generalized. In addition, there is a positive statistically significant relationship between electronic equipment & parts and *profit margin* (0.1) comparing the reference industry aerospace and defense, but this industry contains only three observations, and this result can not been generalized. Moreover, there is a positive statistically significant relationship between electronic renewable energy and *profit margin* (0.14) comparing the reference industry aerospace and defense, but this industry contains only two observations, and this result can not been generalized.

Overall, due to an analysis of linear regression results for *profit margin*, it can be concluded that *CSP* effect on *ROA* in model 5 and 6 support hypothesis 1, that *CSP* has the positive effect on *CFP*.

Table 16 Linear regression results for profit margin

N=313	Model 4		Model 5		Model 6	
Variables	**b**	**t**	**b**	**t**	**b**	**t**
CSP			0.09*	1.4	0.11*	1.55
innovation			0.01	0.12	0.98	0.68
CSP* innovation					-0.87	-0.68
Number of employees	0.01	0.14	0.01	0.18	0.01	0.21
Industry						
Software&IT services	-0.12	-0.78	-0.27*	1.53	-0.27*	-1.54
Pharmaceuticals	0.01	0.06	0.01	0.05	0.003	0.03
Machinery,Tools, Heavy Vechicles, Trains	-0.07	-0.5	-0.13	-0.92	-0.13	-0.9
Food&Tobacco	-0.08	-0.62	-0.17	-1.22	-0.17	-1.19
Automobiles&Auto parts	-0.06	-0.56	-0.14	-1.13	-0.15	-1.14
Computers, Phone and household electronics	0.01	0.12	0.02	0.21	0.02	0.18
Semiconductor&Semiconductor equipment	0.02	0.2	0.03	0.32	0.03	0.28
Healthcare equipment&supplies	-0.01	-0.08	-0.02	-0.24	-0.02	-0.24
Beverages	0.003	0.04	-0.01	-0.1	-0.01	-0.11
Banking services	0.45*	7.24	0.45*	7.24	0.45****	7.24

	***		***			
Residential&commercial REIT's	0.3****	4.37	0.3****	4.37	0.3****	4.37
Chemicals	0.07	0.96	0.14*	1.66	0.14*	1.66
Industrial conglomerates	-0.01	-0.16	-0.02	-0.24	-0.02	-0.22
Personal&Household products	-0.04	-0.57	-0.08	-0.98	-0.07	-0.88
Metals&Mining	0.08	1.22	0.16**	2.24	0.16**	2.25
Telecommunications services	-0.02	-0.34	-0.06	-0.78	-0.06	-0.78
Professional&Commercial service	-0.02	-0.34	-0.03	-0.46	-0.03	-0.46
Real estate operations	0.04	0.66	0.09*	1.56	0.09*	1.59
Containers&Packaging	-0.03	-0.52	-0.07	-1.07	-0.07	-1.08
Electronic equipment&Parts	0.04	0.7	0.1*	1.39	0.09*	1.41
Insurance	-0.03	-0.42	-0.07	-1.16	-0.07	-1.17
Office equipment	-0.02	-0.33	-0.04	-0.6	-0.04	-0.58
Oil&Gas related equipment and services	-0.03	-0.5	-0.13	-2.06	-0.13	-2.02
Specialty retailers	-0.04	-0.65	-0.06	-1.02	-0.06	-1.00
Biotechnology&Medical research	-0.001	-0.13	-0.02	-0.36	-0.02	-0.34
Communications&Networking	-0.004	-0.07	-0.002	-0.03	-0.01	-0.13
Freight&Logistics services	-0.03	-0.55	-0.07	-1.01	-0.06	-0.98
Leisureproducts	0.02	0.28	0.04	0.55	0.04	0.58
Oil&Gas	-0.02	-0.4	-0.05	-0.87	-0.05	-0.77
Renewable energy	0.07	1.2	0.14**	2.16	0.14	2.17
Homebuilding&Construction supplies	-0.01	-0.27	-0.03	-0.58	-0.04	-0.6
Hotels&Entertainment services	-0.02	-0.38	-0.05	-0.8	-0.05	-0.8
Investment banking&Investment services	0.01	0.11	0.01	0.11	0.01	0.11
Media&Publishing	-0.02	-0.42	-0.02	-0.42	-0.02	-0.42
Textiles&Apparel	-0.02	-0.4	-0.05	-0.84	-0.05	-0.84
Transport infrastructure	0.01	0.14	0.01	0.14	0.01	0.14

F	(40,269)=3.76	(37,248)=2.28	(37,247)=2.23
d.f.	309	285	285
p	0.00	0.0001	0.0001
R^2	0.36	0.25	0.26
ΔR^2		-0.11	0.01

*p <0.1; ** p<0.05; *** p<0.01; **** p< 0.001*

Model 7 includes only an effect of control variables on *profit margin*. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 8), the interaction effect of *CSP* and *innovation* (Model 9). In these models R^2 is enough to generalize result as all. Model 7 explains 13% of the data variation within the sample observations, but the model is not statistically significant. Model 8 explains lower variation of data within sample observations (12%), however variables were added. Model 9 explains 14% of the data variation within the sample observations, but the model is not statistically significant.

As can be seen in, the hypothesized effect between *CSP* and *current ratio* receives statistically significant support being negative (-0.1) in model 8 in 10% confidence interval, and it does not support hypothesis 1. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *CSP*, *current ratio* will decrease by 0.1, when *innovation* presents in model. Impact of *innovation* on *current ratio* was found as positive in model 9 (3.15) in 1 % confidence interval and negative in model 8 (-0.1) with 10% confidence interval, but models 8 and 9 are not statistically significant. Notable that *innovation* has more effect on *current ratio*, when the interaction effect exists in model. The interaction effect of *innovation* and *CSP* influence negatively (-3.27) on *current ratio* in model 9 in 1% confidence interval, which does not support hypothesis 3.

