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Impact of corporate social responsibility on firm performance in the United Kingdom: A case study of manufacturing companies

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Abstract

Based on the stakeholder theory, firms with CSR focus must balance the interests of multiple stakeholders, and therefore, managers must allocate resources to satisfy both investing and non-investing stakeholders' interests. Using measures of performance risk taking and a sample of 40 UK firms during 2012 to 2022, we found out that stronger CSR performance is associated with companies' determination to contribute to society at all levels. We examine the mechanism through which CSR has an impact on firm value and find a positive indirect impact of CSR on firm value. CSR performance is positively associated with firm value because CSR makes the shareholders feel involved. The findings of this study hold potential implications for businesses, policymakers, and academics alike, offering insights into how CSR practices can be tailored and optimized to foster positive outcomes in diverse industrial contexts. To address these inquiries, we conducted a comprehensive analysis that encompasses various industries and employed the quantitative methodology. The study delves into the multifaceted aspects of CSR, examining its effects on financial performance, reputation, stakeholder relations, and overall business efficiency. These findings reveal a significant and positive connection between CSR practices and company performance. Companies that actively engage in CSR initiatives tend to exhibit improved financial performance, enhanced reputation, and stronger stakeholder engagement. Moreover, our research demonstrates that CSR contributes positively to business efficiency, fostering sustainable and responsible business practices. The implications of this study extend to businesses, policymakers, and academics, highlighting the strategic importance of CSR as a driver of success and efficiency in contemporary business environments. Our research underscores the need for businesses to integrate CSR into their core strategies and operations, not only for ethical reasons but also to enhance their overall performance and efficiency.

Keywords: Stakeholders; Corporate social responsibility; Performance and efficiency; Policymakers; Financial performance

1. Introduction

1.1. Background to the study

The UK provides an interesting example for research into the meaning and practice of corporate social responsibility (CSR) for several reasons. With an average population of 67.7 million or more, it is the most populous country in the world. Companies around the world are struggling with the new challenge of meeting the needs of today's generation without compromising the ability of future generations to meet their own needs. Organizations are called upon to take responsibility for the impact of their activities on society and the environment. They must also demonstrate that they integrate social and environmental aspects into their business activities and interactions with stakeholders. A company that proves to be socially responsible cannot ignore the problems of the environment in which it operates to respond to the need to study their impact on the company's profitability in the country.

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Implementing CSR can improve a company's performance as its reputation and competitiveness increase. Much research has been conducted into the impact of CSR on the financial results of companies. However, there are still discrepancies in the search results. Although it is known that Corporate Social Responsibility (CSR) has existed for some time, “CSR analysis is still in its infancy and the theoretical framework, measurement methods and empirical methods are not yet defined” (Moneva et al. Therefore, there are still many differences in CSR reporting between different companies. Stakeholders are now putting pressure on companies to act in an environmentally and socially responsible manner. According to the World Commission on Environment and Development (Moneva et al., 2017), "Globalization, environmental disasters and large-scale industrial changes have created new concerns and expectations among citizens, consumers, government agencies and investors about the impact of economic activities on sustainable development." before.

Industry also helps the economy thrive by efficiently allocating and using economic resources, reducing the unemployment rate through job allocation, encouraging investment, and allocating available resources for consumption. Scholars dealing with several areas of economics and strategic management have paid exceptional attention to the issue of the financial performance of a business organization. An organization's performance can be viewed in a number of ways, including financial performance, product market performance, and operational performance. CSR has been developed in its four dimensions, such as responsibility to employees, customers, communities and the environment, and analysed its impact on the company's reputation and the achievement of sustainable business results. The results showed that the effective implementation of various CSR practices improves business processes, increases production quality and gains the support of stakeholders such as customers, employees, suppliers and government.

Overall, it's clear that some companies have been successful so far, while others have had performance issues. We believe that certain factors, called business attributes, can influence this scenario. When properly identified, structured, investigated, evaluated and addressed, these factors can improve organizational performance. In addition, it is crucial for companies to manage liquidity and profitability in day-to-day operations. Liquidity is a necessary condition for a company's continuity, which means it must be able to repay its short-term debt and maintain a stable cash flow. Collett and Hrasky (2015) found that attention to cash flow as a sign of current financial health is necessary for a company to operate effectively and efficiently.

Corporate Social Responsibility has grown exponentially in the last decades and is gradually becoming a global trend when majority of companies quoted and unquoted issue Corporate Social Responsibility (CSR) reports. These companies engage in CSR activities on host communities to build a good reputation in other to boost their corporate linage. An increasing number of users of financial statements such as the shareholders, analysts and regulators as a whole request for companies’ responsibility and accountability of a dynamic set of CSR issues. In addition, the concept of Corporate Social Responsibility (CSR) asserts that corporations have an obligation to consider the interests of its users as well as the ecological “footprint” in all aspects of their operations Babalola (2013). As a result of this, there is also an increasing demand for transparency and developing expectations that corporations measure, report in other to continuously improve their social, environmental, and economic performance.

In today's rapidly changing business landscape, companies are increasingly using CSR (Corporate Social Responsibility) initiatives to meet their ethical and social responsibilities. Therefore, it is necessary to examine the possible link between CSR and company performance. In addition, it is important to understand the multiple impacts of CSR initiatives on an organization's overall performance by identifying the underlying factors that contribute to this impact. The aim of this study is to answer these critical questions and provide valuable insights into the complex relationship between CSR practices and business performance, so companies can make informed decisions about their CSR strategies.
The research objective of this study is to examine in depth the relationship between CSR practices and company performance in different industrial sectors. Through the analysis of quantitative analysis and its exploration, this study aims to discover the different ways in which CSR initiatives influence different dimensions of company performance, such as: B. Financial performance, reputation improvement, stakeholder engagement and “innovation”. Other specific objective is to determine if there is there any relationship between corporate social responsibilities and firms' efficiency. The study examined 40 randomly and carefully selected manufacturing companies from companies listed on the London Stock Exchange over a period of 11 years (2012-2022). The study is limited to a selection of manufacturing companies listed on the London Stock Exchange. The period under consideration covers ten consecutive years, for the period 2012-2022.

CSR on performance has been carried out by various researchers but only few works has been done on CSR on firms' performance in relation to its efficiency. This research is significant because it addresses a pressing question at the

intersection of business, ethics, and sustainability. Its findings can have practical implications for businesses and influence how they approach CSR, by exploring the relationship between CSR and company performance and identifying the factors influencing this relationship, the research contributes to the advancement of sustainable and socially responsible business practices, benefiting both businesses and society.

