


WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE: EVIDENCE FROM ALTERNATIVE ENERGY FIRMS IN THE UK

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ARTICLE INFO	ABSTRACT
<p>Article history: Received: December, 02nd 2023 Accepted: March, 14th 2024</p>	<p>Purpose: This study examined the impact of working capital management on the financial performance of alternative energy in the UK from 2015 to 2022. The proxy used includes receivable turnover, payable turnover, inventory turnover and return on asset. The study employs an ex-post facto research design using panel data from the sampled firms' annual reports.</p>
<p>Keywords: Working Capital Management; Financial Performance; Alternative Energy; UK.</p> 	<p>Methodology: The panel data were analysed using descriptive statistics, correlation matrix and panel regression analysis. The Hausman specification test showed that the fixed effect was more appropriate.</p> <p>Findings and Conclusion: The findings show that receivable turnover has a significant positive impact on the return on assets of the alternative firm in the UK. In addition, payable turnover has a significant negative effect on return on assets, while the findings on inventory turnover have an insignificant impact on return on assets. These findings imply that working capital management significantly affects the financial performance of alternative energy firms in the UK. Based on the conclusion, the study recommends that oil and gas firms increase their net cash flow from operating activities to increase their financial performance.</p> <p>Originality/Value: Globally, it is acknowledged that many companies fail due to poor working capital management. This study contributes to knowledge by examining the effect of working capital management on the financial performance of alternative energy firms in line with sustainable development goals in achieving a sustainable UK economy. This has not been previously studied.</p> <p>Doi: https://doi.org/10.26668/businessreview/2024.v9i4.4435</p>

GESTÃO DO CAPITAL DE GIRO E DESEMPENHO FINANCEIRO: EVIDÊNCIAS DE EMPRESAS DE ENERGIA ALTERNATIVA NO REINO UNIDO

RESUMO

Objetivo: Este estudo examinou o impacto da gestão do capital de giro sobre o desempenho financeiro de empresas de energia alternativa no Reino Unido de 2015 a 2022. A proxy usada inclui o giro de contas a receber, o giro de contas a pagar, o giro de estoque e o retorno sobre o ativo. O estudo emprega um projeto de pesquisa ex-post facto usando dados de painel dos relatórios anuais das empresas da amostra.

Metodologia: Os dados do painel foram analisados por meio de estatísticas descritivas, matriz de correlação e análise de regressão de painel. O teste de especificação de Hausman mostrou que o efeito fixo era mais apropriado.

Resultados e Conclusões: Os resultados mostram que o volume de negócios de contas a receber tem um impacto positivo significativo sobre o retorno sobre os ativos da empresa alternativa no Reino Unido. Além disso, o giro

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de contas a pagar tem um efeito negativo significativo sobre o retorno sobre os ativos, enquanto os resultados sobre o giro de estoques têm um impacto insignificante sobre o retorno sobre os ativos. Esses resultados implicam que a gestão do capital de giro afeta significativamente o desempenho financeiro das empresas de energia alternativa no Reino Unido. Com base na conclusão, o estudo recomenda que as empresas de petróleo e gás aumentem seu fluxo de caixa líquido das atividades operacionais para melhorar seu desempenho financeiro.

Originalidade/Valor: Globalmente, reconhece-se que muitas empresas fracassam devido à má gestão do capital de giro. Este estudo contribui para o conhecimento ao examinar o efeito da gestão do capital de giro sobre o desempenho financeiro de empresas de energia alternativa, de acordo com as metas de desenvolvimento sustentável para alcançar uma economia sustentável no Reino Unido. Isso não foi estudado anteriormente.

Palavras-chave: Gestão de Capital de Giro, Desempenho Financeiro, Energia Alternativa, Reino Unido.

GESTIÓN DEL CAPITAL CIRCULANTE Y RESULTADOS FINANCIEROS: DATOS DE EMPRESAS DE ENERGÍAS ALTERNATIVAS DEL REINO UNIDO

RESUMEN

Propósito: Este estudio examinó el impacto de la gestión del capital circulante en el rendimiento financiero de las empresas de energía alternativa en el Reino Unido de 2015 a 2022. El indicador utilizado incluye la rotación de cuentas por cobrar, la rotación de cuentas por pagar, la rotación de inventarios y el rendimiento de los activos. El estudio emplea un diseño de investigación ex-post facto utilizando datos de panel procedentes de los informes anuales de las empresas de la muestra.

Metodología: Los datos de panel se analizaron mediante estadística descriptiva, matriz de correlaciones y análisis de regresión de panel. La prueba de especificación de Hausman demostró que el efecto fijo era más apropiado.

