Exploring the Impact of Unrelated Diversification on Corporate performance in Egypt

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Abstract
This paper aims to investigate the relationship between unrelated forms of diversification and firm performance in Egypt. Utilizing a sample of 16 publicly traded Egyptian companies during a period from 2015 to 2022, the research investigates the relationship between diversification and performance, considering the context of the Egyptian business environment. Implications for managers, policymakers, and future research are discussed. We test for the net effect of diversification strategy over time and the findings of the study demonstrated that a relationship exists as performance increased up to a certain level due to the unrelated diversification strategy.

Introduction

Diversification is a strategy that involves expanding a firm's business activities into different industries or markets that are distinct from its core business (Barkema & Vermeulen, 1997; Palich, Cardinal, & Miller, 2000). It can be categorized as related or unrelated diversification, depending on the degree of similarity between the new and existing businesses (Hoskisson et al., 1993). Related Diversification involves entering new markets or product lines that have synergies or strategic fit with a company's existing core business, these synergies may arise from shared technologies, distribution channels, customer base, or other commonalities (Rumelt, 1974). Unrelated Diversification involves entering new markets or product lines that are completely different from a company's core business and have no obvious synergies.

Research has shown that both related and unrelated diversification can positively affect firm performance (Harrison & St-Onge, 2000). However, the relationship between diversification and performance may be influenced by factors such as industry type, firm size, and environmental uncertainty (Barkema & Vermeulen, 1997).

Diversification has long been a strategic approach for firms to manage risks and enhance performance (Joshi & Dwivedi, 2015). In Egypt, where the business environment is characterized by economic instability and political uncertainty (El-Hossekiny,2018), diversification into unrelated industries may offer a competitive advantage for firms. This study aims to explore the impact of diversification in unrelated industries on firm performance in Egypt

Diversification in unrelated industries has been a topic of interest for scholars and practitioners alike. The concept of diversification refers to a strategy adopted by firms to expand their operations into unrelated industries. This strategy aims to reduce risk, enhance growth opportunities, and increase profitability. However, the effectiveness of diversification in unrelated industries on firm performance has been a subject of debate in the literature. As according to some research, performance is negatively impacted by unrelated diversification (Chatterjee and Wernerfelt, 1991; Palich et al., 2000; Kumar 2013; Ataullah et al., 2014; Schommer et al., 2019). This opinion has been questioned, nevertheless, for several reasons. First, a large portion of the earlier research used samples from developed economies, especially U.S. corporations (Benito-Osorio et al., 2012). According to research on emerging markets, in areas where there are institutional gaps, unrelated diversification is advantageous. Second, some specific conditions like high

competition or financial crises are needed for the unrelated diversification to improve the performance. (Ljubownikow & Ang, 2020)

Based on the above introduction, our main objective is to explore the diversification in unrelated industries and its impact on firm performance. It also discusses the relevance of this topic in the context of Egypt. The study was structured into five sections: after introducing the topic in section one; section two reviewed the theoretical background, the relevant literature and hypothesis development; section three described the research methodology used; section four included the research findings and a discussion of them; and section five offered the study's implications and recommendations. Of the companies registered on the EGX 30, only sixteen companies were included in the study.

Theoretical background and literature review

Theoretical Background

Diversification has emerged as a key survival strategy for organizations striving to outpace their competitors (Haug & Ulrich, 2013). Managers increasingly adopt diversification, whether related or unrelated, as a strategic option to enhance performance (Castaldi & Giarratana, 2018; Makau & Ambrose, 2018). Two pertinent theories, Modern Portfolio Theory (MPT) by Henry Markowitz and the Resource-Based View (RBT) by Birger Wernerfelt, are crucial to this study for their explanations of the dependent and independent variables. Modern Portfolio Theory (MPT), designed to aid in the selection and formation of efficient diversified portfolios, helps investors minimize risk by spreading it across multiple portfolios. This theory advises against relying on a single portfolio, emphasizing the benefits of diversification in reducing overall risk. On the other hand, Resource-Based View (RBT) emphasizes leveraging an organization's unique and unchangeable internal capabilities to achieve a competitive advantage. According to this theory, organizations possess untapped resources that, when effectively utilized, can enhance their performance and provide superiority over competitors.