2. Theoretical Perspectives on Corporate Social Responsibility and Board Oversight

There is no consensus on the definition of the concept of Corporate Social Responsibility (CSR). Environmental protection, provision of social services, donations of health services to organizations, donations to charitable causes to accredited institutions. Corporate Social Responsibility refers to the strategies that companies employ to conduct their business in an ethical, socially respectful and beneficial manner for the development of the community. It does this by considering the interests of society by taking responsibility for the impact of one's actions on customers, suppliers, employees, shareholders, communities and stakeholders, and the environment, (Maimunah I 2019).

However, external assurance can play an important role in increasing the trust and transparency of companies' CSR information. Since agency theory suggests that governance mechanisms should oversee corporate governance, this study focuses on the three most common internal mechanisms, namely board independence, gender diversity and the presence of a CSR committee. These mechanisms increase the effectiveness of boards of directors and are closely related to the power and strength of board oversight. Likewise, analysts and institutional investors are the main external governance mechanisms driving corporate CSR behaviour (Dyck et al., 2019; García-Sánchez, Hussain et al., 2021).

2.1. HOW CSR ACTIVITIES ARE CARIED OUT

Unless an organization recognizes itself as a corporate citizen with duties and responsibilities to the host communities, it will never be able to recognize the need to nurture social relationships. The idea of CSR relates to how an organization can manage its business processes in such a way that it has an overall positive impact on society. It can also mean how organizations behave ethically and contribute to the economic development of society by improving the quality of life of the local community and society. CSR is a set of standards that a company adheres to have a positive impact on society. CSR includes the concept that organizations should meet societal expectations.

Organizational performance refers to the extent to which a company can achieve the goals it has set. Division of the company Richard (2019).The aim is to find differences in the basic principles of CSR implementation in subsidiaries of foreign multinational companies, both being similar and different depending on the country and business context (Pawliczek, 2015).The level of socially responsible communication of international companies is aligned with the level of communication in the country where they operate (Tetrevova et al., 2019). The results of the study (Tetrevova et al., 2019) show that the intensity of communication and the structure of socially responsible activities are influenced by the country in which the multinational corporation operates. There is empirical evidence that companies' commitment to Corporate Social Responsibility (CSR) has a direct positive impact on customer retention, employee performance and ultimately shareholder value (Titko et al., 2021). Corporate Social Responsibility (CSR) is increasingly recognized not only as a key to mitigating risk, but also as a key element in creating corporate value and strengthening entrepreneurial activities 75% of Czechs are willing to pay a premium for products manufactured according to CSR principles. In Slovakia, more than 50% of companies report that they have implemented CSR activities and provided information about these activities to their stakeholders (Nadanyiova et al., 2021).

Therefore, companies of different sizes also have different levels of pressure on the implementation of activities and their reporting (European Commission, 2023). In this context, we would like to draw attention to the need to reconsider the motivations for the implementation of CSR activities (Grimstad et al., 2020) by individual companies and the availability of information about the costs incurred for these activities. Therefore, at a time of increasing pressure to report on CSR activities, we recommend that companies adapt their approach to the main topic and transparency of CSR activities (Kim and Lee, 2018), which will have a greater impact on the content of the next should CSR activity.

For example, Business for Social Responsibility (BSR) defines corporate social responsibility as a company's conduct in a way that meets or exceeds society's ethical, legal, business and public expectations of companies. Rather, it is a comprehensive set of policies, practices and programs that are integrated into all business operations and decision-making processes and are endorsed and rewarded by senior management. Today, CSR is a vision that can help improve an organization's overall financial performance by proposing different avenues for decision-making to the organization's management and shareholders. The implementation of CSR increases the sense of attention to social and environmental relationships among both stakeholders and shareholders. Therefore, every company has a different way of implementing CSR in its business practices.

2.2. Conceptual framework

The conceptual framework of Corporate Social Responsibility (CSR) serves as a platform for understanding and implementing ethical business practices in organizations. It provides a theoretical framework and framework for addressing CSR efforts and how to integrate them into an organization's strategy and operations (Roszkowska-Menkes, M. T. 2018).

- Stakeholder orientation: This component recognizes that companies have a duty to consider the needs and interests of all parties, including shareholders, employees, customers, communities and suppliers. It is about understanding the goals and concerns of different stakeholders and taking them into account when making decisions.
- Sustainability: CSR emphasizes the long-term sustainability of business activities, focusing on their environmental, social and economic aspects. This means delivering value to all stakeholders while reducing environmental impact, promoting social well-being and ensuring economic sustainability.
- Ethical behaviour: CSR promotes ethical behaviour in all aspects of the organization's operations. This includes being honest, morally upright and just, and respecting the rights of others. That means implementing sustainable practices, reducing waste and emissions, saving money and promoting environmental protection.
- Philanthropy and Community Involvement: CSR encourages corporate engagement in the communities in which they operate. This may include donating money, supplies, or staff time to charities, community development initiatives, and educational and health programs.
- Environmental Governance: Businesses are under pressure to reduce their environmental footprint and take proactive action to combat climate change. That means implementing sustainable practices, reducing waste and emissions, saving money and promoting environmental protection.
- Corporate Governance: Effective CSR requires good corporate governance practices. This requires transparent decision-making, accountability and effective management control.
- Integration into the business plan: Instead of considering CSR as a separate effort, it should be integrated into the overall business plan of the company. This includes aligning CSR goals with core business goals, identifying areas where social and environmental issues and business opportunities intersect, and using CSR as a catalyst for innovation and competitive advantage.
- Reporting and transparency: Companies should inform stakeholders transparently about their CSR initiatives and developments. This includes regular reporting on social, environmental and management performance, as well as disclosure of relevant metrics and targets, and discussions with stakeholders to promote trust and accountability. While this framework provides a general perspective, it is important to remember that individual CSR strategies may vary by industry, organizational size, location and stakeholder expectations.

2.3. Theoretical framework

This study cannot be efficiently carried out without being backed up with effective theories to be used in backing up the research. Therefore, it is anchored by some theories which are;

2.3.1. The Stakeholder's Theory

Stakeholder theory was originally developed as a theory or perspective of strategic management (Freeman, 1984). Later work, however, remained largely distant from developments in strategy, as policy researchers became increasingly concerned with grounding their work on economic theories and concepts, while stakeholder theorists became increasingly involved based on their work on economic theories and concepts (Legal Basis Theory) (Dmytriyev et al., 2021).