According to an analysis of effect size in Table 17 *CSP* and *innovation* have the similar effect on *current ratio* in models 8(4%), but in case of *innovation,* it is higher in 1% than in model 9 because existing of the interaction effect in model 9. However, *CSP* effect size is lower in 3 %, when the interaction effect includes in model 9. The interaction effect of *CSP* and *innovation* has 6% effect size on *current ratio* in model 9.

Table 17 Effect size analysis of models 8 and 9

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Variable	Effect in model 8	Effect in model 9
CSP	5%	2%
Innovation	5%	6%
Interaction effect	-	6%
Industry	4%	3%
Number of employees	0.05%	0.2%

Number of employees, which is a control variable, does not get statistically significant support. Software& IT services has 63 observations and the positive statistically significant relationship (-0.32) in 10% confidence interval, so it can be generalized that when *CSP, innovation* exist in model, software& IT services industry demonstrates positive influence on *current ratio*. Also, there is a positive statistically significant relationship between leisure industry and *current ratio* (0.11), but this industry contains only two observations, and this result can not been generalized. Furthermore, it was found the positive statistically significant relationship between chemicals industry and *current ratio* (0.25) in 5 % confidence interval, but this industry contains only seven observations, and this result can not been generalized. Additionally, there is a positive statistically significant relationship between leisure industry and *current ratio* (0.14) comparing the reference industry aerospace and defense, but this industry contains only one observation in 5 % confidence interval, and this result can not been generalized.

Overall, due to analysis of linear regression results for *current ratio*, it can be concluded that results of analysis do not support all three hypotheses.

Table 18 Result of linear regression analysis for current ratio

N=313	Model 7		Model 8		Model 9	
Variables	b	t	b	t	b	t
CSP	-0.02	-0.4	-0.1*	-1.59	-0.02	-0.32
innovation			-0.1*	-1.72	3.15***	2.02
CSP*innovation					-3.27***	-2.09
Number of employees			-0.004	-0.06	0.002	0.03
Industry						
Software&IT services	0.29*	1.57	0.32*	1.66	0.07	1.08

Pharmaceuticals	0.18	1.15	0.2	1.26	0.19	1.19
Machinery, Tools, Heavy Vechicles, Trains	0.13	0.84	0.15	0.93	0.16	1.01
Food&Tobacco	0.12	0.82	0.13	0.84	0.14	0.92
Automobiles&Auto Parts	0.13	0.98	0.14	1.05	0.14	1.01
Computers, Phone and household electronics	0.09	0.86	0.09	0.94	0.09	0.86
Semiconductor&Semiconductor equipment	0.22**	2.38	0.25**	2.58	0.24**	2.46
Healthcare equipment&supplies	0.06	0.68	0.08	0.82	0.08	0.81
Beverages	0.09	1.04	0.11	1.2	0.11	1.17
Banking services	-0.04	-0.52	-0.04	-0.52	-0.04	-0.52
Residential&commercial REIT's	0.02	0.23	0.02	0.23	0.02	0.23
Chemicals	0.13*	1.53	0.16*	1.76	0.16*	1.81
Industrial conglomerates	0.09	1.21	0.02	1.16	0.1	1.24
Personal&Household products	0.04	0.51	0.08	0.84	0.09	1.11
Metals&Mining	0.04	0.57	0.06	0.76	0.06	0.78
Telecommunications services	0.03	0.35	0.04	0.5	0.04	0.51
Professional&Commercial service	-0.04	-0.52	0.01	0.23	0.02	0.23
Real estate operations	0.02	0.27	-0.05	-0.69	-0.04	-0.59
Containers&Packaging	-0.05	-0.66	-0.04	-0.57	-0.04	-0.59
Electronic equipment&Parts	0.09	1.2	0.08	1.11	0.09	1.19
Insurance	-0.06	-0.9	-0.03	-0.46	-0.03	-0.5
Office equipment	-0.0001	0	0.002	0.04	0.01	0.11
Oil&Gas related equipment and services	-0.03	-0.45	-0.003	-0.05	0.003	0.05
Specialty retailers	0.02	0.25	-0.004	-0.07	-0.001	-0.02
Biotechnology&Medical research	-0.01	-0.12	0.001	0.03	0.01	0.09

Communications&Networking	0.06	0.86	0.05	0.75	0.03	0.44
Freight&Logistics services	0.02	0.32	0.02	0.27	0.03	0.37
Leisure products	0.11*	1.58	0.11*	1.59	0.12*	1.7
Oil&Gas	0.03	0.48	0.05	0.71	0.06	0.98
Renewable energy	-0.001	-0.03	0.01	0.13	0.01	0.18
Homebuilding&Construction supplies	0.01	0.18	0.02	0.34	0.02	0.27
Hotels&Entertainment services	-0.04	-0.58	-0.03	-0.51	0.02	-0.02
Investment banking&Investment services	0.14**	2.2	0.14**	2.2	0.14**	2.2
Media&Publishing	0.01	0.2	0.01	0.2	0.01	0.2
Textiles&Apparel	0.03	0.46	0.04	0.59	0.04	0.59
Transport infrastructure	0.05	0.72	0.05	0.72	0.05	0.72
F	$(40,266)=0.98$		$(37,248)=0.92$		$(38,247)=1.02$	
d.f.	306		285		285	
p	0.5		0.6		0.44	
R^2	0.13		0.12		0.14	
ΔR^2			-0.01		0.02	

*$p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

4.2.2 Linear regression result of ESG and CSR datasets

This chapter describes 18 models, which contain effect *CSP*, innovation, the interaction effect of *CSP* and *innovation* and control variables *(number of employees, industry)* on different variables of CFP *(ROA, current ratio, profit margin)* for ESG and CSR datasets.

