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The Value Relevance of Non-Financial Information to Firm Profitability: an Empirical Study on the Hypercompetitive Industry

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Abstract

The purpose of this study is to examine the relationship between non-financial information and firm profitability. The data and samples were extracted from publicly listed companies (PLCs) operating in the U.S. hypercompetitive industry. The U.S. (NYSE) setting of the study was chosen due to the efficiency of its capital market. The efficiency of the NYSE can be identified from the rapid adjustment of stock price movement as a consequence of incoming new information. By employing panel data regression analysis of 83 companies spanning from 2011 to 2016 (498 firm-year observations), this study tests the relevance of firms' non-financial on firm profitability. The findings suggest that non-financial information has shown a positive and relevant association with firm profitability. Thus, the presence of CSR reports (CSR_Rep), and high CSR performance scores (CSR_Perf) as the proxies of non-financial information is positively associated with firms' profitability (ROA and ROE). In this regard, the company might explore the benefit of gaining a positive reputation and better business legitimacy from society as well as their stakeholders.

Relevansi Kinerja Non-Keuangan Terhadap Nilai Perusahaan: Studi Empiris Pada Industri Hiperkompetisi

Abstrak

Tujuan dari penelitian ini adalah untuk menguji asosiasi antara kinerja non-keuangan dan profitabilitas perusahaan. Data dan sampel penelitian diperoleh dari perusahaan go public yang tergabung dalam industri hiperkompetisi di Bursa Efek Amerika (New York Stock Exchange). Pasar modal Amerika dipilih sebagai objek penelitian karena tingginya tingkat efisiensi pasar modal tersebut. Efisiensi Bursa Efek Amerika dapat dilihat dari cepatnya penyesuaian harga sebagai konsekuensi dari informasi baru yang masuk ke lingkungan pasar, sehingga harga pasar menjadi salah satu indikator utama yang menjadi pertimbangan investor saat mengambil keputusan investasi. Dengan memanfaatkan analisis regresi data panel terhadap 83 data set perusahaan dari tahun 2011 sampai dengan 2016 (498 observasi), studi ini menguji relevansi kinerja non-keuangan perusahaan yang diukur melalui ketersediaan laporan dan performa corporate social responsibility (CSR) terhadap profitabilitas perusahaan. Temuan empiris mengindikasikan bahwa informasi non keuangan memiliki relevansi yang positif terhadap profitabilitas perusahaan. Oleh sebab itu, keberadaan laporan CSR yang dipublikasikan ke publik, dan kinerja CSR yang tinggi berasosiasi positif dengan profitabilitas perusahaan, sehingga sangat besar peluang perusahaan untuk meningkatkan reputasi dan legitimasi bisnis yang lebih baik dari publik serta stakeholders.
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INTRODUCTION

This study solely aims to test the relevance of non-financial performance (CSR) to the profitability of publicly listed companies (PLCs) in the U.S. hyper-competitive industry. The previous research in the field of non-financial information reporting has indicated a significant development, and the results of these studies have attracted the interest of many stakeholders (government, investors, suppliers, employees, financial analysts) as well as researchers in accounting and finance. This indicates the increasingly important role of non-financial information for stakeholders, causing many companies to compete in disclosing not only information related to the firm's financial performance but also non-financial information. This non-financial information is considered as one of the relevant information and can help the company to improve the company's economic performance in the future.

Corporate Social Responsibility (CSR) is commonly studied by researchers in the area of accounting & finance as it is associated with the voluntary disclosure of non-financial information. CSR information generally contains environmental, social, and governance-related aspects that are also known as ESG information (Usman & Yennita, 2018; Yoon, et al., 2018). The performance of CSR, a.k.a ESG information, is usually expected to boost the firm's economic performance in the future since the firm's attention to environmental, social, and governance sustainability issues are deemed sensitive topics for stakeholders (GRI, 2014). However, if the reporting of CSR/ESG information is not delivered correctly, the firm's expenditures related to CSR initiatives will not be considered as an investment that may generate value-added, but lead to a reduction in the firm's profitability. Thus, the firm's involvement with CSR-related activities might not positively impact the development of the firm's future value.

The firm's decision to be involved in the implementation of CSR-related activities is deemed a strategic decision. The decision is made through an inclusive and comprehensive cost and benefit analysis (Cormier & Magnan, 2015). This is considered necessary since the decisions related to CSR activities are not only deemed as charity activities per se, but also as an effort to gain and increase the firm's social legitimacy from the public's perspective (Lys et al., 2015). Therefore, the firm, through its management decisions makes an in-depth analysis of the extent to which the involvement of CSR activities can have a potentially positive impact on firm value, both in terms of economic significance (profitability) and social legitimacy (Cormier & Magnan, 2015; Bagnoli & Watts, 2017).

A burgeoning number of empirical studies reveal that firms with CSR policies tend to perceive more benefits. The research of Dhaliwal et al. (2012) reports that firms with CSR disclosure to the public can help financial analysts reduce information asymmetry by mitigating the range of errors in the estimation of estimation potential earnings forecast. Additionally, another study conducted by Cheng et al. (2014) also shows that publicly disclosed non-financial information can help firms to gain easier access to finance. Other researchers also mention that companies can obtain social legitimacy and more positive social recognition as a license to operate (Bebbington et al., 2008; Usman, 2020a; Usman et al., 2020).