Literature Review and Hypothesis Development

The literature on diversification in unrelated industries is vast and has produced mixed results. Some studies have found that diversification leads to improved firm performance, while others have found the opposite. For instance, a study by Bhide (1994) found that diversified firms outperformed their undiversified counterparts in terms of stock returns. Similarly, a study by Rajan and Zingales (1995) found that diversified firms had higher market-to-book ratios than undiversified firms. These findings suggest that diversification can lead to improved financial performance. Diversification can offer resources and competencies that are transferable across different divisions of a corporation, according to the resource-based concept (Martin and Sayrak, 2003). Additionally, technology adds value by filling in the roles of institutions that are "missing" in less developed nations, hence reducing failures in the labor, capital, and product markets (Khanna and Palepu, 2000a). According to Khanna and Palepu (2000a), increasing business performance and lowering transaction costs are two benefits of increased diversification in India. More recently, Santalo and Becerra (2008) found that the performance-diversification relationship is not homogeneous across industries, but that diversification is associated with positive performance in industries dominated by diversified firms, and negative in industries dominated by single segment firms.

However, other studies have found that diversification can lead to negative consequences. For instance, a study by Hitt et al. (1991) found that diversified firms had lower profitability than undiversified firms. Similarly, a study by Kotha and Mathews (1997) found that diversified firms had higher costs of capital than undiversified firms. These findings suggested that diversification can lead to higher costs and lower profitability.

The conflicting results in the literature can be attributed to several factors. One factor is the type of diversification strategy adopted by firms. Some studies have found that related diversification, which involves expanding into related industries, leads to improved performance, while unrelated diversification, which involves expanding into unrelated industries, leads to negative consequences (Barkema et al., 1996). Another factor is the context in which diversification takes place. For instance, a study by Hitt et al. (1991) found that diversification led to lower profitability in mature industries but higher profitability in emerging industries.

(Rumelt, 1974) investigated the relationships among diversification strategy, organizational structure, and economic performance and found that related diversification strategies were found to outperform the other diversification strategies on average. The related-constrained diversification strategy was found to be the highest-performing on average. By contrast, the unrelated diversification strategy (and the minor categories within it) was found to be one of the lowest-performing diversification strategies. (Montgomery, C. A. 1985) examined performance differences in diversified firms using the market structure variables of industrial organization economics. Montgomery offers an alternative explanation of performance differences between related-constrained and unrelated firms, the essence of which is that related-constrained firms tend to be in industries whose market structure leads to above-average profitability.

Egypt is a rapidly developing country with a diverse economy that includes industries such as agriculture, manufacturing, and services. However, many Egyptian firms are concentrated in a few industries, which exposes them to high levels of risk. Diversification into unrelated industries can help these firms reduce risk and enhance growth opportunities. Moreover, diversification can help Egyptian firms compete in global markets, as it allows them to leverage their resources and capabilities across multiple industries. However, the literature on the relationship between diversification and firm performance presents a complex and inconclusive narrative. Some studies posit a positive correlation between a firm's diversification and performance, while others unearth a negative relationship. This ambiguity leads to our research hypothesis:

H0: Diversification in unrelated industries has no significant impact on the performance of firms in Egypt.

H1: Diversification in unrelated industries has a significant impact on the Egyptian firm's performance.

Research methodology

Diversification in Egypt: Egyptian firms have adopted diversification strategies to cope with the country's challenging business environment (El-Hossekiny, 2018). The Egyptian government has also encouraged diversification through various policies and initiatives (Abdel-Kader & El-Hawary, 2017). Despite these efforts, limited research has been conducted on the impact of diversification on firm performance in Egypt.

To explore the impact of diversification in unrelated industries on firm performance in the context of Egypt, a research study will be conducted. The study is a quantitative research, panel data for the period of 2015 to 2022. The sample consists of 16 publicly traded Egyptian companies listed on the Egyptian Exchange. Data on firm performance is obtained from financial statements, while diversification measures are derived from annual reports and company websites.