In the beginning, the CSR dataset was analyzed. Model 10 includes only an effect of control variables on ROA. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 11), the interaction effect of *CSP* and *innovation* (Model 12). In these models, R^2 is quite low to generalize result. Model 10 explains 4% of the data

variation within the sample observations, but the model is not statistically significant. Model 11 and 12 explain in 1 % and 2% higher variation of data within sample observations, but models are still not statistically significant.

As can be seen in Appendix 1 the hypothesized effect between *CSP* and *ROA* receives statistically significant support being negative (-0.22) in 10% confidence interval in model 12. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *CSP*, *ROA* will decrease by 0.22. Impact of *innovation* on *ROA* was found as negative (-0.4) in model 12 and positive (0.04) in model 11, but result is not statistically significant. Notable that *CSP* and *innovation* have more effect on *ROA*, when the interaction effect exists in model, but this result is not statistically significant. An interaction effect of *innovation* and *CSP* influence positively (0.48) on *ROA* in model 12, which supports hypothesis 3, however result is not statistically significant, it means that result cannot be generalized. *Number of employees*, which is control variable, does not get statistically significant support being negative.

Overall, due to analysis of linear regression results for *ROA*, using CSR dataset, it can be concluded that *CSP* effect on *ROA* in model 12 does not support hypothesis 1, that *CSP* has positive effect on *CFP*.

Next analyzing variable, which measure CFP, is *profit margin*. Model 13 includes only effect of control variables on *profit margin*. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 14), the interaction effect of *CSP* and *innovation* (Model 15). In these models, R^2 is quite low to generalize result. Model 13 explains 11% of the data variation within the sample observations, but the model is not statistically significant. Model 11 and 12 explain in 2% higher variation of data within sample observations, but all models are still not statistically significant.

As can be seen in Appendix 1, the hypothesized effect between *CSP* and *profit margin* receives no statistically significant support being negative (-0.01 and -0.07) in models 14 and 15. Notable that *CSP* has more effect on *profit margin*, when the interaction effect exists in model, but this result is not statistically significant. Impact of *innovation* on *profit margin* was found as positive (0.15) in model 14and result is statistically significant in 10% confidence interval. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *innovation*, *profit margin*

will increase by 0.15. This result supports hypothesis 2. Interaction effect of *innovation* and *CSP* influence positively (0.24) on *profit margin* in model 15, which supports hypothesis 3, however result is not statistically significant, it means that result cannot be generalized. *Number of employees*, which is control variable, does not get statistically significant support being positive.

Summarizing analysis of linear regression results for *profit margin*, using CSR dataset, it can be concluded that *innovation* effect on *profit margin* in model 14 supports hypothesis 2, that *innovation* has positive effect on *CFP*.

Following analyzing variable, which measure CFP, is *current ratio*. Model 16 includes only effect of control variables on *current ratio*. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 17), the interaction effect of *CSP* and *innovation* (Model 15). In these models, R^2 is quite low to generalize result. Model 16 explains 8% of the data variation within the sample observations, but the model is not statistically significant. Model 17 and 18 explain in 3% higher variation of data within sample observations, but all models are still not statistically significant.

As can be seen in Appendix 1, the hypothesized effect between *CSP* and *current ratio* receives statistically significant support being negative (-0.13) in models 17 in 10% confidence interval. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *CSP*, *current ratio* will decrease by 0.13. This result rejects hypothesis 1. An impact of *innovation* on *current ratio* was found as positive (0.22) in model 17 and result is statistically significant in 5% confidence interval. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *innovation*, *current ratio* will increase by 0.22. This result supports hypothesis 2. An interaction effect of *innovation* and *CSP* influence negatively (-0.15) on *current ratio* in model 18, which does not support hypothesis 3, however result is not statistically significant, it means that result cannot be generalized. *Number of employees*, which is control variable, does not get statistically significant support being positive.

Summarizing analysis of linear regression results for *current ratio*, using CSR dataset, it can be concluded that *innovation* effect on *profit margin* in model 17 supports

hypothesis 2, that *innovation* has positive effect on *CFP*, but statistically significant effect of *CSP* influence negatively on *CFP*, which rejects hypothesis 1.

The Eikon dataset also was tested by Stata program. Model 19 includes only effect of control variables on ROA. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 20), the interaction effect of *CSP* and *innovation* (Model 21). In these models R^2 is enough to generalize result. Model 19 explains 31% of the data variation within the sample observations, and model is statistically significant in 5% confidence interval. Model 20 explains 2% higher variation of data within sample observations, and model 20 still statistically significant in 5% confidence interval. However, model 21 explains only 16% of the data variation within the sample observations, and model is statistically significant in 10% confidence interval.

As can be seen in Appendix 2, the hypothesized effect between *CSP* and *ROA* receives no statistically significant support being negative (-0.07 and -0.060) in model 20 and model 21. Impact of *innovation* on *ROA* was found as negative (-0.13) in model 20 and result is statistically significant in 10% confidence interval. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *innovation*, *ROA* will decrease by 0.13. This result rejects hypothesis 2. Interaction effect of *innovation* and *CSP* influence negatively (-0.69) on *ROA* in model 21, which does not support hypothesis 3. However, result is not statistically significant; it means that result cannot be generalized. *Number of employees*, which is control variable, does not get statistically significant support being positive.