Although the previous studies have explained the benefits of corporate involvement with socially responsible activities, research that specifically looks at the role of social responsibility in a hypercompetitive industry is still under-researched. Therefore, the setting of study utilizing the hypercompetitive industry is indeed interesting to be executed. Due to the highly competitive nature of this industry, the innovations made by companies in the software and hardware sub-industries are closely related to environmental, social, and organizational governance aspects. For example, the data disclosed by The Guardian in 2018 on the impact of environmental damage caused by company activities operating in the semiconductor industry have caused a loss of 20.3 billion US Dollars. Furthermore, another example of a sexual harassment case that occurred at the giant tech

Google is also a social problem that is closely related to employees (https://inet.detik.com/cyberlife/d-4283925/ribuan-karyawan-google-berdemo). This causes these companies to be in the public spotlight, resulting in reduced company productivity and might even cause the best talent not to stay long in a company, and ultimately affects the level of profitability (e.g., declining stock prices, decreasing trading volume, negative reputation). Therefore, the study of the performance and impact of the firm's operations from the perspective of environmental, social, and governance aspects have turned into relevant issues in the hypercompetitive industry.

In general, this study contributes to two essential aspects. First, the obtained empirical results of this study are intended to add relevant literature amid intellectual debates that arise among researchers in the accounting and finance fields, which focuses on using non-financial information and testing its relevance to firm profitability. Second, this research is expected to contribute to regulators or policymakers (government). Thus policymakers may apply relevant regulations according to the impact resulting from the firms when operating in the society.

Hypothesis Development

Legitimacy Theory

The theoretical foundation used in this study employs the legitimacy theory. As noted in the seminal paper of Suchman (1995), legitimacy is defined as "*a general perception or assumption about an action, or an entity that is considered to fit within a socially constructed system, values, beliefs, and definitions*". Referring to the legitimacy theory, it can be explained that the firm tries to get sympathy from the social community where it operates to maintain the continuity of its business operations. In this case, the firm's main motives can be grouped into several goals, such as (i) carrying out charity activities with the motive of gaining social legitimacy, (ii) increasing social legitimacy, or even (iii) maintaining legitimacy itself (Milne & Patten, 2002). The other motivation related to organizational legitimacy could lead to the industry memberships. For instance, the social aspects is deemed as the most dominant disclosed information than the environmental issue in Banks' CSR publications (Tandelilin & Usman, 2022). Meanwhile, the study of Kamaludin et al. (2022) notes that companies operating in more social and environmental pressure such as software and hardware industrial sectors, are more likely to deal with more consistent CSR publication over the years to maintain their organizational legitimacy.

In the development of legitimacy theory in social research, the issue of social legitimacy sometimes overlaps with some of the motives and goals imposed by the company. As decision-makers in every company activity, managers can see the charity activities or all forms of CSR-related initiatives from a different perspective. For example, sometimes the implementation of social responsibility activities is not only meant to gain social legitimacy from the society, but there are several other motives such as maintaining a good impression to the management (impression management), hiding actual events related to CSR activities (i.e., this action is associated with camouflaging effort), and as a tool for corporate reputation risk management (Neu et al., 1998; Bebbington et al., 2008; Michelon et al., 2016; Usman, 2020b).

The Drivers of Non-financial Information Disclosure as a Reflection of Non-financial Performance.

Prior studies also reveal that many factors might drive companies to take policies associated to the disclosure of non-financial information to the public. Research conducted by Dhaliwal et al. (2011) mentions that voluntary disclosure of non-financial information might assist companies to get a lower cost of capital. This is seen as relevant because investors or stakeholders who have an interest in the sustainability of the company have the perception that the disclosure of non-financial information can help mitigate the level of information asymmetry between the company and stakeholders. The subsequent research performed by Dhaliwal et al. (2012) also

confirms that voluntarily disclosed non-financial information can help the financial analysts to reduce the error rate in the process of estimating potential earnings forecast that the company may generate in the future. Thus, this is in line with the findings of Cheng et al. (2014) that the availability of non-financial information is more likely to increase the company's opportunities to gain better financial access from both the capital market and the money market.

Furthermore, the research conducted by Axjonow et al. (2016) shows that proper reporting of CSR information and the appropriate implementation of CSR activities can help companies to gain a positive reputation from the professional stakeholders. This is indeed relevant since more and more individuals, as well as institutional investors, are starting to realize the importance of sustainability issues from the aspects of economic, social, and environmental sustainability. This is also evidenced by the increasing number of stock indexes or portfolios that are specifically dedicated to companies that have a focus on sustainability issues (e.g., Sri Kehati Index (IDX), Green Equity index (NASDAQ), Green Economy Mark (LSE) and so forth).

In Europe, some empirical studies have reported that firms have several motivations to engage in CSR-related activity and its reporting. This action is officially regulated under European Directive No. 94 of 2014 (European Commission, 2014) and effectively turned into mandatory practice based on the enactment of the EU Directive. The study of Park & Brorson (2005) mainly shows two reasons for a firm's motivation to deal with CSR practice; (i) the firm tries to benchmark the CSR initiatives by imitating other companies that have implemented CSR activities and perceived its benefits. (ii) In Europe, there are several awards for companies that have performed well in CSR-related initiatives related to environmental sustainability, and most companies with CSR publications pursue these awards to gain social recognition and legitimacy. On the contrary, several reasons might drive the firms not to deal with CSR-related initiatives. Among them, Park & Brorson (2005) reported that relatively new companies (start-ups) in Sweden prefer not to immediately deal with CSR activity as CSR initiatives are pretty high cost, and the firm has to carefully consider the cost and benefits of dealing with CSR. Most small-size companies generally think that carrying out social responsibility activities is an unnecessary expense, and the benefits cannot be perceived directly. Therefore, the study of Park & Brorson (2005) indicates that most companies in Sweden will only carry out activities related to corporate responsibility after the company is financially stable, or at least 3 years after the company operates.