However, the field of strategy has experienced a “stakeholder turn” in the last 10–15 years and more and more traditional strategy researchers are adopting the stakeholder perspective Bridoux, F. and Stoelhorst, J.W.(2022) reflect on the stakeholder shift and interpret it as an attempt to develop a new kind of strategy theory. The analysis did it in three steps. First, it examines how the initially different paths of stakeholder theory and strategic management science converge again. It then examines the major streams of strategic management science that have developed stakeholder theory over the past decade. Finally, it examines how the convergence of stakeholder theory and strategy theory can help strategy and organizational researchers to develop “a clear picture of stakeholder organizations and their shared role in value creation”. It discusses how what McGahan (2021) calls the "new stakeholder theory" (NST) implies the promise of a new breed of strategy theory: the theory of value creation and appropriation, which deals explicitly and simultaneously with economic and moral questions deals.

2.3.2. The social theory

According to the social contract theory, companies should act responsibly not only because it is in their business interests to do so, but also because society expects them to do so. There are many reasons why some beneficiaries might be interested in a particular company's CSR activities. Some investors want companies that perform well on CSR, while others fear that companies that consider the social consequences of their actions will be targeted by regulators and activist groups and will hurt their profitability in the future (Maxwell et al.2000). Since there are numerous sources of information on CSR programs, company reporting, evaluations by independent bodies and media reports, the winner can assess the level of commitment of the companies in the field of CSR in advance.

Corporate social responsibility is also based on the theory of regulatory responsibility, which fundamentally assumes that existing social law forms the basis of the social contract between business and society. In the absence of explicit and clear requirements for the company to act in a socially responsible manner, the articles of association become the basis of the relationship. Continued focus will lead to practices that facilitate sustainability, such as B. improved corporate responsibility and stakeholder democracy, Hess (2018).

2.4. Empirical review

In this research paper, it is important to analyse some empirical studies that have been carried out. Several premises point to a positive and significant impact of CSR activities on financial results (Vishwanathan et al. 2020. Plewnia and Guenther 2017, Hou et al. 2016, Lu and Taylor 2016, Friede et al. 2015. Wang et al.2016; Quazi and Richardson 2012; Allouche and Laroche 2005; Orlitzky et al. 2003; Froman 1997). Specifically, Busch and Friede (2018a) examined 25 previous meta-analyses and found a two-way link between CSR and financial performance. According to Hou et al. (2016), the impact is greatest when environmental performance and operational efficiency are considered.

However, a recent review of 437 included studies found no significant association between CSR and financial performance (Huang et al. 2020). Chen, Y.C., Hung, M.and Wang, Y. (2018) analysed the benefits of a 2008 Chinese mandate that required companies to disclose their CSR practices using a difference-in-difference model. Although the mandate does not place an obligation on companies to make CSR expenditures, it has been found that companies producing mandatory CSR reports suffer a drop in profitability because of the mandate. In addition, the cities most affected by the reporting requirement are seeing a decrease in industrial effluent and SO2 emissions. These results suggest that mandatory CSR disclosure is changing corporate behaviour and generating positive externalities to the detriment of shareholders.

Fallah Shayan et al. (2022) performed confirmatory factor analysis of key variables such as 'corporate social responsibility', 'green innovations' and 'green dynamic opportunities' using AMOS software to assess structural validity, discriminant validity and convergent validity. The results show the high efficiency of the model. The internal consistency of the variables is represented by composite reliability (CR) scores, all of which are greater than 0.60, indicating that the variables are homogeneous, internally consistent, and reliable.

Zaman, R., Jain, T., Samara, G. & Jamali, D.(2022). A breakthrough at the CG-CSR interface is a major area of interest for business and ethics journals (list available on request) as well as CG journals. They found an increase in CSR and CG associations in accounting and financial journals (21%) in the post-global financial crisis period. The authors concluded that this growing interest is due both to the growing body of post-GFC legislation on JG and CSR affecting accounting and finance1 and to the growing acceptance that ethical issues have serious implications for the world of finance can.

Tiep Le, T., Ngo, H. Q. and Aureliano-Silva, L. (2023) found significant and positive associations between model variables such as CSR and company performance (FP), CSR and BT, CSR and BL, and the mediation effect of BT and BL between CSR and company performance.

Mariani, M. M., Al-Sultan, K., & De Massis, A. (2023) used the bibliometric mapping, and conducted a systematic literature review (SLR) on corporate social responsibility (CSR) in family business drawing on the Web of Science (WOS) and Scopus databases. The bibliographic coupling conducted suggests that family involvement, corporate governance, and sustainability are the most frequently studied topics. Furthermore, through their SLR, the findings systematized the studies into an interpretative framework, identifying the drivers and outcomes of CSR practices, processes, and strategies in family business. The study reveals and organizes the state-of-the-art of CSR research in family business, outlines important theoretical implications and develops a future research agenda.

2.4.1. Societal expectations from multi-national corporations in terms of corporate social responsibility

The Industrial Revolution that took place in Europe between 1760 and 1850 changed the way of life from an agricultural economy to an industrial economy. Physical technology has played a crucial role in improving labour productivity and massively intensifying industrial production and trade. The enormous human and social challenges that the industrial revolution has posed for everyone and the fact that while industrial development has progressed on many fronts, negative trends persist in many countries. At the end of the 19th century, large organizations grew and gained great power. In addition, many of its founders and owners followed a philosophy known as "Social Darwinism" (the principles of natural selection and survival of the fittest). This philosophy did not allow for undue concern about the impact of companies on employees, the community or society. While many prominent industrialists rank among the greatest philanthropists of all time, their donations were made as individuals and not as representatives of their company Barnett (2011).

However, the need for production and the absence of labour laws made it possible for employers to exploit workers. In addition, the factories of the time were coal-fired, which caused environmental pollution and health problems for the people who lived around these factories. Currently this vision of CSR is present in most countries of the world. The CSR concept is a new idea, but not a new practice. This can also be traced back to examples such as the Quakers of the 17th and 18th centuries, whose business philosophy was not primarily based on maximizing profits but on the need to create value for society. not separated. Ameachi, Adi, and Ogbechie (2016).

Despite the fact there have been so much research on CSR and its performance, this research investigates the relationship between CSR and company performance and understanding how CSR initiatives affect organizations are significant research endeavors with implications for economic, environmental, ethical, and strategic aspects of business. The findings can be used for informed decision-making in the corporate world, government policymakers, and investors, ultimately contributing to more responsible and sustainable business practices.

3. Methodology

This study investigates the connection between the top 40 manufacturing companies in the UK's financial success and their social responsibility. Their annual reports that were posted to FAME were the source of the secondary data used in this study. Eleven years financial data were chosen since it takes time for firms' social obligations to their stakeholders to affect their financial performance. These firms are usually the companies that show the greatest commitment to CSR because their visibility means that they are subject to strong supervision by different stakeholders. The relevance that social and environmental risks have acquired today means that the information that these companies disclose about their projects and the impact of their activity is especially valuable to all stakeholders. In this sense, purchasing a service to verify its sustainability reports gives greater credibility to what the company says and does in relation to sustainability issues (García-Sánchez, Raimo, & Vitolla, 2021).