As models 20 and 21 are statistically significant, effect analysis was done. According to an analysis of effect size in Table 19 *innovation* (9%) has more impact on *ROA* than *CSP* (6%) in model 20. However, when the interaction effect exists in model 21, CSP (5%) has more effect on *ROA* than *innovation* (3%). Interaction effect of *CSP* and *innovation* has 4% effect size on *ROA* in model 21.

Table 19 Effect size analysis of models 20 and 21

Variable	Effect in model 20	Effect in model 21
CSP	6%	5%
innovation	9%	3%
Interaction effect	-	4%

Industry	25%	25%
Number of employees	0.6%	6%

All in all, due to analysis of linear regression results for *ROA*, using the Eikon dataset, it can be concluded that *innovation* effect on *ROA* in model 20 does not support hypothesis 2, that *innovation* has positive effect on *CFP*.

Next analyzing variable, which measure CFP, is *profit margin.* Model 22 includes only effect of control variables on *profit margin*. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 23), the interaction effect of *CSP* and *innovation* (Model 24). In these models R^2 is enough to generalize result. Model 22 explains 37% of the data variation within the sample observations, and model is statistically significant in 0, 1 % confidence interval. Model 23 explains in 2% higher variation of data within sample observations than model 22, and significant in 0, 1 % confidence interval. Model 24 has same confidence interval, and explains 41% variation of data within sample observations

As can be seen in Appendix 2, the hypothesized effect between *CSP* and *profit margin* receives statistically significant support being positive (0.34 and 0.42) in models 23 and 24. Notable that *CSP* has more effect on *profit margin*, when the interaction effect exists in model. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *CSP*, *profit margin* will increase by 0.42 in model 24. This result supports hypothesis 1. Impact of *innovation* on *profit margin* was found as positive (4.24) in model 24 and result is statistically significant in 10% confidence interval. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *innovation*, *profit margin* will increase by 4.24. This result supports hypothesis 2. An interaction effect of *innovation* and *CSP* influence negatively (-4.35) on *profit margin* in model 24, it rejects hypothesis 3, and result is statistically significant in 5 % confidence interval. *Number of employees*, which is control variable, does not get statistically significant support being negative.

As models 23 and 24 are statistically significant, effect analysis was done. According to an analysis of effect size in Table 20 *innovation* (21% in model 23) has more impact on *profit margin* when the interaction effect exists in model (24% in model 24). There is same

situation with *CSP* (7% in model 23), as it is higher (11%) effect size of this variable in model with the interaction effect. Interaction effect of *CSP* and *innovation* has 11% effect size on *profit margin* in model 24.

Table 20 Effect size analysis of models 23 and 24

Variable	Effect in model 23	Effect in model 24
CSP	21%	24%
innovation	7%	11%
Interaction effect	-	11%
Industry	30%	31%
Number of employees	4%	3%

Summarizing analysis of linear regression results for *profit margin*, using the Eikon dataset, it can be concluded that result of *innovation* effect on *profit margin* in model 24 supports hypothesis 2, that *innovation* has positive effect on *CFP*. Moreover, result of *CSP* effect on *profit margin* in model 24 supports hypothesis 1, that *CSP* has positive effect on *CFP*.

Following analyzing variable, which measure CFP, is *current ratio*. Model 25 includes only effect of control variables on *current ratio*. The subsequent models introduce moderating variables *innovation* and *CSP* (Model 26), the interaction effect of *CSP* and *innovation* (Model 27). In these models R^2 is same and enough to generalize result. Models 25, 26 and 27 explain 25% of the data variation within the sample observations, but models are not statistically significant.

As can be seen in Appendix 2, the hypothesized effect between *CSP* and *current ratio* receives no statistically significant support being negative (-0.02) in model 26and positive (0.08) in model 27. Impact of *innovation* on *current ratio* was found as positive (4.81) in model 27 and result is statistically significant in 10% confidence interval. As coefficients, which were reported are beta coefficients, it can be interpreted that in every standard deviation increase in *innovation*, *current ratio* will increase by 4.81. This result supports hypothesis 2. An interaction effect of *innovation* and *CSP* influence negatively (-4.99) on *current ratio* in model 27, which does not support hypothesis 3, and result is

statistically significant in 5% confidence interval. *Number of employees*, which is control variable, does not get statistically significant support being negative.

Summarizing analysis of linear regression results for *current ratio*, using The Eikon dataset, it can be concluded that *innovation* effect on *profit margin* in model 24 supports hypothesis 2, that *innovation* has positive effect on *CFP*, but statistically significant effect of interaction between *CSP* and *innovation* influences negatively on *CFP*, which rejects hypothesis 3. Meaning of results will be discussed in chapter 5.

5. DISCUSSION AND CONCLUSIONS

The aim of this thesis was investigating the influence of corporate social performance on the financial performance of a firm and role of innovation in this relationship. To do so, I used secondary data and did linear regression analysis of CSP, innovation and CFP with industry and number of employees as control variables.

While the findings section provided the actual representations and visualizations of the results of analysis, the more fine-grained discussion is carried out and infused with a degree of meaning in concluding chapter. This chapter first briefly summarizes the answers to the main research question and sub questions in 5.1; moves on to discuss the theoretical contributions under 5.2; states the managerial implications in 5.3; and finally closes with limitations and suggestions for further research under 5.4.