The nexus between non-financial performance and firm profitability.

Non-financial information as mentioned in the previous studies has a reasonably positive association with firm profitability (Devine & Halpern, 2001; Manchiraju & Rajgopal, 2017; Yoon et al., 2018). However, there are also several empirical studies reporting that the firm's involvement in social responsibility activities does not have a significant effect on the value and level of company profitability. On the contrary, the consensus showed by previous research generally states that the company's involvement in CSR activities has a positive relationship with the firm's long-term profitability. For example, a study conducted by Famiyeh (2017) documents that there is a positive relationship between the implementation of corporate responsibility and company performance. In this case, firms that are directly involved with CSR-related activities have the opportunity to manage costs more flexibly. In line with the legitimacy theory used in this study as well as several kinds of literature in the CSR stream, this study argues that there is a positive association between the company's involvement in CSR activities and the profits that the company may generate in the future. Therefore, the first hypothesis is developed as follows.

H1: The publication of CSR reports is positively associated with firm profitability.

The following hypothesis seeks to examine the relationship between corporate social responsibility performance and firm profitability. In this case, the third party is more likely to evaluate the amount of non-financial information distributed to the public. The third party, in this case, is not a provider of assurance services, but a third party that conducts independent research on the impact of a firm's involvement in economic, environmental, social, and organizational governance. The previous research of Usman & Yennita (2018) has reported that the ranking scores regarding the performance of corporate social responsibility are one of the relevant information for stakeholders, and professional investors in particular. This is considered crucial as not many stakeholders or investors can directly interpret and extract this helpful information from corporate responsibility documents published by firms (Cho et al., 2013). Therefore, third-party services such as rating agencies (e.g., Bloomberg, Thomson Reuters ASSET4, and KLD (MSCI)) give the ranking weights as a reflection of performance for corporate social responsibility impacts.

Moreover, the study by Manchiraju & Rajgopal (2017) found that most Indian firms that properly dealt with CSR-related activity perceived higher profitability. In their study, they reported that when the CSR regulation was imposed on the Indian firms, at the beginning these firms experienced a 4.1% drop in their stock prices. However, this circumstance did not last long. When the firms spent the expenditure not only on the CSR-related activities, these firms also increased their advertisement expenditure, and the CSR report is deemed as a proper venue for promoting the firms' social responsibility actions to the public. Their overall empirical findings suggest that firms that voluntarily dealt with CSR reporting earlier would perceive higher shareholder value (i.e., stock price). Continuing Manchiraju & Rajgopal's (2017) empirical evidence, our study also examines whether the overall performance of corporate social responsibility activities has an effect or can be useful as relevant information in explaining the variations of firm profitability. Thus, the second hypothesis is formulated as follows.

H2: A high CSR performance score is positively associated with firm profitability.

Research Model

To simplify the research design, we deliberately describe the relationship between the main variables of interest within two boxes above the dotted line. As illustrated in Figure 1, the main concept is to examine the relationship between the performance of non-financial information and firm profitability. Furthermore, to operationalize the main concept, we use two proxies/variables in measuring non-financial information, such as the presence of a CSR report (CSR_Rep) and CSR performance score (CSR_Perf). In relation to the dependent variable, we use return on assets (ROA) and return on equity (ROE) as the surrogate indicators of firm profitability. As we are aware of the potential effect of the endogeneity problem that may affect the estimation of our empirical model, we also consider including the control variable in tackling the issue of omitted correlated variable bias.

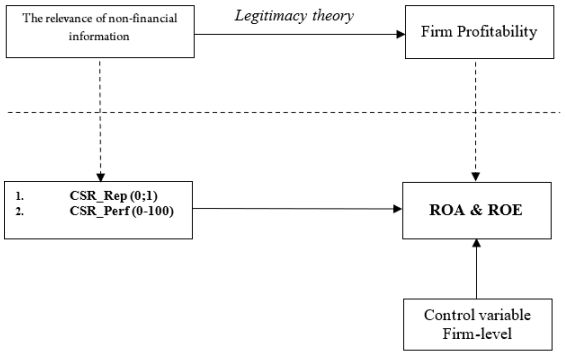

Figure 1. Research Model

METHOD

Data and Sample

This study uses data and samples taken from the New York Stock Exchange (NYSE) publicly listed companies (PLCs). The sample comprised actively registered firms in the hypercompetitive tech industry (hardware and

software). This industry was specifically chosen because the companies incorporated in the hardware and software industry have a direct impact on the environmental, social, and organizational governance sustainability issues. Information about whether companies disclose their non-financial information or not also becomes vital as a key requirement in data collection and sample generation.