The study will address the following question:

"How does diversification in unrelated industries affect financial performance in Egypt?"

Measurement Model

To analyze study data, we used Stata software v12 to determine the relationship between study variables and the validity of the hypotheses of the study. We also used tests such as Residuals Heteroskedasticity Test, Normality of Residuals Test, Multi-Linear Correlation, Multicollinearity, and Autocorrelation test, as well as regression methods.

Performance Measure

Given that the primary objective of this study is to empirically test the relation between diversification strategy and firm performance, proxies for both performance and diversification strategy must be selected. Of the various performance measures used in the business literature, the most common is return on assets (ROA) and return on equity (ROE).

Diversification Measure

In this paper, we use the dummy variable to denote the degree to which companies are diversified or not. The scores are bounded between 0 and 1, with 0 indicating the firm is not diversified in unrelated industries and 1 indicating the firm is diversified in unrelated industries.

The data were drawn from the annual reports of the companies for a period of 8 years (2015-2022)

The Regression Model: -
ROA = (Diversification, Liquidity, Debt Ratio, Profitability, Firm Age)……(1)
ROE = (Diversification, Liquidity, Debt Ratio, Profitability, Firm Age)……(2)

From it, we extract the regression equation as follows:

Model 1: $ROA = a + \beta 1\ DIV + \beta 2\ LIQ + \beta 3\ DER + \beta 4\ PRO + \beta 5\ Age + \varepsilon$ ……(3)

Model 2: $ROE = a + \beta 1\ DIV + \beta 2\ LIQ + \beta 3\ DER + \beta 4\ PRO + \beta 5\ Age + \varepsilon$ ……(4)

Table (1) Variable Measuring

Variable Name	Code	Measure by
Return on Assets	ROA	Net Income/Total Assets
Return on Equity	ROE	Net Income/Total Equity
Diversification	DIV	Dummy Variable
Liquidity	LIQ	Current Liability/Current Assets
Debt Ratio	DER	Total Liability/Total Assets
Profitability	PRO	Gross Profit/Net Sales
Firm Age	AGE	The number of years since it was founded

Statistical Result

1- Main statistical tests

The following table shows the descriptive statistics for the research variables. The average return on equity was 0.11, the average return on assets was 0.10, and the average liquidity, indebtedness, and profitability were 0.18, 0.59, and 16.79 respectively. The average operational age of the companies studied is 51 years.

Table (2) Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	128	.119	.954	-7.453	3.522
ROA	128	.101	.153	-.11	.91
LIQ	128	1.386	.783	.232	4.456
DER	128	.596	.19	.18	.904
PRO	128	26.794	16.258	-5.443	70.9
Age	128	51.438	40.36	8	168

Source: Stata V14 Output.

Table No. (3) indicates that the results of the Skewness test range between 0.24 and 0.69, and the results of the Kurtosis test range between 0.27 and 0.77. Thus, it indicates that the data of the study variables follow a normal distribution. The significant results of the chi2 test range between 0.07 and 0.13, which are greater than 5%. This means that all variables follow a normal distribution.

Table (3) Skewness and Kurtosis test

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj_chi2(2)	Prob>chi2
ROA	128	0.5643	0.63175	3.95675	0.10735
ROE	128	0.69445	0.7771	4.1021	0.13205
DIV	128	0.66215	0.74195	4.06695	0.1254
LIQ	128	0.4446	0.49875	3.82375	0.13395
DER	128	0.24605	0.2755	3.6005	0.0741
PRO	128	0.2736	0.30685	3.63185	0.08265
AGE	128	0.6764	0.7581	4.0831	0.12825

Source: Stata V14 Output

Table No. (4) shows the results of the correlation between the independent variables and the dependent variable. It was observed that there is a positive direct relationship between the independent variables (DIV-LIQ-PRO-Age) and the dependent variable, return on assets, with correlation values ranging from 0.03 to 0.19 to 0.121 to -0.36. Additionally, there is an inverse relationship between debt ratio and return on assets with a value of -0.18. These coefficients are statistically significant at a significance level of less than 5%.