5.1 Summary of main research question

This chapter answers main research question, which is below:

RQ: What is the effect of Corporate Social Performance (CSP), innovation and their interaction on Corporate Financial Performance (CFP)?

And also, this chapter explain result of sub-questions testing, which are^

SQ1: What is effect of CSP on CFP?

SQ2: What is effect of innovation on CFP?

SQ3: What is the effect of the interaction between CSP and innovation on CFP?

Analyzing results of linear regression for separate datasets, it can be concluded that in CSR datasets there are only not statistically significant models that is why result cannot be generalized. In the Eikon dataset, *innovation* has statistically negative effect on *ROA* in statistically significant model, which rejects hypothesis 2. It is proved that *CSP* and *innovation* influence positively on *profit margin*. That fact supports hypothesis 1 and 2. The interaction effect has negative impact on *profit margin* does not support hypothesis 3.

Due to Table 21 it can be stated that CSP has positive statistically significant impact on CFP in statistically significant model, so it supports hypothesis one. According to Table 21   linear regression analysis of combined dataset it can be concluded that

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innovation has statistically significant negative result on CFP in statistically significant model, that is why result can be generalized. This result does not support hypothesis 2 about positive influence innovation on CFP.

To summarize, first hypothesis about positive influence CSP to CFP was accepted. Second hypothesis about positive influence of innovation to CFP was declined and result was negative. And third hypothesis about positive relationship between interaction of CSP and innovation and CFP was declined and relationship was found as negative.

Table 21 Summary of all linear regression results

Datasets	CSR Hub			Eikon			Total		
Variables	ROA	Current ratio	profit margin	ROA **	Current ratio	profit margin ***	ROA *	Current ratio	profit margin ****
CSP	-	-				+		-	+
innovation		+	+	-	+	+	-	-	
CSP*innovation					-	-		-	

*p <0.1; ** p<0.05; *** p<0.01; **** p< 0.001*

5.2 Theoretical contributions

This research offers theoretical contributions towards corporate social performance, innovation and corporate financial performance.

Positive impact CSP on CFP proves following studies (Allouche, 2005; Lo, 2007;vanBeurden, 2008; Consolandi, 2009;Doh, 2010;Wagner, 2010;Cheung, 2011; Robinson, 2011). Profit margin is not often used variable to measure CFP in relationship between CSP and CFP due to theoretical framework. In this study, profit margin was variable, with using that it was proved statistically significant relationship between CSP and CFP in statistically significant model.

Negative impact of innovation on CSP-CFP relationship agrees with Bae(2011) research, but does not support positive finding of McWilliams (2000), McWilliams et al. (2006), Porter (2006), Barnett (2007), Hull (2008), Ortiz (2008), Surroca (2010).Many researchers pointed out that innovation positively influences the relationship between CSP and CFP. One of the reasons, why result of this thesis differs from findings of many

researchers, is the fact that different indexes were used to measure CSP (ESG index and CSR index), which are not commonly used still.

5.3 Managerial contributions

Due to findings, it can be concluded that managers need to turn their attention to the efficient management of a firm's intangible resources. Based on results demonstrating that both corporate social performance and corporate financial performance are linked to innovation management, the prescription is to link managerial compensation to both CSP and innovation. It may give rise to ideas and practices for managers of strongly sustainable organizations. The findings suggest that managers of these organizations should carefully analyze possible impact of innovating on firm performance. In practice, one could imagine this manifesting as discarding initiatives that have a focus on either CSR or the innovation alone, or adjusting them to consider, include, and account for the complex interconnections and implications in both dimensions instead.

5.4 Limitations and suggestions for future research

The key limitations might be the reduced reach of data (i.e. one year). That is why the research doesn't account for the differential and is therefore strictly cross-sectional for the year 2017 only – indicating the possible under specification of models and the likely presence of endogeneity. This imposes limitations on investigating the causality between the independent and dependent variables, as well as the generalizability of the results outside of the sample group.

The approach to data collection presents limitations in terms of a potential survival bias, where only those companies that were diligent in reporting both (i) financial information and (ii) corporate social performance information at a sufficient level made it into the data pool. Per the relatively low number of observations resulting, it may well be assumed that the data represents a 'best-in-class' group of companies - an idea further devaluing the generalizability of the results. In addition, the seemingly random selection of industries the sample consists of makes meaningful group comparisons difficult if not impossible, as at some an individual industry was represented by three observations alone. Similarly, the uneven distribution of countries represented in the sample presents a difficulty to generalization, as most observations was primarily focused on Great Britain (about 50%) with seemingly random additions from other nations.

Furthermore, CSP variable was created by combining ESG and CSR index, which have not same evaluation methodology. It influences on research results. Lastly, as a portion of the data was manually aggregated using Excel, there remains a possibility for human error e.g. by decimal-errors or incorrectly retained data rows, which may have significant effects on individual observations - if present.

Per the limitations, an improved and more representative sample would be a decent starting point for further research. Improvements in the sample can be achieved through e.g. geographically focused local studies or industry-specific studies investigating the same phenomenon in varying contexts, allowing for result comparisons across industries. For instance, the biotechnology and pharmaceutical industries may be opportune candidates for studying the effects of CSP in the high innovation end, whereas textiles and apparel could be studied as a low innovation counterpart. This approach would allow for more meaningful interpretations between industries than those achieved by this study provided data for such in-depth studies were available.