Resultados y Conclusiones: Los resultados muestran que la rotación de cuentas por cobrar tiene un impacto positivo significativo en el rendimiento de los activos de la empresa alternativa en el Reino Unido. Además, la rotación de cuentas por pagar tiene un efecto negativo significativo en el rendimiento de los activos, mientras que los resultados sobre la rotación de existencias tienen un impacto insignificante en el rendimiento de los activos. Estos resultados implican que la gestión del capital circulante afecta significativamente a los resultados financieros de las empresas de energías alternativas en el Reino Unido. A partir de esta conclusión, el estudio recomienda que las empresas de petróleo y gas aumenten su flujo de caja neto procedente de las actividades de explotación para mejorar sus resultados financieros.

Originalidad/Valor: En todo el mundo se reconoce que muchas empresas fracasan debido a una mala gestión del capital circulante. Este estudio contribuye al conocimiento examinando el efecto de la gestión del capital circulante en los resultados financieros de las empresas de energías alternativas, en consonancia con los objetivos de desarrollo sostenible para lograr una economía sostenible en el Reino Unido. Esto no se ha estudiado anteriormente.

Palabras clave: Gestión del Capital Circulante, Rendimiento Financiero, Energías Alternativas, Reino Unido.

1 INTRODUCTION

Working Capital Management (WCM) is vital in firms' operational and financial decisions. The working capital is the term used to describe the resources employed by a firm for the purpose of carrying out its routine business operations. Effective management is a critical factor in influencing a company's financial performance. WCM encompasses several tactics to effectively manage the company's current assets and liabilities. The primary objective is ensuring uninterrupted operations and fulfilling debt obligations within the specified time frame (accounts payable, receivable, and inventories) to achieve and sustain the ideal level of working capital. Managing working capital is crucial due to its significant influence on a

corporate organisation's operational efficiency and financial solvency. According to Qurashi (2017), managers' adoption of an aggressive approach to working capital can yield higher profits. However, it is important to note that this strategy is associated with consistently low levels of liquidity in their respective organisations. On the contrary, managers who practice the conservative working capital approach limit their ability to expand and generate more profit and liquidity for their firms. This view aligns with the study of Hoang (2015), who stated that about 1000 firms globally lose about \$ 2 billion per annum due to poor WCM. Therefore, working capital is a firm's most important financial position measurement. For these reasons, the effective and efficient administration of working capital is crucial and often mandatory for businesses, among other factors.

In the UK, it is acknowledged that many companies fail due to poor WCM (Wilson, 2008). Late payment affects the expenses associated with finance and the allocation of managerial resources required for pursuing payment which can significantly erode profitability. This has remained a significant problem for most firms despite the various measures and legislations instituted by the UK government. Empirical findings (Banos-Caballero et al., 2014) have shown that poor WCM has cost the UK economy and businesses billions of pounds when companies fail to meet debt obligations and adequately manage inventory and late payments.

Any organisation's primary goal is maximising shareholders' wealth, which involves optimally employing the required resources to improve its financial performance (Rovetta et al., 2023; Naja & Ahmad, 2024). Financial performance in this study is measured as Return on Asset (ROA). The ROA metric is employed as a means of evaluating the financial well-being of a company. It explains management's effective and efficient use of assets to generate earnings. Therefore, the nexus between WCM and financial performance is vital as it demonstrates the potential utilisation of internally generated funds in more lucrative investment prospects, enhancing the welfare of the firm's shareholders. This study, therefore, proxies working capital as payable turnover, receivable turnover and inventory turnover.

The trade-off hypothesis of financial leverage suggests that an escalation in the level of accounts payable will augment the likelihood of bankruptcy and financial difficulty, diminishing the organisation's performance (Ebire et al., 2024). This highlights the importance of effectively managing the utilisation of credit facilities and the timing of payments to establish a harmonious equilibrium between working capital and liquidity. Bhattacharya (2014) states that payable turnover includes trade credit and accrued expenses, which offer continuous financing for business activities. Gonçalves, Gaio and Robles (2018) and Mathuva (2015)

opined that firms have the potential to enhance their profitability by strategically extending the duration of their payment cycles to creditors, so utilizing the resulting liquidity to finance investments in short-term assets. According to Ikechukwu and Nwakaego (2015), accounts payable can be defined as the documented records of suppliers' bills for products and services that have undergone processing but have not yet been settled in terms of payment. This is widely acknowledged as one of the most crucial sources of short-term funding.

Receivable is a significant aspect of business operations involving credit sales, monitoring, and control decisions. Aldubhani et al. (2022) opined that initiating the accounts receivables management process involves establishing the firm's credit policy. Nevertheless, the organisation must establish a comprehensive framework for overseeing and regulating adherence to credit criteria. Therefore, effective management of credit policies is vital for a good receivable system. Bieniasz and Golaz (2011) and Enqvist, Graham and Nikkinen (2014) claimed that decreasing collection days positively impacts performance. This implies that if a firm collects its receivables swiftly, it prevents it from a cash crisis to sustain its operations.