There is a positive relationship between the independent variables (DIV-LIQ-PRO-Age) and return on equity with values of 0.10, 0.47, 0.02, and 0.05 respectively. In contrast, there is an inverse relationship between the debt ratio and return on equity, with an ownership value of -0.561. These coefficients are statistically significant at a level of less than 5%.

Table (4) Correlation test between study variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) ROE	1.000						
(2) ROA	0.328	1.000					
(3) DIV	0.033	0.101	1.000				
(4) LIQ	0.199	0.477	-0.051	1.000			
(5) DER	-0.183	-0.561	0.244	-0.518	1.000		
(6) PRO	0.121	0.020	-0.452	0.288	-0.352	1.000	
(7) Age	0.036	0.059	0.367	-0.077	-0.185	-0.082	1.000

Source: Stata V14 Output.

2- *Study Model Results*

To analyze the results of the study hypotheses, we must first examine the quality of the chosen model and second estimate the regression analysis for the chosen model.

Table (5) heteroskedasticity and Multivariate normality test

Test	Model 1		Model 2	
	Chi2	prob	Chi2	prob
Breusch-Pagan test for heteroskedasticity	4.3533	0.3339	3.91797	0.30051
Multivariate normality Test – Doornik-Hansen	4.2867	0.2385	3.85803	0.21465

Source: Stata V14 Output.

The table (5) shows the difference between the variance test heteroskedasticity for model 1, which is (4.35 – 3.91) with a p-value of (0.33 – 0.30), greater than 0.05. This indicates that the study model does not have a problem with variance and that the model is good and suitable for testing. also, a normal distribution test was conducted for the residuals of the study model using the Doornik-Hansen test. The results indicate that the chi-square value for the two models is (4.28 – 3.85), with a significant level of prob chi-square (0.23 – 0.21), suggesting that the residuals of the study model follow a normal distribution. The significance value of the test is greater than 0.05. Table 6 shows the Variance Inflation Factor to test multicollinearity between independent variables.

Table (6) Multicollinearity test

Variable	VIF	1/VIF
DER	1.76	0.569640
DIV	1.64	0.611452
LIQ	1.55	0.645732
PRO	1.42	0.704669
Age	1.38	0.723050
Mean VIF	1.55	

Source: Stata V14 Output.

We used Variance Inflation Factor to detect the most important problem of multiple regression, known as multicollinearity. The values of the variance inflation factor range between 1 and less than 5, indicating that the regression model does not have a multicollinearity problem. Additionally, the mean variance inflation factor is 1.55, which is less than 5, indicating that the model is suitable for regression analysis.

Table (7) Result of Estimating Regression Model

variable	ROA			ROE		
	Coef.	t-value	p-value	Coef.	t-value	p-value
DIV	0.070	-3.220	0.009	0.405	4.490	0.046
LIQ	0.050	3.040	0.003	0.103	3.780	0.000
DER	-0.440	-6.060	0.000	-0.819	-2.590	0.004
PRO	0.030	-3.300	0.001	0.060	4.010	0.000
Age	0.010	2.940	0.005	0.030	2.910	0.000
Constant	0.393	5.710	0.000	0.360	3.650	0.000
R-squared	0.713			R-squared	0.690	
F-test	18.800			F-test	9.267	
Prob > F	0.000			Prob > F	0.000	

Source: Stata V14 Output.

The previous table shows the results of the first and second models as follows:

Results of the first model:

The results of the first model indicate that the value of the F-test was 18.8, with a statistical significance value of 0.00 at a significance level of less than 5%, which indicates the validity and stability of the model. The interpretation coefficient was 0.713, meaning that the independent variables (Diversification, Liquidity, Debt Ratio, Profitability, Firm Age) explain 71.3% of the changes in return on assets. The remaining percentage is due to other factors not included in the model. The regression equation can be extracted as follows:

ROA= 0.393 + 0.07 DIV + 0.05 LIQ - 0.44 DER + 0.03 PRO + 0.01 Age + ε

It is clear from the parameters of the regression model that:

- There is a positive effect of Diversification on return on assets with a value of 0.07, meaning that increasing Diversification by one unit will lead to an increase in return on assets by 0.07 in the Egyptian companies under study. This value is statistically significant at a significance level of less than 5%.
- And, there is a positive effect of Liquidity on return on assets with a value of 0.05, meaning that increasing Liquidity by one unit will lead to an increase in return on assets by 0.05 in the Egyptian companies under study. This value is statistically significant at a significance level of less than 5%.
- Also, there is a positive effect for Profitability on return on assets with a value of 0.03, meaning that increasing Profitability by one unit will lead to an increase in return on assets by 0.03. This value is statistically significant at a significance level of less than 5%.
- There is a positive effect for firm age on return on assets with a value of 0.01, meaning that increasing firm age by one unit will lead to an increase in return on assets by 0.01. This value is statistically significant at a significance level of less than 5%.
- But there is a negative effect for Debt Ratio on return on assets with a value of -0.44, meaning that decrees in Debt Ratio by one unit will lead to an increase in return on assets by 0.44. This value is statistically significant at a significance level of less than 5%.

Results of the Second model:

The results of the second model indicate that the value of the F-test was 9.267, with a statistical significance value of 0.00 at a significance level of less than 5%, which indicates the validity and stability of the model. The interpretation coefficient was 0.69, meaning that the independent variables (Diversification, Liquidity, Debt Ratio, Profitability, Firm Age) explain 69% of the changes in return on Equity. The

remaining percentage is due to other factors not included in the model. The regression equation can be extracted as follows:

ROE= 0.360 + 0.405 DIV + 0.103 LIQ - 0.819 DER + 0.06 PRO + 0.03 Age + ε

It is clear from the parameters of the regression model that:

- There is a positive effect of Diversification on return on equity with a value of 0.405, meaning that increasing Diversification by one unit will lead to an increase in return on equity by 0.4 in the Egyptian companies under study. This value is statistically significant at a significance level of less than 5%.
- And there is a positive effect of Liquidity on return on equity with a value of 0.10, meaning that increasing Liquidity by one unit will lead to an increase in return on equity by 0.10 in the Egyptian companies under study. This value is statistically significant at a significance level of less than 5%.
- Also, there is a positive effect for Profitability on return on equity with a value of 0.06, meaning that increasing Profitability by one unit will lead to an increase in return on equity by 0.06. This value is statistically significant at a significance level of less than 5%.
- There is a positive effect for firm age on return on equity with a value of 0.03, meaning that increasing firm age by one unit will lead to an increase in return on equity by 0.03. This value is statistically significant at a significance level of less than 5%.
- But there is a negative effect for Debt Ratio on return on equity with a value of -0.819, meaning that decrees in Debt Ratio by one unit will lead to an increase in return on equity by 0.819. This value is statistically significant at a significance level of less than 5%.

Based on the previous results and the results of the multiple regression analysis presented in Table (7), we reject the null hypothesis of the study and accept the alternative hypothesis that

H1: Diversification in unrelated industries has a significant impact on the Egyptian firm's performance.

Conclusion

The purpose of this study was to analyze the nature of general relationship between unrelated corporate diversification and financial performance of firms listed at Egypt stock exchange market. The empirical estimation is based on 8-year data of 16 non-financial companies from 2015 to 2022. To explore the relationship between unrelated corporate diversification and firm performance, Stata software v12 model was used. Corporate diversification was divided into two categories namely, related and unrelated diversification, while return on assets and return on equity was taken as proxy to measure the firm performance. Other variable like size of firm, age of firm, assets growth, liquidity, debt or equity ratio of firm were taken as control variables. The findings of the first model suggest that the independent variables of Diversification, Liquidity, Debt Ratio, Profitability, and Firm Age have a significant impact on the Return on Assets (ROA) of Egyptian companies.