Further, the measure for innovation would need to be expanded to capture further dimensions – while initial expectations toward including patents and trademarks as outputs failed due to lack of available data in our given context, either other approaches to data collection (alternative databases etc.) or other metrics for capturing such effects could be entertained. Such alternative metrics could include e.g. new product or feature launches in a given time period, filed patent or trademark applications (instead of # of total patents or trademarks held), new brand launches etc.; if possible referring these activities to their pertinent investments would add valuable information but may be difficult to achieve in practice.

Lastly, in terms of variables, the industry differentiation remains as the major challenge not tackled by this paper and demands an improved metric for a reliable and valid measurement, as in this study it was manually defined, in which industry group company should be. It was needed to do that because of different industry methodology in the ESG and the CSRHub dataset. Moreover, it is not a valid nor adequate measure for something as ambitious as industry differentiation overall and coming up with a reliable alternative may perhaps demand a research in its own right.

On the methodology front, more studies employing a longitudinal approach is called for to combat endogeneity and under specification of numerous former models; this would vastly improve the results subject to debate as many studies, including this one, rely strictly on cross-sectional approaches (Garcia Castro et al., 2010).

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Appendix1 Linear regression results of CSRHub dataset

Table 22 Linear regression results for ROA (CSR dataset)

N=134	Model 10		Model 11		Model 12	
	b	**t**	**b**	**t**	**b**	**t**
CSP			-0.12	-1.16	-0.22*	-1.72
innovation			0.04	0.43	-0.4	-1.13
CSP*innovation					0.48	1.3
Number of employees	-0.03	-0.33	-0.2	-0.19	-0.02	-0.22
Industry						
Software&IT services	0.12	0.68	0.08	0.43	0.08	0.46
Pharmaceuticals	0.06	0.44	0.04	0.3	0.03	0.2
Machinery,tools, heavy vechicles, trains	0.13	1.08	0.12	0.99	0.12	1.01
Food&tobacco	0.08	0.53	0.06	0.39	0.05	0.31
Computers,phone and household electronics	0.13	1.07	0.1	0.79	0.14	1.09
Beverages	0.11	0.99	0.12	1.1	0.14	1.22
Containers&packaging	-0.03	-0.3	-0.02	0.39	-0.02	-0.16
Freight&logistics	-0.04	-0.47	-0.05	-0.54	-0.06	-0.59
NB	-0.02	-0.19	-0.03	-0.28	-0.03	-0.32
F	(11,121)=0.4		(13,119)=0.45		(14,118)=0.54	
d.f.	132		132		132	
P	0.95		0.95		0.9	
R^2	0.04		0.05		0.06	
ΔR^2			0.01		0.01	

*$p <0.1$; ** $p<0.05$; *** $p<0.01$; **** $p< 0.001$

Table 23 Linear regression results for profit margin (CSR dataset)

N=134	Model 13		Model 14		Model 15	
	b	t	b	t	b	t
CSP			-0.01	-0.15	-0.07	0.58
innovation			0.15*	1.54	-0.08	-0.22
CSP*innovation					0.24	0.68
Number of employees	0.02	0.2	0.01	0.12	0.01	0.1
Industry						
Software&IT services	0.16	0.94	0.18	1.22	0.18	1.03
Pharmaceuticals	0.32**	2.31	0.3**	2.13	0.29**	2.06
Machinery,tools, heavy vechicles, trains	0.16	1.36	0.16*	1.44	0.16*	1.45
Food&tobacco	0.08	0.59	0.12	0.83	0.11	0.78
Computers,phone and household electronics	0.2*	1.73	0.18*	1.55	0.2*	1.66
Beverages	0.26**	2.46	0.29**	2.66	0.29	2.7
Containers&packaging	-0.01	-0.12	0.002	0.03	0.01	0.07
Freight&logistics	-0.02	-0.26	-0.01	-0.13	-0.01	-0.16
Telecommunications services	0.03	0.27	-0.001	-0.01	-0.002	-0.03
F	(11,121)=1.38		(13,119)=1.35		(14,118)=1.29	
d.f.	132		132		132	
p	0.19		0.19		0.22	
R^2	0.11		0.13		0.13	
ΔR^2			0.02		0	

*p <0.1; ** p<0.05; *** p<0.01; **** p< 0.001

Table 24 Linear regression result for current ratio (CSR dataset)

N=134	Model 16		Model 17		Model 18	
	b	**t**	**b**	**t**	**b**	**t**
CSP			-0.13*	-1.58	-0.1	-0.8
innovation			0.22**	2.38	-0.35	1.05
CSP*innovation					-0.15	-0.43
Number of employees	0.03	1.12	0.04	0.76	0.04	0.45
Industry						
Software&IT services	0.29****	2.58	0.27**	2.07	0.26*	1.52
Pharmaceuticals	0.06	0.54	0.01	0.11	0.02	0.12
Machinery,tools, heavy vechicles, trains	-0.03	-0.4	-0.02	-0.35	-0.03	-0.22
Food&tobacco	0.07	0.64	0.09	0.8	0.1	0.66
Computers,phone and household electronics	0.11	1.1	0.06	0.52	0.04	0.36
Beverages	0.13	0.91	0.17	1.21	0.17*	1.52
Containers&packaging	-0.06****	-4.34	-0.04	-2.35	-0.05	-0.52
Freight&logistics	-0.02	-1.28	-0.01	-0.63	-0.01	-0.13
Telecommunications services	0.09*	1.66	0.5*	1.55	0.05	0.57
F	$(11,121) = 0.99$		$(13,119) = 0.45$		$(14,118) = 1.3$	
d.f.	132		132		132	
p	0.45		0.17		0.22	
R^2	0.08		0.13		0.13	
ΔR^2			0.05		0	