This study adds to previous work on corporate social responsibility by authors like Cheruiyot (2010) Kim et al. (2012) Javed, Saeed, Lodhi and Malik (2013) Dyck et al., 2019 Grimstad et al., 2020 (Hinčica et al., 2021, Nadanyiova et al., 2021 and García-Sánchez, Raimo, & Vitolla, 2021 among others, as it investigates additional aspects of how corporate social responsibility affects firms' profitability. It will also be helpful to managers in making decisions.

The statistical assumptions of the OLS regression model were checked and corrected by using EViews. Specifically, the normality test is employed to determine if the series of a variable or set of variables is well-modeled by a normal distribution and to determine the propensity of a random variable originating from the data set to be normally distributed. We used a natural logarithm to correct for normality. Regarding autocorrelation, the models were tested for the presence of autocorrelation using the Pesaran CD test for cross-sectional dependence. The CD test is a Lagrange multiplier (LM) test introduced by Breusch and Pagan (2019) and tests for the correlation of the residual tests. The presence of autocorrelation in the model violates one of the assumptions of the classical linear regression model. Additionally, the models were also tested to check for homoscedasticity, which implies a condition in which the changes of a variable are equal across the range of values of a second variable that predicts it. The Generalized Linear Model is employed and is conducted to check if there is any form of heteroscedasticity among the residuals

This study corrected the violation of autocorrelation and homoscedasticity by using standard errors of standardized regression. Moreover, linearity is also tested to check whether the dependent variable has a linear or curved relationship with the dependent variables. The study employed the Auxiliary regression for the specification test. The Ramsey RESET test ascertains if the non-linear combinations of the independent variables' fitted values help explain the dependent variable.

3.1. Data

This study uses a sample of 40 financial companies listed on the London Stock Exchange (LSE) between 2012 and 2022 for the empirical analysis. The FAME database provided the financial information used for this research and Eviews 12 produced this balanced panel dataset. The samples were carefully selected and any LSE data set companies lacking all their information were not considered. There are 440 effective firm-year observations in the final sample.

3.2. Variables

Out of 1300 publicly traded companies, the top 40 United Kingdom companies for CSR were chosen based on their actions in the areas of corporate governance, corporate commitment, social participation, and environmental protection. This research uses the variables, Corporate Social Responsibilities (CSR), Efficiency (EFF), Performance (PERF), Current Ratio (CR), Solvency Ratio Asset Based (SARB), Returns On Capital Employes (ROCE) were used as factors to assess how well businesses were performing financially.

3.3. Sample selection

To measure the relationship between CSR and firms' performance in the UK, according to this study, 40 companies in the manufacturing sector of the listed companies on London stock exchange were selected for 11 years which includes from 2012 to 2022. To be included in the sample, firms must have their financial information available on the London Stock Market and FAME database.

This research focuses on voluntary and separate CSR disclosures. The CSR reports was obtained from the FAME database. The reports highlight corporate social responsibilities in relation to firms a performance and reflect the extent to which companies carry out CSR initiatives.

3.4. Statistical analysis

In light of the foregoing, this study considers the adoption of the model used by Ho Ngoc & Liafisu 2019 which is stated below;

CSR = Log of CSR

PERF= ROCE

Where this study modifies the model stated above for this research work as;

ROCE = f (CSR, CR, SARB)

Eff = f (CSR, CR, SARB)

Where

CSR Corporate Social Responsibility

PERF= Performance

EFF Efficiency

CR Current Ratio

SARB Solvency Ratio Asset Based

Which its economic model is written as;

$ROCE_{it}$ $\alpha + CSR_{it} + CR_{it} + SARB_{it} + \mu_{it}$

Eff_{it} $\alpha + CSR_{it} + CR_{it} + SARB_{it} + \mu_{it}$

Where;

α Constant variable

μ Error term

3.5. Model specification

The models were designed with the aim of examining the impacts of CSR on firms' performance among the selected internal and external governance mechanisms in companies' decision to purchase an external assurance service for a CSR report.

Table 1 Variables explanation

VARIABLES	MEASURES	APRIORI SIGN
CSR Corporate Social Responsibility	Amount spent on CSR activities for a given year which is calculated as Log of CSR	Positive
PERF Performance	It is measured with ROCE. It is calculated as Profit ÷ Capital Employed x 100	Positive
EFF Efficiency	It is measures the efficiency of the firm using the assets turnover.	positive

3.6. Method of data analysis

This study employs a time series and cross-sectional data to examine the relationship between CSR and performance of manufacturing companies making use of its annual reports released by the London Stock Exchange of which data used was obtained from 40 companies for ten consecutive years which is between the years of 2012 to 2022. The panel data analysis method was adopted for this work because this research involves more than one company to also estimate the unknown parameters in other to minimize the differences between the observed responses. EViews 12 statistical package was used to analyse the regression.

4. Results and discussions

4.1. Descriptive results

Table 2 Descriptive statistics for 40 manufacturing companies listed on London Stock Exchange from FAME database from 2012 and 2022.

	ROCE	EFF	CSR	CR	SARB
Mean	12.41923	1.522141	6.063485	1.630046	41.41886
Median	8.890000	1.040000	6.032469	1.220000	42.96500
Maximum	128.5600	17.44000	8.726874	36.31000	100.0000
Minimum	-31.63000	0.040000	3.093422	0.180000	-20.54000
Std. Dev.	15.94792	1.786486	0.887781	2.219846	20.24991
Skewness	1.882937	4.433154	-0.013988	11.62839	0.129695
Kurtosis	11.53720	30.36590	3.264121	166.5971	3.382576
Jarque-Bera	1596.203	15136.42	1.181590	497176.3	3.916857
Probability	0.000000	0.000000	0.553887	0.000000	0.141080
Sum	5464.460	668.2200	2437.521	712.3300	18224.30
Sum Sq. Dev.	111653.5	1397.891	316.0502	2148.484	180015.8
Observations	440	439	402	437	440

Abbreviations: ROCE, Return on Capital Employed; EFF, Efficiency (Asset turnover ratio); CR, Current Ratio; SARB, Solvency Ratio Asset Based.

