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Impact of Environmental Reporting on Financial Performance: Study of Global Fortune 500 Companies

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Abstract: This study examines the impact of environmental reporting on the financial performance of Fortune 500 firms from 2013 to 2017. It appraises financial performance by measuring three independent variables: reduction in greenhouse gas emissions, reduction in waste, and reduction in water consumption. While the target population comprised the top 100 CSR-reputed companies listed on Fortune 500, the sample size was determined to be 50 based on observations of 250 companies. The collected data were analyzed using descriptive statistics, correlation, and regression analysis. Findings indicated that reduction in nominated variables such as greenhouse gas emissions and water consumption had a positive and significant impact on financial performance, whereas that in another variable, i.e., waste, had a negative and significant impact on financial performance. Thereby, this study recommends that firms should adopt environment-friendly resources to attract stakeholders as well as save the planet. It also suggests that firms need to accord dedicated focus to environmental reporting to improve profitability.

Keywords: environmental reporting, financial performance, Fortune 500 companies.

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INTRODUCTION

At present, as much society started to become knowledgeable and concerned towards the environment that they reside in as business started involving with the economy (Gray, 2010; Bachev, 2018; Halimah & Rahmawati, 2019). For the latest couple of years, organization start to develop the sustainability or environmental report with a detail of the organization's impacts upon environment and process by which impact is monitored and measured (Tasneem et al., 2016; Lestari et al., 2019). It is been a difficult yet interesting issue to conduct a study as recently environmental reporting (ER) is becoming popular by organizations. Hence, a plentiful study on this concept has been conducted in multiple countries to investigate the effect on an organization by environmental reporting. Some of examples are, public listed companies in Malaysia (Yusoff et al., 2018), the

oil and gas companies in Niger Delta of Nigeria (Bassey et al., 2013), tannery, cement, ceramics, engineering, food and beverages sectors of Bangladesh (Ahmad, 2012), the pharmaceutical sector of Pakistan and electronic sector of Brazil (Kijewska & Bluszcz, 2016). On the other hand, to discover the effect of environmental reporting developed and dynamics countries, authors have released many studies including Australia's forestry and paper, chemical, industrial engineering, mining and industrial transport sectors (Bhattacharyya, 2014). In Japan, electronic sector (Cortez & Cudia, 2010), and United Kingdom's oil and gas, industrial consumer goods, health care, basic material, telecommunication and technology and consumer services sectors (Kijewska & Bluszcz, 2016).

In regards, empirical literature on environmental reporting on firm's financial performance has been mixed, with some studies reporting positive relationship (King & Lenox, 2001; Egbunike & Emudainohwo, 2017), neutral relationship (Elsayed & Paton, 2005) and negative relationship (Konar & Cohen, 1997; Khanna et al., 1998). Deegan & Rankin (1996); Elijido-Ten (2004) reveal that due to inadequate statutory enforcement of environmental reports, most developing country's firms decide on their own as to what to disclose in other to favor their corporate image. Similarly, Fekrat et al. (1996) also argue that some corporate entities do not disclose the true reflection of their entities environmental performance. This is because there is no generally accepted standard for environmental reporting, hence individual company's report their environmental status based on how management wanted to portray to the public which makes comparisons difficult if not impossible (Appiah et al., 2017).

Based on evidence it can be observed that organization delivering ethical, social and environmental reports have improved of the 100 largest organizations in the top reporting countries) from 24% to 33% between 1999 and 2005 and in 2008 it was raised in 45% (KPMG, 200, 2008). According to KPMG (2008), approximately 80% of the largest 250 companies around the world issued ethical, social and environmental reports (Reddy & Gordon, 2010). In recent years, the adverse environmental effect of economic development has become a matter of great public concern around the world. Steadily environment is becoming much more vital social, economic and political problem (Tasneem et al., 2016).

According to the past researches, there were very few researchers have debated the impact of the environmental reporting on financial performance throughout the world. In addition, those research were used in the context base of sample countries. Therefore, this research fulfils the gap by using global companies listed in Fortune 500. Due to unavailability of the data this research conducted with 50 companies from the current listed Fortune 500 companies form the world. Thus, this one of the very rare studies who is conducted with the world top listed company rather than a certain context. Thus, the contextual gap will be filled. Another point is that, there are numerous research has been conducted aiming to measure the impact of many independent variables. Nevertheless, few of them conclude the study with the result of positive, negative and neutral but not conclusive. This research will establish the conclusive findings and nominated variables impact will be found. Therefore, the conceptual gap will be filled through this research (Konar & Cohen, 1997; Khanna et al., 1998; Tasneem et al., 2016).