The management of inventory is a vital concern within the realm of production management. (Aldubhani et al., 2022). Management is accountable for delivering sufficient capital to maintain the stock to avoid shortage or lack of goods, which can affect the sale process. Inventory turnover is, therefore, viewed as an essential source of revenue for firms, which may affect their performance. Brigham and Houston (2009) opined that inventory turnover aims to maintain an adequate stock level that ensures uninterrupted manufacturing processes and minimises the expenses associated with maintaining inventory. Studies such as Enow and Brijlal (2014) and Olaoye et al. (2019) study perspective posit a favourable correlation exists between inventory management and a firm's performance. This correlation suggests that maintaining a substantial inventory level can prevent firms from experiencing sales losses and reduce the likelihood of suffering breakage costs within their production or supply chain.

Studies such as Qurashi (2017) focused on ten Pharmaceuticals and Biotechnology firms listed on FTSE, all share index firms from 2009 to 2015. Banos-Caballero et al. (2014) determined WCMs relationship to non-financial UK enterprises' performance. Similarly, Kerem and Sargon (2021) examined the impact of WCM on overall non-financial FTSE firms' performance. These studies were limited in scope to Pharmaceutical and Biotechnology firms spanning from 2009 to 2015. Also, they focused on other sectors, which differs from the current study that focuses on the influence of WCM on the financial performance of alternative energy

enterprises that are listed in the United Kingdom. The extant body of literature has achieved significant theoretical and empirical advancements in understanding the link between WCM and financial success. However, they are conflicting findings on the impact of WCM on performance. For example, Seyed and Esmail (2012); Salman et al. (2014) study identified a significant adverse impact on WCM and performance. In contrast, Ademola (2014) found a positive impact on performance. The difference in findings could result from geographical location and economies. Also, studies such as Aldubhani et al. (2022) examined the impact of WCM policies performance of manufacturing companies listed on the Qatar Stock Exchange between 2015 and 2019. Hammer et al. (2021) investigated the relationship between WCM and firm performance in Malaysia between 2009 and 2018. Akbar et al. (2021) assessed the impact of WCM on performance listed on the Islamic market index in Pakistan. While Okoye et al. (2020) examined the effects of WCM on the financial performance of a sample of companies listed on the Nigerian Stock Exchange. The analysis utilises panel data from 40 firms operating in the consumer and industrial products sectors. The findings of these studies were limited to other sectors and countries outside the UK. The dearth of literature in the UK and the divergent views and gaps in the scope of prior studies necessitate exploring the impact of WCM on performance in UK alternative energy firms. The study extends the frontier of knowledge by exploring the impact of WCM on performance in alternative energy UK firms.

This study examines WCM's impact on selected UK firms. Specifically, this study focuses on alternative energy firms listed on the London Stock Exchange (LSE). The alternative energy sector is chosen for several reasons. The significance of sustainability is increasingly recognized, prompting numerous companies and individuals to embrace renewable energy sources, particularly in light of the ongoing oil and gas crises. There is a global shift occurring wherein carbon-based fossil fuels are being replaced by cleaner alternative energy sources. Additionally, it has been asserted by specialists that the process of decarbonising the world economy will necessitate an investment exceeding \$100 trillion throughout the upcoming three decades. The call by the global economy to move away from fossil fuels and adopt renewable energy will be driven by alternative energy firms. Consequently, alternative energy firms must efficiently manage their working capital to stabilise profitability and ensure survival. Given the importance of this sector, it is, therefore, pertinent to explore what impact WCM will have on its performance.

The subsequent sections of the paper are organised in the following manner: In Section 2, the theoretical review and literature review are examined, alongside the development of the

formulated theory. In this paper, Section 3 outlines the methods employed in the study, while Section 4 provides a comprehensive analysis and discussion of the obtained findings. Section 5 contains the presentation of the conclusion and recommendations.

2 THEORETICAL FRAMEWORK

Numerous theories have elucidated the correlation between WCM and financial performance. This section presents the operating and cash conversion cycle theories to underpin this study. The operating cycle theory is credited to Richards and Laughlin (1980). The theory postulates that the incorporation of payments, receivables, and inventory turnover within the operational cycle holds substantial importance in comprehending the financial dynamics of a company. To effectively manage liquidity, a corporation must incorporate the income statement about its operational activities into the static balance sheet analysis to assess liquidity value. Richard and Laughlin (1980) argued that the current and acid-test ratios indicating solvency are unreliable because they do not reflect optimal liquidity management. Consequently, many organisations now integrate accounts receivable, accounts payable, and inventory turnover metrics into their operating cycle as they adopt a more comprehensive approach to liquidity management. Including supplementary liquidity measures acknowledges the variability of certain working capital elements, such as production, distribution (sales), and collection, which are subject to fluctuations rather than remaining constant. Prior studies have widely used the operating cycle theory to explain the effect of WCM on financial performance. Madugba and Ogbonnaya (2016) explained that the operating cycle is a concept that considers the components of WCM, namely receivables, payables, and inventories, to elucidate its influence on financial performance. This hypothesis posits that the provision of extended loan terms to a client will result in an increased inclination towards making larger investments within the business cycle but with reduced liquidity.