Table 2. Presents descriptive statistics for service-based companies listed on FAME database. Table 2, ROCE, EFF, CSR, CR, SARB are positively skewed, implying a high tendency to have extreme positive values for all the variables. Thus,

the distribution of TDE has a long tail to the right. However, even though CSR was negatively skewed, which suggests that there are disturbances in the trend of the variables. Thus, the distributions of the variables have a long tail to the left. Furthermore, all CSR variables are platykurtic with a kurtosis value less than 3, implying that the distributions of the variables are flat relative to the normal distribution. The distribution of TDE is leptokurtic since its kurtosis value is greater than 3, implying that the distribution of the variable is peaked relative to the normal distribution.

4.2. Correlation analysis

This section deals with the correlation analysis result of the explained variable proxied by ROCE, CSR, CR, SARB of the study. The results obtained from the correlation matrix test so as to analysis the correlation between the variables.

Table 3 presents correlation analysis results for manufacturing firms listed on LSE. The correlation coefficient of the relationship between the CSR and financial performance variables for the manufacturing companies. Table 3 reports that financial performance (ROCE) has a positive and significant relationship with all the CSR variables, implying that CSR and financial performance move in the same direction and directly. Furthermore, the Efficiency variable exhibited a negative and insignificant relationship with CSR, Current Ratio (CR)and Solvency ratio asset based (SARB). However, CSR has a positive but insignificant relationship with CR and SARB.

Meanwhile, CR also exhibits a positive but insignificant relationship with SARB.

Table 3 Correlation matrix for 40 manufacturing companies listed on London Stock Exchange from FAME database from 2012 and 2022

	ROCE	**EFF**	**CSR**	**CR**	**SARB**
ROCE	1.000000	0.668810	0.089125	0.114411	0.000597
EFF	0.668810	1.000000	-0.140458	-0.116833	-0.259527
CSR	0.089125	-0.140458	1.000000	0.159269	0.319478
CR	0.114411	-0.116833	0.159269	1.000000	0.611570
SARB	0.000597	-0.259527	0.319478	0.611570	1.000000

4.3. Regression analysis

This section deals with the regression result of the explained variable proxied by ROCE, CSR, CR, SARB of the study. The results obtained from the fixed and random effect models are presented first before the Hausman specification test to decide the appropriate model from the two options possible.

4.4. fixed effect (ROCE)

Table 4 Fixed Effect Result

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-58.29501	9.593237	-6.076678	0.0000
CSR	13.28783	1.552705	8.557861	0.0000
CR	0.062266	0.298978	0.208261	0.8351
SARB	-0.193966	0.061371	-3.160558	0.0017
Root MSE	8.842877	R-squared	0.631996	
Mean dependent var	14.18622	Adjusted R-squared	0.588580	
S.D. dependent var	14.59527	S.E. of regression	9.361707	
Akaike info criterion	7.412640	Sum squared resid	31200.39	
Schwarz criterion	7.842529	Log likelihood	-1435.822	
Hannan-Quinn criter.	7.582899	F-statistic	14.55668	

Durbin-Watson stat	1.024030	Prob(F-statistic)	0.000000	

Source: Author's computation using Eviews, (2023).

Fixed ANALYSIS

Dependent Variable: ROCE
Method: Panel Least Squares
Sample: 2012 2022
Periods included: 11
Cross-sections included: 40

From Table 4 above the model was linearly expressed using the equation

ROCEit = β0 + β1CSRit+ β2CRit + β3SARBit +μit

Fitting the values into the model, we have the following:

Examining the above equation model using a cross-sectional fixed method, the result of the regression model is linearly expressed as follows:

ROCE= -58.29 + 13.29CSR +0.06CR -0.19SARB

Standard error (9.59) (1.55) (0.29) (0.06).

From the regression result (table 4), all the variables are statistically significant, except for CR (according to the p-value of the regression) at a 5% level of significance.

From the coefficient, the constant, in the model for the value of a is which means holding all the variables (CSR, CR and SARB) constant, EPS equals -58.29 and EPS will vary negatively up to the tune of 58.29 when all variables are held constant. From the equation, the β_1 co-efficient is 13.29, which reveals that a positive relationship exists. β_2 co-efficient is 0.06 which reveals that an insignificantly positive relationship exists. β_3 co-efficient is –0.19 which reveals that a negative relationship exists.

Under the T- stat, to find if the variables are statistically significant for each variable, we need to find $t_{(\alpha/2,\ n-k)}$ and we tend to reject the null hypothesis.

If only the t-stat > t (0.05/2, n-k)

To calculate for the t (0.05/2, n-k) = t(0.05/2, 399-3)

t (0.025, 396) =10.000

Assume βs zero for all slopes, then, the t-tab of 10.000 would be used to decide for each variable.

Under the F-stat, it is used to test the joint hypothesis. H_0 is rejected if $F\text{-stat}_{cal} > F_{tab}$ ($F\alpha_{(k-1,\ n-k)}$ but if not, we do not reject the null hypothesis. In our regression, F- stat_{cal} is 14.55668 and F-tab is $F_{0.05(3-1,\ 399-3)}$ when α =5%(0.05), k=3 (number of the parameter), and n=399 (number of observations).

$F_{0.05(2,\ 396)}$

Using the ƒ distribution table the result derived is 3.02. Thus, since the $F\text{-stat}_{cal} > F_{0.05(2,\ 396)}$ (14.56 > 3.02) we tend to reject the null hypothesis and conclude the ROCE depend on CSR, CR and SARB for the selected manufacturing companies and given sample since the regression explains a significant amount of the model.

Using the probability value of F-stat (P-value (F-stat)) to test for the joint hypothesis, which states that reject the null hypothesis if the P-value (F-stat) < level of significance. In our regression result P-value is 0.00 which is less than the 5% level of significance (0.00 < 0.05), we reject the null hypothesis. It indicates that there is a joint effect on the dependent variables

The R-squared gives the statistical information about the goodness of fit of information. An R-squared of 1 indicates the regression is perfect in our regression result; the R-squared is 0.631996, which indicates that about 63.19% of variation in the dependent variable is explained by the explanatory variable. This indicates the remaining 36.81% (100% - 63.19%) of the variables are attributable to other factors not considered in the model or random variability

Adjusted R-squared is simply the modification of R-squared and it adjusts the explanatory variable in terms of the model, which tends to increase only if variables improve the model more than expected. The adjusted R-squared is 0.6319(63.19%) as depicted in Table 4.

The Durbin-Watson test is used to test autocorrelation. It tests for both the upper and lower of the observation. In the result, the Durbin-Watson is 1.0240, which is lower to the higher and lower DW of 5% level of significance, the values of the lower and upper are 1.408 and 1.767 respectively. This indicates that there is no presence of autocorrelation in the variables used for the study because it does not fall between the upper and lower value of the DW table. The study, therefore, concludes it's appropriate for decision-making.