*p <0.1; ** p<0.05; *** p<0.01; **** p< 0.001*

Appendix 2 Linear regression results of The Eikon dataset

Table 25 Linear regression results for ROA (The Eikon dataset)

N=178	Model 19		Model 20		Model 21	
Variable	**b**	**t**	**b**	**t**	**b**	**t**
CSP			-0.07	-0.74	-0.06	-0.55
innovation			-0.13*	-1.48	0.55	0.23
CSP*innovation					-0.69	-0.28
Number of employees	0.05	0.71	0.07	0.84	0.07	0.86
Industry						
Software&IT services	0.04	0.19	-0.1	-0.81	-0.11	-0.84
Pharmaceuticals	0.02	0.16	0.02	0.11	0.01	0.07
Machinery,Tools, Heavy Vechicles, Trains	0.02	0.14	0.001	0.01	0.003	0.02
Food&Tobacco	0.07	0.46	0.1	0.75	0.09	0.76
Automobiles&Auto Parts	-0.04	-0.29	-0.04	-0.31	-0.05	-0.32
Computers, Phone and household electronics	-0.09	-1.06	-0.07	-0.75	-0.06	-0.69
Semiconductor&Semiconductor equipment	0.07	0.57	0.1	0.77	0.09	0.74
Healthcare equipment&supplies	0.04	0.33	0.05	0.44	0.05	0.44
Beverages	-0.03	-0.4	0.02	0.24	0.02	0.26
Chemicals	-0.06	-0.04	-0.31	-0.2	-0.04	-0.31
Industrial conglomerates	-0.07	-0.08	-0.75	-0.63	-0.08	-0.73
Personal&Household products	-0.01	-0.04	0.4	0.46	0.05	0.44
Metals&Mining	-0.03	-0.01	-0.09	-0.01	-0.01	-0.09
Telecommunications services	-0.06	-0.68	-0.05	-0.56	-0.05	-0.56
Professional&CommercialService	-0.02	-0.24	-0.02	-0.19	-0.02	-0.19
Real estate operations	-0.08	-0.9	-0.04	-0.45	-0.04	-0.43
Containers&Packaging	-0.05	-0.65	-0.05	-0.6	-0.05	-0.6
Electronic equipment&Parts	0.01	0.14	0.01	0.06	0.01	0.08
Insurance	-0.14	-1.46	-0.07	-0.89	-0.08	-0.89
Office equipment	-0.05	-0.61	-0.05	-0.55	-0.05	-0.54
Oil&Gas related equipment and services	-0.14	-1.55	-0.14*	-1.61	-0.14*	-1.59

Specialty retailers	-0.04	-0.4	-0.06	-0.7	-0.06	-0.69
Biotechnology&Medical research	0.32****	4.12	0.34****	4.09	0.34****	4.08
Communications&Networking	0.08	0.94	0.07	0.81	0.07	0.75
Freight&LogisticsServices	-0.02	-0.19	-0.02	-0.23	-0.02	-0.22
Leisureproducts	0.27***	3.27	0.28**	3.19	0.29**	3.19
Oil&Gas	0.01**	0.17	0.03	0.38	0.04	0.42
Renewable energy	0.003	0.04	0.02	0.18	0.02	0.18
Homebuilding&Construction supplies	-0.04	-0.56	-0.03	-0.38	-0.03	-0.4
Hotels&Entertainment services	0.05	0.6	0.05	-0.38	0.05	0.62
Textiles&Apparel	-0.04	-0.46	-0.03	-0.32	-0.03	-0.32
F	(37,137)=1.61		(36,116)=1.60		(38,247)=1.23	
d.f.	176		152		285	
p	0.02		0.03		0.1	
R^2	0.31		0.33		0.158	
ΔR^2			0.02		0	

*p <0.1; ** p<0.05; *** p<0.01; **** p< 0.001

Table 26 Linear regression result for profit margin (The Eikon dataset)

N=178	Model 22		Model 23		Model 24	
Variable	**b**	**t**	**b**	**t**	**b**	**t**
CSP			0.34****	3.61	0.42****	4.12
innovation			-0.08	-0.92	4.25*	1.37
CSP*innovation					-4.35**	-1.91
Number of employees	0.01	-0.1	-0.03	-0.34	-0.01	-0.15
Industry						
Software&IT services	-0.09	-0.84	-0.22	-1.83	-0.26**	-2.11
Pharmaceuticals	0.03	0.21	0.11	0.79	0.08	0.54
Machinery,Tools, Heavy Vechicles, Trains	-0.06	-0.39	-0.14	-0.83	-0.12	-0.74
Food&Tobacco	-0.03	-0.22	-0.06	-0.49	-0.05	-0.43
Automobiles&Auto Parts	-0.03	-0.21	-0.04	-0.27	-0.05	-0.05
Computers, Phone and household electronics	-0.06	0.76	0.17**	1.95	0.2**	2.26