Gitman (1974) developed the cash conversion cycle as an integral component of the operational cycle. Blinder and Maccini (2001) claim that the cash conversion cycle theory pertains to the duration required by a corporation to transform its resource inputs into cash. The evaluation pertains to the efficiency with which a company is managing its working capital. Typically, companies acquire inventory through credit transactions, leading to the creation of accounts payable. In addition to cash transactions, firms can engage in credit sales, creating accounts receivable. Hence, cash is not implicated until the company fulfils its obligations by

settling accounts payable and receiving payments for accounts receivable. The cash conversion cycle is a metric that quantifies the duration between the initial cash expenditure and the subsequent retrieval of cash (Siddiquee et al., 2009). The significance of the cash conversion cycle in contemporary organisations is based on the premise that a longer cash conversion cycle adversely impacts the firm's profitability. This is because the company has funds locked up in non-interest-bearing accounts. As a result, reducing the duration of the cash conversion cycle leads to enhanced net present value of cash flows for the organisation, enabling quicker receipt of funds. Hence, the cash conversion cycle is crucial in establishing the connection between cash management and the financial performance evaluation of publicly traded alternative energy companies in the UK.

2.1 RECEIVABLE TURNOVER AND PERFORMANCE

Lantz (2008) defined receivable turnover as the duration required for customers, who receive products and services, to fulfil their financial obligations. This definition posits that receivable turnover represents a company's average days to receive customer payments. Similarly, Nuhiu and Dermaku (2017) described receivable turnover as the temporal gap between sales transactions and the subsequent cash inflows derived from accounts receivable. The authors said that accounts receivable signifies the outstanding balance owed by customers to the company within a current timeframe and are directly associated with the firm's operational undertakings. The authors clarified that an increased proportion of accounts receivable corresponds to an elevated level of short-term loans extended by the company to its clientele. Companies that provide trade credit to their clients tend to have a longer duration for accounts receivable, resulting in a greater allocation of funds towards working capital. However, organisations that receive customer payments close to the time of product or service delivery tend to have less cash invested in working capital. Nuhiu and Dermaku (2017) argued that shorter receivable turnover results in better firm performance because firms that delay debtors' collection periods improve the firm's liquidity level and, ultimately, profitability. Empirical studies such as Aldubhani et al. (2022) found that companies with shorter receivables collection periods are more profitable. Okoye et al. (2020) and Tanveer et al. (2016) study showed that the average collection period had a significant positive impact on ROA.

Kerem and Sargon (2021) conducted an assessment in the United Kingdom to examine the influence of credit rating monitoring on the WCM and its subsequent effect on the overall

profitability of non-financial enterprises listed on the FTSE 100. The results indicate that the implementation of aggressive WCM is crucial for enhancing the financial performance of non-financial companies included on the FTSE100 index, particularly when return on equity (ROE) is employed as a performance measure. In a study by Qurashi (2017), the author investigated the influence of WCM on the profitability of Pharmaceuticals and Biotechnology companies listed on the FTSE all-share index. The study analysed data from the period of 2009 to 2015, encompassing a total of 10 firms. The findings indicate an inverse correlation between the duration of the collection period and profitability.

The study conducted by Anton and Nucu (2021) aimed to investigate the correlation between WCM and corporate profitability. The research focused on a sample of 719 publicly listed enterprises in Poland from 2007 to 2016. The empirical findings demonstrate a curvilinear association between the level of WCM and business profitability, characterised by an inverted U-shape pattern. This implies that the impact of working capital on the profitability of Polish firms is favourable up to a certain threshold, beyond which it becomes detrimental. Once the break-even point is reached, the impact of working capital on business profitability becomes adverse. Braimah et al. (2021) investigated the influence of WCM on the financial performance of SMEs in Ghana, a developing economy, from 2007 to 2016. The findings indicate a curvilinear association between the duration of trade receivables collection and business profitability, characterised by an inverted U-shaped pattern. This observation implies the presence of an ideal duration for collecting trade receivables that maximises profitability. Upon further examination, it has been observed that a departure from the ideal duration for collecting trade receivables has a substantial and adverse impact on the profitability of corporations. These findings were supported by the studies of Abdulazeez et al. (2018); Arnaldi et al. (2021); Hammer et al. (2021); Kasozi (2017); Kiptoo (2017); Mabandla and Makoni (2019); Umenzekwe et al. (2021) discovered a substantial inverse link between average collection time and performance.