The capability to reduce corporate environmental impacts required to deem the multinational of companies, thus companies have to issue in the collective contribution of particular branches around the world in terms of implementation of environmental policies. There is a high temptation to Ship Company's highly polluting operations to other countries with lax regulations (Kozul-Wright & Fortunato, 2012; Odoemelam & Okafor, 2018). Thereby, MNCs will be under regulatory scrutiny to accomplish the principle of total sustainability reporting, similarly carbon disclosure which might increase the environmental performance (Ahmad, 2012; Valentinovna, 2018). However, there are questions raised in regards to benefit and motivation beyond regulatory compliance where the corporate world investing resources aiming to increase the

environmental sustainability, Darnall et al., (2008) stated that since the findings of the research on the issues are still inconclusive or unsolved and managers even more apprehensive. As per literature on this issue coverage limited in terms of industries which are highly polluting within large firm's (including energy, mining and manufacturing) which are mostly located in developed countries and ruled with tighter legislation and lead the manager think of whether some of the research findings are related or applicable with their industry, size of organization and location. Even though in the present numerous researchers are expanding the scope in order to develop economies which is because of potential threats that these pose to the environment, little has been carried out aiming to cut across the emerging, developed, poor countries and developing countries. Therefore, the gap identified to be filled with this research.

Research objectives: 1) To investigate the impact of reduction greenhouse emission on financial performance. 2) To investigate the impact of reduction waste on financial performance. 3) To investigate the impact of reduction water consumption on financial performance. Research questions: 1) What is the impact of reduction greenhouse emission on financial performance? 2) What is the impact of reduction waste on financial performance? 3) What is the impact of reduction water consumption on financial performance?

METHODS

This study is, however, following the causal research design as causal research design mainly play role in terms of analyzing the cause and impact between the variables (independent and dependent). This approach prescribed for the research as it will be favorable and positive for this research as it evaluates the effect of the changes on the existing norms as well as recognizes the causes behind a wide range of practices. Through this nominated research design, the effect of environmental reporting on financial performance will be measured and will be comprehended.

In addition, empirical studies foundation with appropriate analysis of the collected data, a set of assumptions of the seeking outcomes would be needed to generate. Moreover, causal research design called as highly structured than any other research design including exploratory and descriptive. In response of this study, exploratory and descriptive research design will not be prescribed as they do hold the capability of covering the extensive sample size which is required for this research as well as it will not contribute to the study to be fulfilled with its objective. Therefore, this study adopts a causal research design.

Fortune 100 published the top 100 global companies name those place rich ranking among other companies who are practicing resources to become environmentally friendly. However, in this research, there are 50 companies with their recent five years sustainability reports selected to conduct the research. And another 50 companies eliminated as there is no available information as there are inconsistency data presenting which is not year to year presented that required to generate the data in respect of this study (Wang et al., 2014).

The target population is the companies' listed in the fortune 500 companies. Data is being collected from 50 companies. These 50 companies were selected using expert sampling techniques. This means only the top 50 companies in terms of revenue, profitability was selected. The data was collected from 2013 to 2017 making it 250 observation. 250 observation was maintained in order to fit the data distribution under the normal distribution range. This ensures data distribution is normal in terms of skewness and kurtosis. The 250 observation is acceptable theoretically as much previous research has used less observation than this (Bhattacharyya, 2014).

RESULTS AND DISCUSSION

Descriptive statistics summarize the greater sets of the quantitative date aiming to serve a clear understanding of the dataset. However, mean and standard deviation are mostly used measurement in descriptive statistic for the determination of the frequency of the responses. The average mean is the most used for measurement of central tendency summarizing the whole set of measurements. Standard deviation (SD) is to measure how far the measurements deviate from the mean.

Table 1 Descriptive Statistics

	Reduction Greenhouse Gas Emission	Reduction Waste	Reduction Water Consumption	Return on Assets
Mean	5.41907	19.63679	17.08465	7.070465
Median	4.74	12.92	14.19	5.06
Maximum	42.34	326.12	87.47	32.89
Minimum	-18.03	-53.16	-26.42	-5.89
Std. Dev.	5.457778	33.10832	16.72849	7.058293

According to the Table 1, the average mean value for the independent variable reduction waste is found to be 19.63 with the standard deviation of 33.10. This indicates that 19% of the chosen firms are reduced by their waste production within the studied time span 2013 to 2017. Also, this is presenting that firms are increasing the return on an assets by reducing waste production. Another independent variable reduction water consumption average mean value is found to be 17.08 with the standard deviation rate of 16.72. This table showing that 17% of selected firms are reduced their water consumption in the study period of 2013 to 2017. Therefore, the result also proved that firms are improving their return on assets by reducing water consumption. Average mean value for the independent variable reduction greenhouse gas emission rate is found to be 5.41 with a standard deviation of 5.45. However, 5% of reducing greenhouse gas emission has reflected that reducing the carbon emission improve the firms ROA. Moving to the dependable variable ROA average mean value 7.07 with the standard deviation rate of 7.05. However, the results show that selected firms ROA improve by reducing carbon emission, water consumption and waste reduction.