Concerning the data, this study uses data taken from the Thomson Reuters EIKON and the ASSET4 databases. EIKON database is used as the source for financial-related information data, while the ASSET4 database is used to extract the data related to non-financial information. In addition to data sources, sample generation is also carried out using several purposive sampling criteria. First, the company must be a member of either the software or hardware subindustry in the U.S. hypercompetitive industry. Second, the company must have available information regarding the disclosure of non-financial information (i.e., CSR report disclosed to the public). Third, the company should be indexed on the ASSET4 database to allow researchers to extract the data related to environmental, social, and governance scores. Finally, the sample companies must have a sufficient number of annual data observations from 2011 to 2016. Hereby is enclosed the procedure of sample generation provided in Table 1.

Apart from the sample generation described in Table 1, a final sample consisting of 83 companies was taken as the final dataset. The detail of the sample list is provided as follows Table 2.

Table 1. Sample generation

No	Criteria	N (n)	Firm-year obs	%
1.	Firms operating either in the *Software & computer service* or *Technology hardware & equipment* industry (Total population; N).	1,111	6,666	100.00
2.	Firms without CSR performance score	(872)	(5,232)	(78.49)
3.	Firms with complete data observation from 2011 to 2016.	(156)	(936)	(14.04)
4.	The final sample is the total population deducted by criteria number 2 and 3 (Total sample; n).	83	498	7.47

Source: The sample firms are taken from Thomson Reuters and ASSET4 databases.

Table 2. Final sample in the hyper-competitive industry

No	Hypercompetitive industry	
	Software subsector	Hardware subsector
1	EQUINIX	FORMFACTOR
2	ALSP.HLTHCR.SLTN.	GARMIN
3	RED HAT	SEAGATE TECH.
4	AKAMAI TECHS.	SILICON LABS.
5	SALESFORCE.COM	ON SEMICONDUCTOR
6	ALPHABET A	MARVELL TECH.GROUP
7	BAIDU 'A' ADR 10:1	VERIFONE SYSTEMS
8	LEIDOS HOLDINGS	CREE
9	IAC/INTERACTIVECORP	MICROCHIP TECH.
10	GARTNER 'A'	VIAVI SOLUTIONS

11	SYNOPSYS	ECHOSTAR
12	INTUIT	CISCO SYSTEMS
13	VMWARE	BROADCOM
14	TERADATA	XILINX
15	SYMANTEC	QUALCOMM
16	PTC - CSR	NVIDIA
17	VERISIGN	F5 NETWORKS
18	FORTINET	JUNIPER NETWORKS
19	AMDOCS	TECH DATA
20	COGNIZANT TECH.SLTN.'A'	CYPRESS SEMICON.
21	EBAY	MAXIM INTEGRATED PRDS.
22	AUTODESK	NETAPP
23	ORACLE	NCR
24	MICROSOFT	CIENA
25	CERNER	RAMBUS
26	ADOBE SYSTEMS	MOTOROLA SOLUTIONS
27	CADENCE DESIGN SYS.	TEXAS INSTRUMENTS
28	FAIR ISAAC	PITNE - OWES
29	NUANCE COMMS.	ANALOG DEVICES
30	CITRIX SYS.	HP
31	FACEBOOK CLASS A	APPLIED MATS.
32	ALTABA	HARRIS
33	ANSYS	WESTERN DIGITAL
34	CHECK POINT SFTW.TECHS.	CORNING
35	TIVO	TERADYNE
36	UNISYS	DIEBOLD NIXDORF
37	INTERNATIONAL BUS.MCHS.	INTEL
38	DXC TECHNOLOGY	SKYWORKS SOLUTIONS
39	CA	ADVANCED MICRO DEVC.
40		INTEGRATED DEVICE TECH.
41		LAM RESEARCH
42		APPLE
43		KLA TENCOR
44		MICRON TEKNOLOGI

Source: Thomson Reuters EIKON

Operational definition

To manifest the research concept depicted in the main variable of interest, the definition, data type, and data source for each proxy are summarized in the following Table 3.

Table 3 illustrates the overview of the operational definitions of each variable. As previously indicated in the research model and Table 3, this study essentially wants to identify the association between the performance of non-financial information and firm profitability in a hypercompetitive industry. In addition to the main variables that have non-financial information characteristics (CSR disclosure

Table 3. Operational definition

No	Variables	Definition	Data type	Data Source
1	ROA	Return on asset	Continous	EIKON
2	ROE	Return on equity	Continous	EIKON
3	CSR_Rep	The availability of a corporate social responsibility report	Dichotomous	ASSET4
4	CSR_Perf	Corporate social responsibility performance score	Continous	ASSET4
5	EPS	Earnings per share	Continous	EIKON
6	LEV	Leverage is measured by the debt to equity ratio	Continous	EIKON
7	SIZE	Logarithms natural of total asset	Continous	EIKON
8	MBV	Market-to-Book value	Continous	EIKON
9	PV	The volatility of stock price, measured by the standard deviation of stock price	Continous	EIKON
10	AGE	Firms' age	Continous	EIKON

and CSR performance scores), this study also uses several financial information variables (i.e., financial ratios, firm's characteristics, as well as firms' age).