H_{01} : Receivable turnover does not significantly impact the return on assets of alternative energy firms in the UK.

2.2 PAYABLE TURNOVER AND PERFORMANCE

According to Erik (2012), payable turnover refers to the mean duration, expressed in days, that a company requires to settle its outstanding debts with creditors or suppliers.

Typically, companies exhibit a preference for deferring payment on credit transactions, but suppliers incentivize customers (referred to as debtors) to settle credit purchases promptly through the provision of cash discounts. Similarly, Nuhiu and Dermaku (2017) defined payable as a financial obligation that must be settled within a very brief timeframe. The term "transactions to suppliers in the operational activities which were not already paid" pertains to outstanding payments for goods or services received from suppliers within the context of operational activities. Accounts payable represent the outstanding obligations owed to suppliers, commencing upon receiving products or services by the company and concluding upon the payment settlement. As the debt owed to suppliers increases, there will be a corresponding increase in the number of accounts payable days. Given the corporation's ability to obtain cost-effective financing through payment deferrals, it can strategically prolong its payment schedule with suppliers to maximise this financial advantage. By doing so, the firm can allocate the resulting surplus cash towards alternative ventures, so potentially yielding greater profits. This study quantifies the payable turnover metric by calculating the average number of days accounts payable (referred to as Average accounts payable) divided by the cost of products supplied and then multiplying this result by 365 days.

Several studies found a significant impact of WCM on performance. For example, Panigrahi et al. (2022) investigated the relationship between WCM and shareholders' wealth in Oman from 2004 to 2019. The study revealed payable positively affect the ROA. Aldubhani et al. (2022), Ibrahim et al. (2021); Mabandla and Makoni (2019); Okoye et al. (2020); Rahman and Ahmed (2021); Umenzekwe et al. (2021) found that companies with longer accounts payable payment periods are related to increased profitability. These studies imply that a higher payable turnover ratio indicates that a company effectively manages its working capital by extending its payment period to suppliers. This allows firms to maintain better control over its cash flow and allocate funds to other strategic initiatives such as investments or expansion. In addition, paying suppliers promptly and efficiently can enhance the company's relationship with its supplier leading to better terms, discounts, or preferential treatment, which can save costs in the long run and ensure a steady supply of goods and services.

In contrast, Hammer et al. (2021) and Qurashi (2017) found that account payable days have an insignificant impact on performance. Some industries or business models inherently have longer payment cycles due to the nature of their operations. In these cases, variations in payable turnover might not significantly impact financial performance, as the industry norms and practices already account for extended payment terms. Larger companies with diverse revenue

streams and operations might have a more diversified financial structure, making the impact of payable turnover changes less pronounced compared to smaller, more specialised firms.

Studies such as Abdulazeez et al. (2018) and Kasozi (2017) found that creditor's payment period is negatively related to performance. This observation implies the presence of an ideal duration for collecting trade receivables that maximises profitability. An overly aggressive approach to extending payment periods can strain relationships with suppliers. Suppliers may become reluctant to provide goods or services on favourable terms, leading to potential disruptions in the supply chain or loss of key partnerships. Also, extending payment periods might cause a company to miss out on early payment discounts offered by suppliers. An excessively high payable turnover ratio might distort certain financial ratios affecting its ability to meet short-term obligations.

H₀₂: Payable turnover does not significantly affect the return on assets of alternative energy firms in the UK.

2.3 INVENTORY TURNOVER AND PERFORMANCE

According to Nuhiu and Dermaku (2017), inventories can be defined as tangible assets that are held by a company with the intention of being sold and subsequently transformed into cash within a relatively short period of time. Increased investment in inventory leads to a greater amount of capital being immobilized, resulting in a delay in generating returns. The process of inventory turnover encompasses a range of potential risks that have the capacity to elevate expenses and exert an influence on short-term managerial decision-making. The costs pertinent to the discussion are often categorised as physical storage and inventory turnover. Coordination and control can also be factors contributing to inventory turnover costs. Potential expenses that could be incorporated are those associated with depletion, theft, and shrinkage of merchandise, order magnitude, duration of the production procedure, and the availability of credit from suppliers. An increase in inventory results in a corresponding rise in the number of days of inventory. Organisations generally endeavour to minimise the amount of capital allocated to inventory. In certain instances, it is common for companies to allocate a significant amount of capital towards their inventories as a necessary component of their operations. This is because many products require extended periods to reach a state of completion and become market-ready. The findings of Banos-Caballero et al. (2014) provide empirical evidence in favour of a curvilinear relationship between investment in working capital and business performance. This

relationship suggests an optimal amount of investment in working capital that effectively balances the associated costs and benefits, thereby maximising a firm's overall value. The findings indicate that it would be prudent for managers to mitigate any adverse impacts on business performance arising from factors such as reduced sales, discounts for early payments, or increased expenses related to additional borrowing. The research additionally examines the potential sensitivity of the optimal working capital level to various alternative metrics of financial constraints. The results indicate that the optimal level is lower for organisations more likely to experience financial constraints. The present study quantifies inventory turnover by calculating the ratio of the cost of products sold in 365 days.