Table 2 Pearson Correlation Statistics

Relationship	Value	Significant	Result
Reduction Greenhouse Emission ←→ ROA	0.600	0.000	Positive significant
Reduction Waste ←→ ROA	0.143	0.035	Positive significant
Reduction Water Consumption ←→ ROA	0.728	0.000	Positive significant

According to Table 2, the reduction of greenhouse emission is positively correlated with ROA with a value of 0.6000. The relationship between the variables is significant with a value of 0.000 which is higher than the rule of thumb applied in this research (Ahmad, 2012).Hence, reduction of greenhouse emission is found to have a positive and significant relation with ROA. Moving to the next variable, reducing waste is positively correlated with ROA with a value of 0.143. The relationship between the variables is significant with the value of 0.000 which is higher than the rule of thumb applied in this research (Ahmad, 2012). Therefore, the reduction of waste is found to have a positive and significant relationship with ROA. Finally, for the last variable findings is, reducing water consumption is positively correlated with ROA with the value of 0.728. The relationship

between the variable is significant with the value of 0.000 which is higher than the rule of thumb applied in this research (Ahmad, 2012).

Table 3 Regression Analysis (Model Justification)

Model	R-Squared	Adjusted R-Squared	F-Statistic	Prob (F-Statistic)	Durbin-Watson Stat
1	0.714927	0.710874	176.3872	0.000	1.503185

Refers to Table 3, it visible that R square value is 0.71 which is indicating that 71% of the dependent variables can be predicted from the independent variables and the adjusted R square value is 0.710 which is indicating that the model is good fit model as the value is higher than the rule of thumb applied in this research 0.60 above. In addition, the average value of probability indicating a value of 0.000 is all the model is significant. The Durbin Watson value is 1.50 which is showing that there is no autocorrelation among the selected firm's data in this research as the value is within the range of 1.5 to 2.5.

Table 4 Regression Analysis

Variables	Coefficient	Std. Error	T-Statistic	Prob.
C	0.294172	0.406785	0.723163	0.4704
Reduction Greenhouse Gas Emission	0.613087	0.054837	11.18015	0.000
Reduction Waste	-0.061828	0.00891	-6.939225	0.000
Reduction Water Consumption	0.27323	0.01727	15.82121	0.000

Referring to Table 4, the beta coefficient value 0.613 for the reduction of greenhouse gas emission indicating that reducing greenhouse gas emission has a positive impact on financial performance. However, the significant value of 0.000 of reducing greenhouse gas emission shows that it has a positive and significant impact on financial performance (ROA). Moving to the next variable, reduce waste has the beta coefficient value of (0.618) and which showing that reducing waste has the negative impact on financial performance as well as the probability value of 0.000 is indicating that it has a negative and significant impact on financial performance. Moreover, in respect of reducing water consumption statistics, the beta coefficient value of 0.273 presenting that it has the positive impact on financial performance (ROA) and the probability value of 0.000 represent that the independent variable reduction water consumption has a positive and significant impact on the dependent variable financial performance.

Table 5 Summary Result of Hypothesis

Hypothesis	Significant Value (0.000-0.050)	Result
H1: Reduction greenhouse emission has positive and significant impact on ROA	0.000	Accepted
H2: Reduction waste has positive and significant impact on ROA	0.000	Accepted
H3: Reduction water consumption has a positive and significant impact on ROA	0.000	Accepted

The independent variable (reduction greenhouse emission) nominated aiming to examine the impact on the dependent variable financial performance measuring by ROA. However, the independent variable reduction greenhouse emission has reflected the positive and significant impact on ROA. The finding of the research is supporting and similar with the research such as Rokhmawati et al. (2017); Rokhmawati & Gunardi

(2017), who concluded with the similar finding as this research is concluding. On the other hand, this research findings establishing opposes the result to Prado-Lorenzo et al. (2012); Ganda & Milondzo (2018). Therefore, the hypothesis (H1) is accepted. As many of the research findings have discussed earlier and here few of the research findings also presents as, Sarkis (2006) conducted the research and found that reduction greenhouse emission has a negative and insignificant impact on ROA. Nevertheless, Prado-Lorenzo & Garcia-Sanchez (2010) found a negative relationship between GHG disclosure and return on equity while, Stanny & Ely (2008) found no relationship between carbon disclosure and investment, further suggesting that carbon disclosure does not drive a firm's financial performance. The results obtained show that there was a reduction in CO_2 emissions in the 2006–2007 period, and also in the 2007–2008 period. As regards the impact that the variation in CO_2 emissions has on ROE and ROA, CO_2 emission variation is a significant but negative variable only for ROA 2007 and for the rest of the years it is not statistically significant either for ROE or ROA (Alvarez, 2012). Hart & Ahuja (1996), using a multiple regression analysis with data for 1989-1992 from the investor responsibility research centre's corporate environmental profiles, found a positive relationship between total chemical substance emission reduction and the return on sales, return on assets (ROA), and return on equities over 1-2 years. However, in this research reduction greenhouse emission has reflected a significant and positive impact on financial performance (ROA). As mentioned earlier, since the firms adopted the various resources aiming to be environmentally friendly the ROA of the firms are increasing.