Empirical Model

Our study utilizes the combined data of time-series and cross-sectional data structure. Given the combined data form, we employ panel data analysis to have a better predictive ability in the estimation procedure and efficient estimation results (Baltagi, 2008). The empirical models with the panel data approach used in this study are notated as follows.

$$ROA_{i,t}, ROE_{i,t} = \alpha + \beta 1 CSR\_Rep_{i,t} + \sum Controls_{i,t} + \sum Year_{i,t} + \varepsilon_{i,t}$$

$$ROA_{i,t}, ROE_{i,t} = \alpha + \beta 1 CSR\_Perf_{i,t} + \sum Controls_{i,t} + \sum Year_{i,t} + \varepsilon_{i,t}$$

As it can be seen on econometrical model one and two, the empirical testing procedure is performed twice using two different models. It is worth reporting that there is a particular relationship between the availability of CSR reports (CSR_REP) and CSR performance score (CSR_Perf), in which CSR performance score cannot be computed and calculated by the analyst if the CSR report is unavailable or unpublished. Therefore, due to this condition, there is multicollinearity issue that should be tackled. Therefore, in anticipating the estimation bias that might lead to overestimation and pseudo estimation results, we therefore, separate the hypotheses testing by not including CSR_REP and CSR_Perf in the same model.

Dependent Variable

The main dependent variables of this study focus on measuring firm profitability. In this regard, we use two financial ratios (i.e., ROA and ROE). These variables are available in the form of continuous data type (ratio). We employ these two variables based on the previous literature which indicates the flexibility of the two financial ratios in illustrating the company's ability to generate profits. Given that, our study presumes that the firm engagement with CSR-related activities is related to firm profitability proxied by ROA and ROE.

Independent Variables

Concerning the main independent variables, we use the combination of dichotomous and continuous data. The first indepen-

dent variable is the availability of CSR reports measured by categorical information. A firm with CSR report (CSR_Rep) is marked 1 and 0 otherwise. Meanwhile, another non-financial variable uses CSR performance (CSR_Perf) ranking data provided by ASSET4. In this sense, firms with CSR performance data employ a data ratio scaling from 0 as the lowest performance score to 100 as the highest performance score. The two main independent variables are further proceeded to the hypotheses testing as the foundation in answering the proposed research questions.

Control Variables

In tackling the issue of the endogeneity problem (i.e., omitted correlated variable bias), we consider employing a set of control variables that represent the firm characteristics. We are also aware that the decision to deal with CSR practice is merely based on the manager's discretion regarding the cost and benefit analysis. Therefore, we utilize several extraneous (control) variables that are typically used in managerial decision-making, that might enhance the internal validity of our study by limiting the effect of confounding factors and other extraneous variables. These variables consist of debt ratio (LEV), firms' size (SIZE), book value of shares (MBV), share price volatility (PV), and firms' age (AGE).

RESULT AND DISCUSSION

Descriptive Statistics

Before proceeding into the hypothesis testing, we perform the descriptive statistics analysis to understand better the data distribution and its characteristics. The result of the descriptive statistics analysis for each variable is provided in Table 4.

Table 4 shows the results of descriptive statistics. Before the data is processed, the data is firstly validated. We identify whether the dataset is normally distributed or not. Thus, we performed data winsorization to minimize the problem of data outlier that may affect the estimation outputs. In general, we divide the characteristics of research variables into three groups (i.e., dependent, independent, and control variables). In line with the information provided in Table 4, it is known that the average value of the main dependent variables ROA and ROE are 9.92 and 18.59 on average, with standard deviations at 6.73 percent for ROA and 40.15 percent for ROE. The mean

Tabel 4. Descriptive statistics

Variable	N	mean	sd	p25	p50	p75	min	max
Dependent variables								
ROA	498	9.921	6.732	6.350	10.140	13.330	-15.870	28.443
ROE	498	18.588	40.153	5.790	13.8750	21.030	-82.510	320.020
Independent variables								
CSR_Rep	498	.449	.497	.00	.000	1.000	.000	1.000
CSR_Perf	498	58.974	18.308	45.230	59.725	73.920	13.240	95.310
Control variables								
EPS	498	2.084	3.068	.540	1.655	2.687	-4.642	16.290
LEV	498	33.151	287.868	6.140	33.505	81.870	-2122.170	1189.300
SIZE	498	15.751	1.317	14.830	15.521	16.357	12.877	19.261
MBV	498	3.125	7.591	1.990	2.960	4.640	-53.910	25.620
PV	498	28.301	8.124	22.340	26.750	33.810	15.030	50.260
AGE	498	34.066	29.174	18.000	28.000	37.000	.000	165.000

Note: We performed data winsorization to each continuous data.

value for the main independent variables can be seen from the mean value of CSR_Rep and CSR_Perf. CSR_Rep indicates a mean value of 44.90 percent, which means that, out of all samples, half of them have published their CSR reports (CSR_Rep) to the public. Meanwhile, CSR performance (CSR_Perf) shows an average value of 58.97 percent, meaning that the overall CSR performance, both for the Environmental, Social, and Governance aspects, is reported at 58.97 percent.

Correlation Analysis

Tabel 5. Correlation matrix

Variable	ROA	ROE	CSR_REP	CSR_Perf	EPS	LEV	SIZE	MBV	PV	AGE
ROA	1									
ROE	.178***	1								
CSR_Rep	.152***	.112*	1							
CSR_Perf	.232***	.039	.644***	1						
EPS	.391***	.253***	.121**	.158***	1					
LEV	.021	-.044	.059	.05	.03	1				
SIZE	.317***	.092*	.448***	.543***	.444***	.07	1			
MBV	.117**	-.099*	.044	.078	.069	.806***	.051	1		
PV	-.220***	-.238***	-.095*	-.316***	-.274***	-.051	-.341***	-.054	1	
AGE	-.063	.124**	-.052	.079	-.100*	.106*	.081	.005	-.212***	1

Notes: the *asterisk* means * p<0.05, ** p<0.01, *** p<0.001 respectively.