A higher inventory turnover ratio typically indicates that a corporation sells its inventory quickly and efficiently. This can have several positive effects on a firm's financial performance. Aldubhani et al. (2022); Kasozi (2017); Mabandla and Makoni (2019); Okoye et al. (2020); Qurashi (2017); Rahman and Ahmed (2021) found that companies with inventory turnover periods are related to higher profitability. Findings indicate that companies that effectively manage and sustain their inventory levels have fewer stock-outs and mitigate the difficulties associated with obtaining necessary finance. A higher inventory turnover reduces the amount of capital tied up in inventory, freeing up cash that can be used for other purposes. In addition, the holding costs of goods can be reduced.

While a high inventory turnover ratio is often lauded for its positive impact on a company's efficiency and profitability, it's essential to recognise that an overly aggressive approach to inventory turnover can lead to unintended consequences. Rapid inventory turnover can sometimes result in inadequate stock levels, leading to frequent stockouts. These stockouts can lead to frustrated customers, lost sales, and a tarnished reputation, ultimately impacting revenue and customer loyalty. While high inventory turnover can free up cash, an extreme emphasis on this metric might result in underinvestment in inventory, potentially leading to lost sales opportunities due to inadequate product availability. Prior empirical studies (Arnaldi et al. (2021); Braimah et al. (2021); Hammer et al. (2021); Kiptoo (2017); Tanveer et al. (2016); Umenzekwe et al. (2021) findings show that there is a inverse relationship between inventory days on firm performance. The discovery implies that the act of investing in inventories and seeking extensions from suppliers incurs supplementary expenses that have an adverse impact on profitability.

In the intricate landscape of financial analysis, the link between inventory turnover and a firm's financial performance can sometimes yield statistically insignificant findings. El-

Ansary and Al-Gazzar (2020) found that inventory turnover does not affect the financial performance of firms. Several factors could be responsible for this outcome. The lagged effects of inventory turnover may not materialise immediately. It might take time for improved turnover to translate into tangible financial gains, making the observed impact statistically insignificant within the confines of a short-term analysis. Different industries exhibit distinct operational dynamics. What might be a significant driver of financial performance in one sector could be of lesser consequence in another, further contributing to the apparent insignificance.

H₀₃: Inventory turnover does not significantly affect the return on assets of alternative energy firms in the UK.

3 METHODOLOGY

The study utilized an ex post facto research design. The population and sample of the study consist of listed alternative energy firms on the main London Stock Exchange (LSE) as at 31st December 2022. Table 1 shows the list of alternative energy firms in the LSE.

Table 1

Listed alternative energy firms

S/N	Firms	Market Capitalisation
1.	Active energy group plc	8.98
2.	AFC energy Plc	149.40
3.	Atome Energy Plc	38.72
4.	Ceres power holding plc	706.87
5.	Clean power hydrogen plc	52.34
6.	EQTEC Plc	19.31
7.	Inspired plc	100.07
8.	ITM Power plc	492.68
9.	Powerhouse energy group plc	39.18
10.	Proton motor power systems plc	157.33
11.	SIMEC Atlantis energy limited	8.49
12.	Tekmar group plc	6.25
13.	Velocys plc	53.43
14.	Verditek plc	4.10

Source: LSE (2023)

The sampling technique employed in this study is the census sampling technique based on data availability. The sampled alternative energy firms were generated from the population, as shown in table 1. Two criteria were used to select the sampled alternative energy firms – they must be listed on the main market of the LSE between 2015 and 2021 and have complete data from the annual reports. Based on these criteria, Atome Energy Plc was dropped because

it was listed in December 2021, Clean Power Holding Plc was listed in 2022, Tekmar Group was floated in 2018. Verditek plc was admitted in 2017.

The data utilized in this study was obtained from secondary sources, specifically collected from the yearly financial statements of the listed alternative energy firms from 2015 to 2021. The secondary source is more appropriate because all information needed for the study is available in the firm’s financial statements. The process involves downloading the financial reports from the firm’s financial statement and collecting them manually into the Excel sheet. The data is a cross-section and time series mixture, thus regarded as a panel. The advantages of using panel data include, first, there is a possibility of variance in the units as it relates to companies over time; thus, panel data takes this well into account by allowing unique variables for the subject. Secondly, this information becomes useful by integrating time series for cross-sectional observations by providing more accurate data and more uncertainty, resulting in less collinearity between variables and more degrees of freedom and, thus, more efficiency. Thirdly, this makes the data better suited for evaluating the dynamics that demand adjustment.