The independent variable reduction waste has been utilized to investigate the impact of it on financial performance. However, in this research reduction waste has revealed that it has a negative and significant impact on ROA. This research is concluding opposes the result of Konar & Cohen (1997), whereas similar to Ochiri et al. (2015). Therefore, the hypothesis (H2) is accepted. Ochiri et al. (2015) demonstrated that firms that generate less waste tend to produce a high corporate financial performance. From the results, there is a positive relationship between waste reduction targets and a firm's profitability, this implies that an increase in waste reduction targets leads to an increase in a firm's profitability. The study found that waste reduction strategy had a significant influence on the performance. Correlation analysis of the effect of waste reduction strategy on firm performance yielded a positive correlation, Regression analysis of waste reduction strategy on firm performance found that waste reduction strategy had 23.2% influence on firm financial performance (Ochiri et al., 2015). However, in this research findings reflected that reduce waste has a significant and negative impact on financial performance (ROA). Finally, it can be observed that since firms are willing and practicing the resources aiming to reduce waste production and being environmentally friendly it is visible firms has decreased the value of its ROA.

Moving to the last independent variable which is reducing water consumption selected to examine the impact on financial performance (ROA). However, the research finding has revealed that the independent variable reduction in water consumption has a positive and significant impact on ROA. This findings similar to Al-Zubari et al. (2018); Kordana et al. (2019) as revealed that reduction water consumption has a positive and significant impact on ROA and set opposes of the result of Bassey et al. (2013); Neeveditah et al. (2017). Therefore, this hypothesis (H3) is Accepted. Few of well-rounded study findings demonstrating aim to examine the effect. However, Bassey et al. (2013) directed the research and found that Water recycling, on the contrary, had a negative influence on EBITA/ROA and Positive relationship with ROE indicating loose in revenue (Bassey et al., 2013). Another study revealed, the obtained result shows that most favourable financial effects can be achieved by reducing water consumption (Kordana et al., 2019). Further study reveals that there is an insignificant relationship between water management practices and financial performance (Neeveditah et al., 2017). However, in this research findings reflected that reduce water consumption has a significant and positive impact on financial performance (ROA). Finally, it can be observed that since firms are willing and practicing

the resources aiming to reduce water consumption and being environmentally friendly it is visible firms has improved its ROA.

CONCLUSION

The multinational organisation should involve in very many environmental or sustainability activities as this kind of events improve and increase the customer base that will eventually escalate the number of profits, thence firm's financial performance also improves. In addition, environmental reporting or sustainability report increase the organisation's visibility and publicity. Through practicing the resources to be environmental friendly organisations are in a position to contribute to the community at large. Moreover, the positive relationship between environmental reporting and financial performance recommends that global companies' managers can use the environmental reporting to enhance the customer trust (stakeholder's positive attention), lessen reputational risks, and as such create long term shareholder value. Furthermore, except few of the countries and union CSR or environmental reporting is optional in the world, thus the big firm's chief executives and Boards of Directors required to be a concern and awareness of the strategic significance, that global firms might realize from responsibility in corporate social responsibility activities.

Others aspects that could be studied in the future in the same field include stakeholders perception of environmental reporting, the relationship between environmental reporting and profitability and the link between environmental reporting and strategy, case study on whether Environmental is an outlet for corruption, where managers use funds for their personal gain in the multinationals companies. This could portray the ancient, contemporary and ensuring financial performance involving both environmental reporting and profitability. Further studies on the impact of Environmental can be responsible in other fields such as farming, banks, telecommunication companies and manufacturing industry. This may bring out the Environmental reporting impacts that will support or argue.

In terms of research limitation, during the research, a number of limitations may have influenced the research findings. Such as, the research adopted the secondary data collection method which can be undependable, In the case of companies planned for the other purposes like pleasing the shareholders and the government that will direct the top listed companies (those are top-ranked in published the environmental report with best outcomes) to modify their financial or provide the wrong information to the researchers. This could be done in response to satisfying external stakeholders and shareholders that the global best CSR reputed companies are performing well. Determining how financial performance and environmental report are related is complex due to the lack of consensus of measurement approaches as it associates to environmental reporting. Subjective indicators are used during the data analysis process that is blurred exactly how these indicators give accurate results.

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