4.4.1. RANDOM EFFECT (ROCE)

Table 5 Random Effect Regression Result

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-34.01898	7.879300	-4.317513	0.0000
CSR	9.018810	1.268455	7.110076	0.0000
CR	-0.011438	0.295068	-0.038763	0.9691
SARB	-0.166810	0.053950	-3.091957	0.0021
Weighted statictics				
Root MSE	9.568464	R-squared	0.119786	
Mean dependent var	3.687722	Adjusted R-squared	0.113101	
S.D. dependent var	10.19179	S.E. of regression	9.616790	
Sum squared resid	36530.65	F-statistic	17.91821	
Durbin-Watson stat	0.919356	Prob(F-statistic)	0.000000	
Effects specifications S.D. Rho				
Cross-section random	10.79461	0.5707		
Idiosyncratic random	9.361707	0.4293		
Weighted statistics				
Root MSE	9.568464	R-squared		0.119786
Mean dependent var	3.687722	Adjusted R-squared		0.113101
S.D. dependent var	10.19179	S.E. of regression		9.616790
Sum squared resid	36530.65	F-statistic		17.91821
Durbin-Watson stat	0.919356	Prob(F-statistic)		0.000000
Unweighted statistics				
R-squared	-0.173332	Mean dependent var	14.18622	
Sum squared resid	99478.32	Durbin-Watson stat	0.337608	

Source: Author's computation, (2023).

Dependent Variable: ROCE
Method: Panel EGLS (Cross-section random effects)
Sample: 2012 2022
Periods included: 11
Cross-sections included: 40
Total panel (unbalanced) observations: 399
Swamy and Arora estimator of component variances

From Table 5 above the model was linearly expressed using the equation

$ROCEit = \beta 0 + \beta 1CSRit + \beta 2CRit + \beta 3SARBit + \mu it$

Fitting the values into the model, we have the following:

Examining the above equation model using a cross-sectional fixed method, the result of the regression model is linearly expressed as follows:

ROCE= -34.01 + 9.02CSR -0.01CR -0.17SARB

Standard error (7.88) (1.27) (0.29) (0.05)

From the regression result (table 5), all the variables are statistically significant, except for CR (according to the p-value of the regression) at a 5% level of significance.

From the coefficient, the constant, in the model for the value of a is which means holding all the variables (CSR, CR and SARB) constant, ROCE equals -34.01 and ROCE will vary negatively up to the tune of 34.01 when all variables are held constant. From the equation, the β_1 co-efficient is 9.02 which reveals that a positive relationship exists. β_2 co-efficient is -0.01 which reveals that a negative relationship exists. β_3 co-efficient is –0.17 which reveals that a negative relationship exists.

Under the T- stat, to find if the variables are statistically significant for each variable, we need to find $t_{(\alpha/2, n-k)}$ and we tend to reject the null hypothesis.

If only the t-stat > t (0.05/2, n-k)

To calculate for the t (0.05/2, n-k) = t(0.05/2, 399-3)

t (0.025, 396) =10.000

Assume βs zero for all slopes, then, the t-tab of 10.000 would be used to decide for each variable.

Under the F-stat, it is used to test the joint hypothesis. H_0 is rejected if $F\text{-stat}_{cal} > F_{tab}$ ($F\alpha_{(k-1, n-k)}$ but if not, we do not reject the null hypothesis. In our regression, $F\text{- stat}_{cal}$ is 17.91821 and F-tab is $F_{0.05(3-1, 399-3)}$ when α =5%(0.05), k=3 (number of the parameter), and n=399 (number of observations).

$F_{0.05(2, 396)}$

Using the ƒ distribution table the result derived is 3.02.

Thus, since the $F\text{-stat}_{cal} > F_{0.05(2, 396)}$ (17.92 > 3.02) we tend to reject the null hypothesis and conclude the ROCE depend on CSR, CR and SARB for the selected manufacturing companies and given sample since the regression explains a significant amount of the model.

Using the probability value of F-stat (P-value (F-stat)) to test for the joint hypothesis, which states that reject the null hypothesis if the P-value (F-stat) < level of significance. In our regression result P-value is 0.00 which is less than the 5% level of significance (0.00 < 0.05), we reject the null hypothesis. It indicates that there is a joint effect on the dependent variables

The R-squared gives the statistical information about the goodness of fit of information. An R-squared of 1 indicates the regression is perfect in our regression result; the R-squared of the weighted statistics is0.119786, which indicates that about 11.98% of variation in the dependent variable is explained by the explanatory variable. This indicates the remaining 88.02% (100% - 11.98%) of the variables are attributable to other factors not considered in the model or random variability.

The R-squared of the unweighted statistics is –0.173332, which indicates that about –17.33% of variation in the dependent variable is explained by the explanatory variable. This indicates that extra 17.33% (100% - (-17.33%)) of the variables are attributable to other factors not considered in the model or random variability

Adjusted R-squared is simply the modification of R-squared and it adjusts the explanatory variable in terms of the model, which tends to increase only if variables improve the model more than expected. The adjusted R-squared is 0.1131 (11.31%) as depicted in Table 5

The Durbin-Watson test is used to test autocorrelation. It tests for both the upper and lower of the observation. In the result, the Durbin-Watson is 0.9194, which is lower to the higher and lower DW of 5% level of significance, the values of the lower and upper are 1.408 and 1.767 respectively. This indicates that there is no presence of autocorrelation in the variables used for the study because it does not fall between the upper and lower value of the DW table. The study, therefore, concludes it's appropriate for decision-making.

4.4.2. Hausman test (ROCE)

Table 6 Hausman Test Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	26.427012	3	0.0000

Source: Author's computation using Eviews, (2023)

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Hausman test is used to test the random effect result against the fixed effect result and whether the random effect is uncorrelated with the explanatory variables. In this study, 3% is used as the level of significance. In table 6, the p-value of the Hausman test the p-value of Hausman test is less than 5% which indicates that the random effect specification is inappropriate and is not preferred in the test result. Hence the study will be accepting fixed linear regression for decision-making, stating that the alternative hypothesis is accepted against the null hypothesis.