Furthermore, the procedure of analysis goes to the correlation test. Correlation analysis is important to identify whether the variables are related to one another. In addition, correlation analysis can also be the initial signal to investigate the possible relationships that may occur in research variables. To justify whether the two variables have a relationship or not, it is seen from the level of significance of the relationship between the two variables. In addition, to find out whether there is a multicollinearity issue that may cause potential bias in the statistical estimation process, this study also applies a threshold level by limiting the correlation (r-value) of the two variables, not more than (<) 0.65. More in detail, the results of the correlation analysis show that there is a significant relationship between the proxies used to measure the performance of non-financial information and firm profitability. In this context, the surrogate indicators of non-financial information performance consist of two variables, namely CSR_Rep and CSR_Perf. Meanwhile, the proxy for firm profitability is represented by ROA and ROE. For the first relation of each proxy, it can be seen that the output of the correlation matrix shows a positive and significant relationship between CSR_Rep and ROA (r= 0.152; p < 0.01) and CSR_Perf with ROA (r= 0.232; p < 0.01). In the second proxy relationship, there is also a positive and significant relationship between CSR_Rep and ROE (r= 0.112; p < 0.1). However, a non-significant positive relationship emerged on the relation between CSR_Perf and ROE (r= 0.039; p > 0.05). In relation to the issue of heteroscedasticity, Baltagi (2008) mentioned that this condition refers to the particular type of pattern in the residual of the predicted model. In this regard, several subsets of residuals amount of variability are larger than the others (non-constant variance). In anticipating the heteroscedasticity issue, Merten et al. (2016) suggested employing a fixed effect model. The estimated results of the econometrical model are deemed efficient and unbiased, whereas the FE model does not take into account the time-invariant variable at the individual level. The next relationship available in Table 5 shows the

correlation between control variables and the main dependent variables (ROA and ROE). Next, the analysis goes into hypothesis testing which presents the main findings of the study.

Hypotheses Testing

After conducting descriptive statistics and correlation analysis, the next stage enters into testing the proposed hypotheses. The main output of empirical evidence using a panel data regression analysis approach is available in Table 6.

Hypothesis one assumes that the publication of CSR reports such as SR reports, ESG reports, triple bottom line reports, registrant reports, environmental reports, and so forth to the public is positively associated with firm profitability. In this circumstance, the availability of CSR reports as a proxy of non-financial performance is tested against two proxies of the firm profitability measured by ROA and ROE. The findings using panel data regression analysis on the first research model show that CSR_Rep has a positive and significant association with firm profitability proxied

Table 6. The outcome of hypotheses testing

$$ROA_{i,t}, ROE_{i,t} = \alpha + \beta 1 CSR\_Rep_{i,t} + \sum Controls_{i,t} + \sum Year_{i,t} + \varepsilon_{i,t}$$

$$ROA_{i,t}, ROE_{i,t} = \alpha + \beta 1 CSR\_Perf_{i,t} + \sum Controls_{i,t} + \sum Year_{i,t} + \varepsilon_{i,t}$$

Variable	(1) ROA	(2) ROA	(3) ROE	(4) ROE
CSR_Rep	.606		11.610**	
	(1.058)		(2.506)	
CSR_Perf		.041**		-.038
		(2.253)		(-.471)
EPS	.596***	.619***	3.686***	3.451***
	(6.166)	(6.362)	(6.591)	(5.940)
LEV	-.004**	-.004**	.013	0.013
	(-2.097)	(-1.996)	(.353)	(.369)
SIZE	.753**	.558*	-5.109***	-2.574*
	(2.525)	(1.871)	(-3.065)	(-1.923)
MBV	.220***	.207**	-1.039	-1.035
	(2.602)	(2.483)	(-.830)	(-.831)
PV	-.122***	-.106**	-.950***	-.941***
	(-2.599)	(-2.221)	(-3.717)	(-3.591)
AGE	-.011*	-.012**	.171*	.150
	(-1.791)	(-1.985)	(1.758)	(1.597)
Constant	1.680	2.205	113.800***	82.320***
	(.335)	(.462)	(3.576)	(2.957)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Observations	498	498	498	498
R-squared	.240	.247	.151	.135

Note: the value of t statistics is available in parentheses. Each asterisk has the meaning of *** p<0.01, **p<0.05, *p<0.1 respectively.

by ROA and ROE, where the coefficient value of CSR_Rep on ROA is positive (βCSR_Rep= 0.606) but statistically insignificant. (p > 0.05). Moreover, the correlation coefficient of CSR_Rep on ROE is positive (βCSR_Rep= 11.61) and significant at the 5 percent alpha level (p < 0.05). The results are both positive but insignificant in one of the relationships, indicating that hypothesis one is partially supported, in which a positive and significant association is only indicated by the association between CSR_Rep and ROE.