The multiple regression model that captures the impact of WCM on the financial performance of alternative energy firms in the UK is presented below:

$$ROA_{it} = \alpha + \beta_1 RT_{it} + \beta_2 PT_{it} + \beta_3 IT_{it} + \varepsilon_{it} \quad (1)$$

Table 2

Variables and their measurements

Variables	Type	Description
ROA	Dependent variable	Net income divided by total asset
Receivable Turnover (RT)	Independent variable	Account receivable ÷ net sales x 365
Payable Turnover (PT)	Independent variable	Account payable ÷ cost of sales x 365 days
Inventory Turnover (IT)	Independent variable	cost of goods sold inventory ÷ inventory x 365 days

Authors compilation (2023)

4 RESULTS AND DISCUSSION

4.1 DESCRIPTIVE STATISTICS AND CORRELATION MATRIX

The descriptive statistics show the nature of each variable in this study. The results of descriptive analysis for these variables employed are presented in Table 4.1

Table 3

Descriptive Statistics and correlation matrix

Variables	Mean	Std Dev.	Min	Max	ROA	RT	PT	IV
ROA	-9163493	13.62966	-59.91	81.2	1.0000			
RT	21897.09	109187.9	-19448.55	613863.6	0.0467	1.0000		
PT	-7766.47	38810.56	-263065.5	6320.199	-0.0417	0.4130	1.0000	
IT	-4019.438	9717.599	-52468.2	3839.78	0.0579	0.0460	-0.1513	1.0000

Stata Output (2023)

Table 3 shows that the mean or average financial performance of listed alternative energy firms in the UK is -91%. This implies that, on average, the management of alternative energy firms in the UK is inefficient in generating profits from their total assets. However, there is a wide dispersion around the mean measured as the standard. The minimum and maximum values of ROA are -59.9% and 81.2%, respectively. This means some alternative firms have more assets to generate their profits while others use fewer assets.

Alternative firms' average receivable is £21,897 million, while the minimum is £-19448.55 million. However, the maximum amount owed the firm is approximately £613,863.6 million. Table 3 above shows that the average payable by alternative energy firms is -£7766.47 million with a deviation of £38810.56 million. The minimum is £-263065.5, and a maximum of £6320.199. Table 3 shows the descriptive statistics of inventory. The findings show that the average number of £-4019.438 million while the minimum number is £-52468.2 million, and the maximum number is £3839.78 million. This finding implies that the firms are not selling their inventory quickly and efficiently.

The pairwise correlation matrix was carried out between the dependent and independent variables to establish the association among the variables. Table 3 shows the summary of the result. The result from Table 3 indicates a positive relationship between financial performance (ROA) and the UK's receivable turnover of listed alternative energy firms. Implying that an increase in receivable turnover leads to more profit by firms. In contrast, the correlation between ROA and payable turnover is negative. This implies that an increase in payable turnover leads to decreased performance. On the other hand, the link between ROA and inventory turnover is positively related. This implies that increased inventory increases the performance of alternative energy firms in the UK. Hence, it can be inferred that a robust statistical link is present between WCM and the financial performance of alternative energy firms in the UK.

The panel regression result is presented in Table 4 below:

Table 4

Fixed Effect Panel Regression Result

Variables	Coefficient	Std. Error	t-statistics	p> t
Receivable turnover	.7333992	.3071087	2.39	0.021
Payable turnover	-2.224643	.664226	-3.35	0.002
Inventory turnover	54.70254	69.1865	0.79	0.433

R² = 25%; F statistic test = 4.18***

*** and ** represents 1% and 5% level of significance, respectively

Source: Stata Output (2023)

The Hausman test was used to determine the fixed and random effects. Based on the outcome of the Hausman test, the fixed effect was found to be suitable for this study, evidenced by the p-value ($p > 0.05$). The analysis in Table 4 shows the regression coefficient (R^2), which explains that 25% of the variations in the financial performance of listed alternative energy can be explained by WCM (receivable turnover, payable turnover and inventory turnover). The F-statistics test was used to show the significance of the model. The findings indicate that the model is fit at 5% significance level.

The panel regression result in Table 4 shows that receivable turnover significantly positively affects the financial performance of listed alternative firms in the UK. Based on the obtained outcome, this research investigation refutes the null hypothesis and supports the alternative hypothesis, which states that receivable turnover size significantly affects the financial performance of listed alternative energy firms in the UK at 5% significance level ($p < 0.05$). The implication of this is that a unit increase in receivable turnover will result in an increase in the financial performance of listed alternative energy by 73%. The first objective concerning receivable turnover and financial performance was found to be significant and positive. The conclusion made on the findings implies that increasing the receivable turnover increases the financial performance of alternative energy firms in the UK. In other words, alternative energy firms with higher receivable turnover perform better than firms with smaller receivable turnover. This finding aligns with the studies of Aldubhani et al. (2022) and Anton and Nucu (2021), who found that receivables' significant positive effect on financial performance. Bieniasz and Golaz (2011) and Enqvist, Graham and Nikkinen (2014) argued that a decrease in collection days' positively impacts performance. This suggests that a firm's expeditious collection of receivables serves as a preventive measure against potential cash shortages that could impede its operational continuity.