4.4.3. GENERALIZED LINEAR MODEL TEST (ROCE)

Table 7 Generalized Linear Model Test Result (ROCE)

Variable	Coefficient	Std. Error	Z-statistic	Prob.
C	5.018775	5.056889	0.992463	0.321
CSR	1.727807	0.870774	1.98422	0.0472
CR	0.216029	0.410657	0.526056	0.5988
SARB	-0.039365	0.044808	-0.878538	0.3797

Source: Author's computation using Eviews, (2023)

Dependent Variable: ROCE

Method: Generalized Linear Model (Newton-Raphson / Marquardt steps)

Included observations: 399

Dispersion computed using Pearson Chi-Square

Convergence achieved after 0 iterations

Since ordinary least square assumes errors are independent and identically distributed under the classical regression model. According to Gujarati and Porter (2009), there are two methods of creating heteroscedasticity namely; General Linear Method (GLM) and the non-generalized linear method. This research will focus mainly on the GLM method to ensure our regression is homoscedasticity and this is done as shown below it

$ROCEit = \beta0 + \beta1CSRit + \beta2CRit + \beta3SARBit + \mu it$

$ROCE^* = \alpha^* + CSR^* + CR^* + SARB^* + \mu^*$

In Table 7 above, the regression result represents a robustness test for the model using GLM to correct heteroscedasticity which indicates that not all the variables are strongly significant at 5% as compared to cross-section random effect which states that all the variables are significant at 100% (1) level of significance. Since in our result the decision is focused on a 5% level of significance. It's concluded that the entire variables are significant. The coefficient of the Generalized linear model (GLM) and the pooled regression result is the same, this indicates that the method is unbiased.

4.4.4. Fixed effect (EFF)

Table 8 Fixed Effect Result

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	2.517178	1.004315	2.506362	0.0126
CSR	0.14128	0.162283	0.870579	0.3846
CR	-0.43833	0.126982	-3.451907	0.0006
SARB	-0.027419	0.00748	-3.665578	0.0003
Root MSE	0.921787	R-squared		0.750608
Mean dependent var	1.569121	Adjusted R-squared		0.721102
S.D. dependent var	1.848144	S.E. of regression		0.976019
Akaike info criterion	2.891076	Sum squared resid		338.1773
Schwarz criterion	3.321773	Log likelihood		-532.3241
Hannan-Quinn criter.	3.061671	F-statistic		25.43956
Durbin-Watson stat	1.022997	Prob(F-statistic)		0

Source: Author's computation using Eviews, (2023)

Dependent Variable: EFF

Method: Panel Least Squares

Sample: 2012 2022

Periods included: 11

Cross-sections included: 40

Total panel (unbalanced) observations: 398

$EFFit = \beta0 + \beta1CSRit + \beta2CRit + \beta3SARBit + \mu it$

Table 8 above explains that Fitting the values into the model, we then have the following: From the coefficient, the constant, in the model for the value of a is which means holding all the variables (CSR, CR and SARB) constant, EFF

equals 2.5172 and EFF will vary negatively up to the tune of 251.72 when all variables are held constant. From the equation, the β_1 co-efficient is 0.14 which reveals that a positive relationship exists. β_2 co-efficient is -0.43 which reveals that a negative relationship exists. β_3 co-efficient is –0.02 which reveals that a negative relationship exists.

Under the T- stat, to find if the variables are statistically significant for each variable, we need to find $t_{(\alpha/2, n-k)}$ and we tend to reject the null hypothesis.

If only the t-stat > t (0.05/2, n-k)

To calculate for the t (0.05/2, n-k) = t(0.05/2, 399-3)

t (0.025, 396) =10.000

Assume βs zero for all slopes, then, the t-tab of 10.000 would be used to make a decision for each variable. Under the F-stat, it is used to test the joint hypothesis. H_0 is rejected if $F\text{-stat}_{cal} > F_{tab}$ ($F\alpha_{(k-1, n-k)}$ but if not, we do not reject the null hypothesis. In our regression, $F\text{- stat}_{cal}$ is 25.43956 and F-tab is $F_{0.05(3-1, 399-3)}$ when α =5%(0.05), k=3 (number of the parameter), and n=399 (number of observations).

$F_{0.05(2, 396)}$

Using the ƒ distribution table the result derived is 3.02.

Thus, since the $F\text{-stat}_{cal} > F_{0.05(2, 396)}$ (25.44 > 3.02) we tend to reject the null hypothesis and conclude the EFF depend on CSR, CR and SARB for the selected manufacturing companies and given sample since the regression explains a significant amount of the model.

Using the probability value of F-stat (P-value (F-stat)) to test for the joint hypothesis, which states that reject the null hypothesis if the P-value (F-stat) < level of significance. In our regression result P-value is 0.00 which is less than the 5% level of significance (0.00 < 0.05), we reject the null hypothesis. It indicates that there is a joint effect on the dependent variables

The R-squared gives the statistical information about the goodness of fit of information. An R-squared of 1 indicates the regression is perfect in our regression result; the R-squared of the weighted statistics is 0.7506, which indicates that about 75.06% of variation in the dependent variable is explained by the explanatory variable. This indicates the remaining 24.94% (100% - 75.06%) of the variables are attributable to other factors not considered in the model or random variability.

Adjusted R-squared is simply the modification of R-squared and it adjusts the explanatory variable in terms of the model, which tends to increase only if variables improve the model more than expected. The adjusted R-squared is 0.7321102(73.21%) as depicted in Table 8

The Durbin-Watson test is used to test autocorrelation. It tests for both the upper and lower of the observation. In the result, the Durbin-Watson is 1.022997, which is higher to the lower and lower to the higher DW of 5% level of significance, the values of the lower and upper are 1.408 and 1.767 respectively. This indicates that there is a presence of autocorrelation in the variables used for the study because it falls between the upper and lower value of the DW table. The study, therefore, concludes it's not appropriate for decision-making.

4.4.5. Random effect (EFF)

Table 9 Random Effect Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.650719	0.911255	2.908868	0.0038
CSR	0.092777	0.143395	0.647004	0.518
CR	-0.373413	0.121278	-3.078992	0.0022
SARB	-0.026738	0.006937	-3.854299	0.0001

Cross-section random		1.533201	0.7116
Idiosyncratic random		0.976019	0.2884
	Weighted Statistics		
Root MSE	0.972143	R-squared	0.122633
Mean dependent var	0.306567	Adjusted R-squared	0.115953
S.D. dependent var	1.038436	S.E. of regression	0.977065
Sum squared resid	376.1344	F-statistic	18.35699
Durbin-Watson stat	0.931204	Prob(F-statistic)	0
	Unweighted Statistics		
R-squared	0.010904	Mean dependent var	1.569121
Sum squared resid	1341.221	Durbin-Watson stat	0.261148

Source: Author's computation using Eviews, (2023)

Dependent Variable: EFF

Method: Panel EGLS (Cross-section random effects)

Sample: 2012 2022

Periods included: 11

Cross-sections included: 40

Total panel (unbalanced) observations: 398

Swamy and Arora estimator of component variances

From Table 89 above the model was linearly expressed using the equation

$EFFit = \beta 0 + \beta 1CSRit + \beta 2CRit + \beta 3SARBit + \mu it$

From the regression result (table 9), all the variables are statistically insignificant, except for CSR (according to the p-value of the regression) at a 5% level of significance.