The results indicate that increasing Diversification, Liquidity, and Profitability have a positive effect on ROA, suggesting that these firms are able to generate higher returns on their assets by adopting these strategies. Specifically, a one-unit increase in Diversification, Liquidity, and Profitability is associated with an increase in ROA of 0.07, 0.05, and 0.03 respectively. On the other hand, the results show that increasing Firm Age has a positive effect on ROA, with a value of 0.01. This suggests that as companies age, they are able to optimize their assets and generate higher returns. In contrast, the study finds that an increase in Debt Ratio has a negative effect on ROA, with a value of -0.44. This implies that companies with high levels of debt may experience decreased profitability due to the high cost of servicing debt and the potential for default. The results of this study provide insights into the factors that contribute to the variation in ROA among Egyptian companies, highlighting the importance of strategic planning and management practices in achieving high levels of profitability. The findings also support the notion that diversification, liquidity, and profitability are key drivers of ROA, while debt ratio is a significant deterrent.

The results of the second model provide valuable insights into the factors that influence return on equity (ROE) in Egyptian companies. The positive and significant effects of diversification, liquidity, and profitability on ROE suggest that these factors play a crucial role in determining the financial performance of Egyptian companies. Specifically, the findings indicate that a one-unit increase in diversification, liquidity, and profitability is associated with a significant increase in ROE, providing evidence that these variables can be used as strategic levers to improve financial performance. Furthermore, the positive effect

of firm age on ROE may indicate that older companies have developed a more stable financial foundation, which can contribute to their improved financial performance. Overall, the findings provide support for the importance of considering these factors in strategic decision-making and highlight the need for Egyptian companies to adopt a balanced approach to managing their financial performance.

Discussion

These results imply that in fact there is a positive strong relationship between diversifying in unrelated sectors and firm performance in which it outperforms firms that are undiversified or using related diversification, these results align with "Brandon C. L. Morris, Stephen G. Fier and Andre P. Liebenberg: The Effect of Diversification Relatedness on Firm Performance" and "Oladimeji, M. S. & Udosen, I. (2019). The Effect of Diversification Strategy on Organizational Performance", in the light of those two articles out of many, they both concluded that organizations pursuing related strategies perform better than unrelated and hybrid organizations. Nevertheless, organizations pursuing a hybrid strategy and unrelated strategy generate higher returns in ROE and ROI. The studies concluded that the benefit of diversification outweighs the cost, thus diversification has a positive effect on an organization's performance.

Managerial Implications and Recommendations

Our study highlights several key policy implications for all sectors. Firstly, efficient financial management is crucial for improving financial performance. Additionally, our findings suggest that diversification can have a positive impact on financial performance, but it is essential to carefully manage diversification decisions to avoid over-diversification, which can negatively impact performance. Furthermore, we found that the capital structure of a firm has a significant impact on financial performance, and it is essential to strike a balance between debt and equity to minimize capital costs and maximize profitability. Finally, effective management of corporate diversification, coupled with good corporate governance and a well-structured financial framework, can significantly improve the financial performance of firms.

We recommend the implementation of strategic financial management for Egyptian companies seeking to enhance their return on equity (ROE). Prioritizing factors that generate profit, such as diversification into new markets or products and improved working capital management for better liquidity, is paramount. Companies should also focus on core business activities with strong margins to solidify profitability. For a long-term perspective, leveraging experience gained over time can lead to more informed decision-making and consequently, improved returns. However, it is crucial to maintain a balanced capital structure by managing debt cautiously. Excessive debt burdens can strain finances with high-interest costs. In conclusion, a successful strategy hinges on prioritizing actions that enhance profitability and cash flow, while concurrently maintaining a healthy debt level and capitalizing on experience for sound financial decision-making. Overall, a balanced approach is key, prioritizing strategies that enhance profitability and cash flow, while maintaining a healthy debt level and utilizing experience for sound financial decisions.

Limitations and future work

Despite the findings of this study, there are some limitations and avenues for future research that warrant consideration. One limitation is that the study is based on a sample of firms in a specific region, which may not be representative of firms in other industries or regions. Additionally, the study's findings may not be generalizable to firms with different ownership structures, sizes, or levels of diversification. Future research could aim to replicate the study using a larger and more diverse sample of firms. Furthermore, while the study found that diversification can improve financial performance, it did not examine the specific mechanisms by which this occurs. Future research could investigate the relationship between diversification and financial performance in more depth, including the role of synergies, risk reduction, and market competition. Finally, future studies could explore the impact of different corporate governance structures and regulatory environments on the relationship between financial structure and financial performance.

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