Furthermore, hypothesis testing is continued on hypothesis two, which presumes that a high CSR performance score is positively associated with firm profitability. The results of statistical analysis show that using CSR_Perf as a proxy for non-financial performance, the regression output presents a positive association (βCSR_Perf= 0.041) and is significant only in the relationship between CSR_Perf and ROA (p < 0.05). However, the tendency of a relationship with the same coefficient sign and significance was not found in the association between CSR_Perf and ROE, in which the coefficient value of the main variable of interest is negative (βCSR_Perf= -0.038), and statistically insignificant (p > 0.05). Thus, it can be inferred that hypothesis two which examines the association between CSR_Perf and firm profitability (ROA and ROE) is also partially supported.

Robustness Test

To ensure that the results of the main analysis are not driven by the estimation bias, this study also utilizes a robustness test (additional analysis) using an alternative test. The independent variables that have been converted into lag form (-1) are used as the alternate measure of independent variables. The main reason for employing the lag variable is given the effect of CSR report availability and CSR performance score in the previous year that need to be reflected through the accounting information (ROA and ROE) in the contemporaneous year. Market participants need time to let all public information be absorped in the price changes. In relation to the accounting information, the firm profitability that can be calculated through the financial metrics also needs time. Therefore, we perform lag regression using an independent variable in time t-1 in explaining the variation of firm profitability in the contemporaneous year (t=0). The results of the analysis can be seen in the following Table 7.

Table 7. Additional analysis (*Robustness test*)

$$ROA_{i,t}, ROE_{i,t} = \alpha + \beta 1 CSR\_Rep_{i,t-1} + \sum Controls_{i,t-1} + \sum Year_{i,t} + \varepsilon_{i,t}$$

$$ROA_{i,t}, ROE_{i,t} = \alpha + \beta 1 CSR\_Perf_{i,t-1} + \sum Controls_{i,t-1} + \sum Year_{i,t} + \varepsilon_{i,t}$$

Variable	(1) ROA	(2) ROA	(3) ROE	(4) ROE
CSR_Rep(-1)	.793		10.040**	
	(1.252)		(2.053)	
CSR_Perf(-1)		.047**		-.082
		(2.365)		(-.850)
EPS(-1)	.508***	.528***	1.998***	1.797***
	(4.506)	(4.504)	(4.108)	(3.522)
LEV(-1)	-.004	-.003	.020	.022
	(-1.582)	(-1.490)	(0.532)	(.572)
SIZE(-1)	.578*	.354	-3.586**	-1.106
	(1.689)	(.981)	(-2.049)	(-.782)

MBV(-1)	.167*	.153*	-1.014	-1.018
	(1.942)	(1.863)	(-.630)	(-.636)
PV(-1)	-.161***	-.146***	-1.253***	-1.261***
	(-3.336)	(-2.923)	(-4.491)	(-4.450)
AGE(-1)	-.014**	-.016**	.112	.091
	(-2.194)	(-2.526)	(1.126)	(.962)
Constant	5.476	6.230	103.500***	75.270***
	(.983)	(1.138)	(3.131)	(2.678)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Observations	410	410	410	410
R-squared	.220	.228	.118	.107

Note: the value of t statistics is available in parentheses. Each asterisk has the meaning of *** p<0.01, **p<0.05, *p<0.1 respectively.

In the robustness test, the hypothesis testing procedure applied is similar to the ones in the main analysis. In this process, it can also be seen that the publication of CSR reports to the public is positively associated with firm profitability. The availability of CSR reports in the previous year (CSR_Rep(-1)) as a proxy for non-financial performance is tested against two proxies of firm profitability measured by ROA and ROE. The test outputs using panel data regression analysis on the first research model with the independent lag variable (-1) shows that CSR_Rep(-1) is positively related to firm profitability proxied by ROA and ROE, where the coefficient value of CSR_Rep(-1) on ROA is positive (βCSR_Rep(-1)= 0.793) but statistically insignificant (p > 0.05). In addition, the coefficient value of CSR_Rep(-1) on ROE is also positive (βCSR_Rep(-1)= 10,040) and significant at the 5 percent alpha level (p < 0.05). The sign of both coefficient values is positive but insignificant in one of the relationships, indicating that the robustness test outcome is pretty similar and consistent with the hypothesis testing outcome in the main analysis. Given that, it can be inferred that hypothesis one is partially supported, where positive and significant associations are only shown by the relationship between the CSR_Rep(-1) and ROE.

Furthermore, hypothesis testing is continued to hypothesis two, which assumes that a high CSR performance score (CSR_Perf) in the previous year (-1) is positively associated with firm profitability at t0. The results of statistical analysis showed that using CSR_Perf(-1) as a proxy for non-financial performance, a positive association is obtained (βCSR_Perf(-1)= 0.047) and significant only in the relationship between CSR_Perf(-1) and ROA (p < 0.05). However, the trend of the relationship with the same significant coefficient sign is not found in the association between CSR_Perf(-1) and ROE, where the coefficient value is found to be negative (βCSR_Perf= -0.082), but statistically insignificant (p > 0.05). Thus, it can be inferred that hypothesis two which examines the relationship between CSR_Perf(-1) and firm profitability (ROA and ROE) is also partially supported.