Semiconductor&Semiconductor equipment	0.02	0.14	0.04	0.3	0.02	0.14
Healthcare equipment&supplies	-0.01	-0.06	-0.06	-0.52	-0.06	-0.57
Beverages	-0.01	-0.18	-0.03	-0.32	-0.02	-0.23
Chemicals	0.07	0.72	0.11	1.03	0.11	1.03
Industrial conglomerates	-0.01	-0.12	0.003	0.03	0.01	0.13
Personal&Household products	-0.04	-0.43	-0.14	-1.28	-0.11	-1.01
Metals&Mining	0.08	0.92	0.18*	1.89	0.18	1.91
Telecommunications services	-0.01	-0.08	-0.06	-0.67	-0.06	-0.7
Professional&CommercialService	-0.02	-0.26	-0.05	-0.71	-0.06	-0.73
Real estate operations	0.04	0.5	0.09	1.11	0.1	1.22
Containers&Packaging	-0.02	-0.28	-0.05	-0.82	-0.07	-0.83
Electronic equipment&Parts	0.04	0.52	0.14	1.59	0.15	1.69
Insurance	-0.03	-0.33	0.11	-1.39	-0.12*	-1.48
Office equipment	-0.02	-0.25	-0.03	-0.39	-0.03	-0.32
Oil&Gas related equipment and services	-0.03	-0.38	-0.16*	-1.82	-0.15*	-1.74
Specialty retailers	-0.04	-0.5	-0.07	-0.93	-0.07	-0.88
Biotechnology&Medical research	-0.01	-0.1	-0.06	-0.77	-0.06	-0.73
Communications&Networking	-0.004	-0.06	0.03	0.39	0.01	0.07
Freight&LogisticsServices	-0.02	-0.23	-0.03	-0.49	-0.02	-0.26
Leisureproducts	0.02	0.21	0.05	0.56	0.06	0.68
Oil&Gas	-0.02	-0.3	-0.09	-1.08	0.06	0.68
Renewable energy	0.07	0.9	0.13	1.55	0.14*	1.59
Homebuilding&Construction supplies	-0.02	-0.2	-0.06	-0.7	-0.06	-0.81
Hotels&Entertainment services	-0.02	-0.29	-0.08	-1.02	-0.08	-1.07
Textiles&Apparel	-0.02	-0.31	-0.08	-1.01	-0.08	-1.05
F	$(39,137)=2.04$		$(36,116)=2.10$		$(37,115)=2.19$	
d.f.	176		152		152	
p	0.001		0.001		0.001	
R^2	0.37		0.39		0.41	
ΔR^2			0.02		0.02	

*p <0.1; ** p<0.05; *** p<0.01; **** p< 0.001*

Table 27 Linear regression analysis for current ratio (The Eikon dataset)

N=178	Model 25		Model 26		Model 27	
Variable	**b**	**t**	**b**	**t**	**b**	**t**
CSP			-0.02	-0.18	0.08	0.65
innovation			-0.15	-1.58	4.81*	1.88
CSP*innovation					-4.99**	-1.94
Number of employees	-0.02	-0.24	-0.03	-0.36	-0.02	-0.17
Industry						
Software&IT services	0.04	0.29	0.10	0.76	0.06	0.47
Pharmaceuticals	0.24*	1.61	0.27*	1.68	0.23	1.44
Machinery,Tools, Heavy Vechicles, Trains	0.19	1.12	0.22	1.19	0.24	1.29
Food&Tobacco	0.10	0.82	0.11	0.78	0.12	0.86
Automobiles&Auto Parts	0.19	1.35	0.21	1.36	0.2	1.31
Computers, Phone and household electronics	-0.04	-0.49	-0.02	-0.17	0.02	0.15
Semiconductor&Semiconductor equipment	0.31**	2.56	0.36**	2.72	0.34	2.57
Healthcare equipment&supplies	0.09	0.73	0.1	0.79	0.09	0.76
Beverages	-0.02	-0.2	-0.02	-0.22	-0.01	-0.13
Chemicals	0.2*	1.65	0.22*	1.74	0.22	1.75
Industrial conglomerates	0.14	1.3	0.15	1.28	0.16	1.4
Personal&Household products	0.06	0.54	0.09	0.78	0.13	1.06
Metals&Mining	0.06	0.62	0.08	0.75	0.08	0.75
Telecommunications services	-0.06	-0.67	-0.06	-0.61	-0.06	-0.64
Professional&CommercialService	-0.05	-0.57	0.02	0.17	0.01	0.16
Real estate operations	0.03	0.29	-0.07	-0.82	-0.06	-0.73
Containers&Packaging	-0.05	-0.56	-0.05	-0.53	-0.05	-0.53
Electronic equipment&Parts	0.12	1.29	0.13	1.26	-0.14	1.36
Insurance	-0.09	-0.97	-0.05	-0.54	-0.06	-0.62
Office equipment	-0.001	-0.01	0.008	0.08	0.01	0.15
Oil&Gas related equipment and services	-0.05	-0.49	-0.001	-0.02	0.01	0.08
Specialty retailers	0.02	0.26	-0.01	-0.08	-0.001	-0.01
Biotechnology&Medical research	-0.01	-0.13	-0.01	-0.07	-0.002	-0.03

Communications&Networking	0.08	0.93	0.09	0.89	0.05	0.56
Freight&LogisticsServices	0.05	0.59	0.05	0.56	0.06	0.67
Leisureproducts	0.15*	1.71	0.16	1.7	0.17	1.83
Oil&Gas	0.04	0.52	0.06	0.66	0.09	0.95
Renewable energy	-0.02	-0.03	0.003	0.04	0.01	0.06
Homebuilding&Construction supplies	0.02	0.19	0.03	0.32	-0.06	-0.81
Hotels&Entertainment services	-0.05	-0.62	-0.05	-0.6	0.02	-0.64
Textiles&Apparel	0.04	0.49	0.05	0.57	0.05	0.55
F	(39,134)=1.14		(39,134)=1.14		(37,115)=1.04	
d.f.	174		173		152	
p	0.29		0.29		0.42	
R^2	0.25		0.25		0.25	
ΔR^2			0		0	

*$p <0.1$; ** $p<0.05$; *** $p<0.01$; **** $p< 0.001$