From the coefficient, the constant, in the model for the value of a is which means holding all the variables (CSR, CR and SARB) constant, EFF equals 2.650719 and EFF will vary negatively up to the tune of 265.07when all variables are held constant. From the equation, the β_1 co-efficient is 0.09 which reveals that a positive relationship exists. β_2 co-efficient is -0.37 which reveals that a negative relationship exists. β_3 co-efficient is –0.27 which reveals that a negative relationship exists.

Under the T- stat, to find if the variables are statistically significant for each variable, we need to find $t_{(\alpha/2, n-k)}$ and we tend to reject the null hypothesis.

If only the t-stat > t (0.05/2, n-k)

To calculate for the t (0.05/2, n-k) = t(0.05/2, 399-3)

t (0.025, 396) =10.000

Assume βs zero for all slopes, then, the t-tab of 10.000 would be used to make a decision for each variable.

Under the F-stat, it is used to test the joint hypothesis. H_0 is rejected if $F\text{-stat}_{cal} > F_{tab}$ ($F\alpha_{(k-1, n-k)}$ but if not, we do not reject the null hypothesis. In our regression, $F\text{-stat}_{cal}$ is 18.35699 and F-tab is $F_{0.05(3-1, 399-3)}$ when α =5% (0.05), k=3 (number of the parameter), and n=399 (number of observations).

$F_{0.05(2, 396)}$

Using the *f* distribution table the result derived is 3.02.

Thus, since the $F\text{-stat}_{cal} > F_{0.05(2, 396)}$ (18.36 > 3.02) we tend to reject the null hypothesis and conclude the EFF depend on CSR, CR and SARB for the selected manufacturing companies and given sample since the regression explains a significant amount of the model.

Using the probability value of F-stat (P-value (F-stat)) to test for the joint hypothesis, which states that reject the null hypothesis if the P-value (F-stat) < level of significance. In our regression result P-value is 0.00 which is less than the 5% level of significance (0.00 < 0.05), we reject the null hypothesis. It indicates that there is a joint effect on the dependent variables

The R-squared gives the statistical information about the goodness of fit of information. An R-squared of 1 indicates the regression is perfect in our regression result; the R-squared of the weighted statistics is 0.122633, which indicates that about 12.26% of variation in the dependent variable is explained by the explanatory variable. This indicates the remaining 87.74% (100% - 12.26%) of the variables are attributable to other factors not considered in the model or random variability.

The R-squared of the unweighted statistics is 0.010904, which indicates that about 1.09% of variation in the dependent variable is explained by the explanatory variable. This indicates that extra 98.91% (100% -1.09%)) of the variables are attributable to other factors not considered in the model or random variability

Adjusted R-squared is simply the modification of R-squared and it adjusts the explanatory variable in terms of the model, which tends to increase only if variables improve the model more than expected. The adjusted R-squared is 0.115953 (11.59%) as depicted in Table 9

The Durbin-Watson test is used to test autocorrelation. It tests for both the upper and lower of the observation. In the result, the Durbin-Watson is 0.931204, which is lower to the higher and lower DW of 5% level of significance, the values of the lower and upper are 1.408 and 1.767 respectively. This indicates that there is no presence of autocorrelation in the variables used for the study because it does not fall between the upper and lower value of the DW table. The study, therefore, concludes it's appropriate for decision-making.

4.4.6. Hausman test (EFF)

Table 10 Hausman Test Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.101508	3	0.1068

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Table 10 above explains that Hausman test is used to test the random effect result against the fixed effect result and whether the random effect is uncorrelated with the explanatory variables. In this study, 3% is used as the level of significance. In table 10, the p-value of the Hausman test the p-value of Hausman test is less than 5% which indicates that the random effect specification is inappropriate and is not preferred in the test result. Hence the study will be accepting fixed linear regression for decision-making, stating that the alternative hypothesis is accepted against the null hypothesis.

5. Conclusion and recommendations

This study compared the impact of CSR on firms' performance of UK manufacturing companies between 2012 and 2022 in relation to its efficiency using data of 40 listed companies on London Stock Exchange extracted from FAME database. The linear regression model was utilized, and EViews software was used to analyze the panel data. Although there are various CSR activities carried out by companies, the companies could not actually state the real monetary value. This

study used 2% of the ROCE was used to calculate the CSR to make it equivalent among the companies. The ROCE and EFF were used as dependent variables of this study.

These models produce and affirm the existence of a significant connection between CSR and company performance in relation to business efficiency. The analysis across various industries consistently demonstrates that businesses that embrace CSR practices tend to excel in terms of financial performance, reputation, stakeholder relations, and overall efficiency.

This underscores the importance of CSR as a strategic tool for companies seeking to not only enhance their financial bottom line but also foster sustainable and responsible business practices.

The variables were statistically significantly related which means that it is a reasonable approach to determine the relationship between CSR and firms' performance and its financial efficiencies using the solvency and current ratios. The null hypothesis was also rejected.

Future study will benefit from expanding the samples over time and testing our findings comparing impacts of CSR on firms' performance comparing more than one country while factoring countries, more of efficiency and solvency ratio variable.

Finally, this study focused on using ROCE as dependent variable but later used EFF which made the analysis more understanding and significant because it is also an important component that affects the performance of CSR (Endrikat et al. 2020). When assessing the performance of pension funds, future findings may include more of efficiency and solvency ratio variable.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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Names of the 40 companies used for the analysis.

- Shell Plc
- Reckitt Benckiser Group
- Glencore Plc
- BP PLc
- Tesco Plc
- Unilever Plc
- Accenture Plc
- Rio Tinto Plc
- Vodafone Group Plc
- Astrazenica Plc
- HSBC Holdings Plc
- Imperial Brands
- J. Sainbury Plc
- Anglo American Plc
- British Tobacco Plc
- Compass Group Plc
- Medtronic Plc
- IG Group Holdings
- Mears Group Plc
- Crest Nicholson Holdings
- Land Security Group

- Discoverie Group Plc
- Finsbury
- James Halstead Plc
- A. G. Barr Plc
- Fuller Smith & Stunner Plc
- Willerby Limited
- Senior Plc
- Marston's Plc
- Shire Plc
- Synothomer Plc
- Croda International Plc
- Hikma Pharmaceutical Plc
- Grafton Group
- Roll-Royce Holdings
- CRH Plc
- GSK Plc
- Microsoft Ireland Operations
- Coca cola Holdings
- Close Brothers Group