Discussion

This study generally conducts empirical tests regarding the relevance of non-financial information on the firm profitability incorporated in the U.S. hypercompetitive industrial sector. This study proposed two hypotheses as the underlying main research questions. Hypothesis one assumes that there is a positive relationship between the existence of non-financial information (CSR) and firm profitabi-

lity. Hypothesis two presumes the association between CSR performance and firm profitability. In the context of this study, the relevance of non-financial information is measured using two surrogate indicators, first the availability of CSR reports (CSR_Rep) and CSR performance score (CSR_Perf). Additionally, to operationalize the concept of firm profitability, this study employs return on assets (ROA) and return on equity (ROE) as the proxies. The results of this empirical research specifically show that there is a relationship between the two concepts studied (i.e., non-financial performance and firm profitability). However, when the two concepts are operationalized using a more measurable variable (profitability ratios), the empirical evidence of this study notes that the two proposed hypotheses are partially supported.

Although the empirical findings show partial associations for both hypotheses one and two, the obtained results indicate that the non-financial performance of firms in the U.S. hypercompetitive industry is relevant and useful in increasing firm profitability. Several previous studies have noted that non-financial information has positive implications for firm value and profitability (Amir & Lev, 1996; Botosan & Harris, 2000; Simpson, 2010). Research conducted by Amir & Lev (1996) in the semiconductor industry showed that non-financial information is also considered by most stakeholders as important information because it contains information that is not commonly found in the annual reports. Thus, non-financial information takes on the role of complementary information for financial information. In addition, the study of Simpson (2010) in the context of the cellular industry also adds that for financial analysts, non-financial reports are also useful when they analyze the firm's performance predictions in time-lead scenarios. This information is used as a component to calculate more accurate earnings forecasts at t+1, t+2, and even t+3. The same propensity was conveyed by the study of Dhaliwal et al. (2012) who found that using an international (global) sample, the existence of a CSR report or a stand-alone CSR report is relevant for analysts in making more accurate earnings forecasts in the +1 and +2 time horizons. Thus, this kind of informational content is useful for financial analysts, and has an impact on earnings forecast recommendations that the company can potentially realize in the future.

Furthermore, the findings of this study are also similar to the study of Cheng et al. (2014), which reported that non-financial information disclosed by companies to the public could help the firm to get better and easier access to finance. The impact is visible in the increasing firms' financial performance reflected in positive stock price changes. Moreover, the existence of CSR reporting and its reports are not always considered a cost item, but at a certain time, the company's decision and commitment to engage in CSR activities can have a positive impact on the reputation and profitability of the company. This is also related to empirical findings in the research reported by Usman et al. (2020) which reports that non-financial information should be indispensable as complementary information that can be used by the stakeholders to reduce the informational gaps (information asymmetry). However, in reality, the publication of non-financial information can also show an inconclusive relationship because not many stakeholders can take for granted the advantages of having CSR information in their hands. Therefore, information published to the public sometimes has reflected the motivations of different managers' discretion at the firm's level, so the credibility of the information might be distorted by the conflicts of interest at the management level.

In general, the findings provide the empirical answers to the proposed research questions that we posed on the two previous hypotheses; (i) is the availability or publication of CSR reports positively associated with firm profitability? and (ii) is a high CSR performance score positively associated with firm profitability? To answer these two research questions, we deliberately extracted data from companies operating in the U.S. (NYSE) hypercompetitive industry. The findings conclude that, there are significant associations that indicate the relevance of non-financial information in increasing firm profita-

bility. However, the relevance of non-financial performance represented by the existence of CSR reports and CSR performance scores is still partial. The practical implication that can be drawn from this finding is that only several companies can optimize the benefits of publishing non-financial reports to the public. Thus, it leads to a positive impact on firm profitability. Such companies are generally firms with large market capitalization. However, for companies with small or medium capitalization, it is not impossible to get the benefits from publishing financial reports to the public. One of the benefits that can be perceived by the firm is the increasing company's reputation and more positive social legitimacy from the public view, as proven by the partially supported hypotheses in the empirical findings of the study.

CONCLUSION AND RECOMMENDATION

This study examines the potential association between the relevance of non-financial information and firm profitability in publicly listed companies (PLCs) operating in the U.S. hypercompetitive industries. By using non-financial information data extracted from the ASSET4 database, this study collected data from 83 PLCs with a period of observation spanning from 2011 to 2016. The findings show that the presence and the performance of non-financial information are positively associated with firm profitability. However, when the firm profitability is operationalized using two forms of profitability ratios (ROA and ROE), the findings infer that the relationship is positive but statistically partial, where a positive relationship has not been followed by a consistent level of significance for each proxy. We conclude that our findings take a position to support the previous studies which found that non-financial information is positively associated with firm profitability and value relevance, in which the company might use this venue to improve its economic performance while increasing the company's reputation and gaining legitimacy for its business. In this regard, the empirical finding of the study is also deemed important when the policymakers regulate the need for non-financial information disclosure to the public.

Moreover, concerning recommendation, we would suggest that future research take into account the alternate measures or proxies of CSR performance. In this study, we employed the data provided by the ASSET4 database, while several database providers offer the alternate measure of non-financial and CSR measurements. Among them, KLD research analytics is deemed as the major source of CSR database provided by Wharton Research Data Services. The other option could be the BLOOMBERG terminal, which also offers analysts' overview and research on the non-financial information (i.e., CSR report, sustainability report, triple bottom line reports, and so forth). ESG rating – MSCI is also an independent provider of ESG data, and this provider is worth considering. Given the presence of several CSR data providers, it is interesting for future studies to consider the comparative study in seeking the consistency of CSR performance scores and their association with firm profitability.

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