Table 4 also shows the panel regression result of payable turnover and financial performance of listed alternative energy firms in the UK. According to the findings, payable turnover significantly negatively affects the financial performance of listed alternative energy firms in the UK, which is revealed by the p-value ($p < 0.05$). Therefore, the null hypothesis, which posits that payable turnover does not significantly impact the financial performance of listed alternative energy firms in the UK, is rejected. Conversely, the alternative hypothesis, which suggests that payable turnover significantly impacts the financial performance of listed alternative energy firms in the UK, is accepted. This implies that a unit increase in payable turnover decreases financial performance by 222.4%. The second objective, which assesses the impact of payable turnover on the return on assets of listed alternative energy firms in the UK, was negative and significant. This finding corroborated the findings by Kasozi (2017), who discovered by statistical analysis that a negative and statistically significant link exists between the average payment period and profitability. This finding suggests that firms which adhere to timely payment practices to their creditors do not exhibit superior performance compared to those organisations that do not prioritise timely payments. Similarly, Rahman and Ahmed (2021) result revealed that if the average payment period increases, it leads to a decrease in the profitability ratios of firms. According to Ikehukwu and Nwakaego (2015), accounts payable refers to the invoices from suppliers for products and services that have been processed but remain unpaid. This is considered a significant source of short-term funding.

Table 4 shows the panel regression result of inventory turnover and the financial performance of listed alternative energy firms in the UK. It was found that the p-value was insignificant. Hence, the acceptance of the null hypothesis and rejection of the alternate hypothesis states that inventory turnover significantly affects the ROA of alternative energy firms in the UK. The study conducted by Olaoye et al. (2019) provides evidence in favor of the notion that there exists a positive correlation between inventory management and a firm's performance. The researchers argue that maintaining a high level of inventory helps prevent firms from experiencing sales losses and reduces the likelihood of incurring breakage costs within their production or supply chain. While Rahman and Ahmed (2021) revealed that more inventory turnover had reduced performance.

4.2 DIAGNOSTIC TESTS

To avoid spurious regression analysis, the regression result was subjected to various robustness tests, such as multicollinearity (to see if the independent variables were suffering from multicollinearity and heteroscedasticity tests). The residual from the regression analysis was examined using a multicollinearity test to identify any potential collinearity between the variables. The findings indicate that the mean Variance Inflation Factor (VIF) was 1.17, which is well below the threshold value of 10. The variance inflation factor (VIF) for the various variables was likewise observed to be significantly low. This suggests that the explanatory factors incorporated in the model exhibited no correlation, therefore indicating the absence of multicollinearity among the variables.

One of the fundamental statistical assumptions behind regression analysis is the presence of homoscedasticity, which posits that the error terms associated with each observation exhibit a consistent and uniform variance. In contrast, it is commonly asserted that errors characterised by changing variances are considered heteroscedastic. The presence of heteroskedasticity in the residuals of the estimations was assessed using the Breusch-Pagan/Cook-Weisberg test. The null hypothesis posits that there is no presence of heteroskedasticity. Based on the analysis conducted, it was observed that the model exhibited heteroskedasticity. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted due to its substantial findings at a 1% level of significance. Consequently, Hausman's test was subsequently employed.

5 CONCLUSION

The objective of this study is to analyze the influence of working capital management on the financial performance of alternative energy companies operating in the United Kingdom. The present study focuses on investigating the impact of receivable, payable, and inventory turnover on return on assets (ROA). Based on the outcomes of the study, the following conclusions have been drawn. The present study establishes that there is a positive relationship between receivable turnover and the financial success of alternative energy enterprises operating in the United Kingdom. The findings of the study indicate that there is a negative relationship between an increase in payable turnover and the financial success of alternative energy enterprises in the United Kingdom. The findings of the study also indicate that there is

no significant impact of inventory turnover on the financial performance of alternative energy enterprises in the United Kingdom.

The following recommendations are put forward:

- i. The study found that receivable turnover significantly impacts financial performance. Hence, it is recommended that the management of alternative energy firms should embrace aggressive working capital investment by increasing their receivable turnover to increase their financial performance.
- ii. The study findings revealed that payable turnover significantly negatively impacts financial performance. The study recommends that alternative energy firms decrease trade payable days to increase its financial performance.
- iii. The study found that inventory turnover has an insignificant effect on financial performance. The study recommends that the management of alternative energy firms should employ the most efficient and effective financing options, such as capital-intensive assets, to influence financial performance.

Data availability: Data will be made available on request.

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