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Investigating the Macroeconomic and Firm Specific Determinants of the Growth and Survival of SMEs: An Empirical Study of the Egyptian Listed SMEs

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Abstract

Egypt faces high fluctuations in its external environment, which has triggered the SMEs to face challenging factors. In this regard, this research investigates the firm-specific and macroeconomic factors that may affect SMEs' survival and growth by applying multiple linear regression using a sample size of 23 listed SMEs at the Nile Stock Exchange of Egypt from 2017–2021. The results of the multiple linear regression analysis of the model of SMEs' survival show that the model is statistically significant. Moreover, the findings of the SMEs' growth model are statistically significant, but the model is weak and cannot strongly predict future movements of SMEs' growth. According to the authors' knowledge, few studies investigate the factors that influence SME growth and survival in Egypt, it is thus recommended to apply more research in this field to the Egyptian market and to test the influence of more variables and tools on organizations.

Keywords

SMEs, Economic growth; Exchange rate; Inflation rate; Lending interest rate; Management efficiency; Leverage; Profitability; Pearson correlation approach and multiple linear regression

Article history

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1. Introduction

Small and medium-sized enterprises (SMEs) play an important role in supporting national economies. They are considered the backbone of any emerging economy since they help the government and its agencies in achieving their targets therefore, the performance of SMEs can be regarded as a problem in several countries. Numerous writings show that several internal factors (e.g., management efficiency, leverage, profitability, etc.) and external factors (e.g., economic growth, exchange rate, inflation rate, lending interest rate, etc.) contribute to explaining the performance of SMEs. (Robb, 2002)

Avouba and Gilles (2022) suggest that all of these factors are necessary not only for business formation but also for business survival and expansion. They also add that by collectively working with large corporations, SMEs have the chance to achieve better financial and operational conditions that lead to a stable, flourishing and prospering economy, which will eventually drive sustainable development in countries.

As a result, Façanha et al. (2012) recommend that SMEs' management shall consider all internal and external factors that may affect growth. This can be achieved by ensuring that SMEs' management has the required human skills, knowledge, abilities, experiences, tools and technology to deal with such changes and threats in order to survive and flourish in the economy.

The purpose of this research paper is to create a framework that connects macroeconomic factors and firm-specific determinants that may affect the growth and survival of Egyptian SMEs, as well as to test its validity through an empirical study of Egyptian listed SMEs. Importantly, the results of this research paper can also be utilized by managers and owners of SMEs to provide better insight into the drivers of SMEs' growth and survival, which can provide them with a better prediction of the performance of SMEs and their growth and survival in the economy.

The current research paper will present two main questions:

Q1. Do macroeconomic variables significantly affect SMEs' growth and survival in Egypt?

Q2. Do firm-specific variables significantly affect SMEs' growth and survival in Egypt?

The rest of this paper proceeds as follows. Section 2 reviews prior literature on macroeconomic determinants, firm-specific determinants and SMEs' determinants followed by the development of the research hypotheses. Section 3 discusses the data and methodology. Section 4 reports the data analysis and hypotheses testing. Finally, Section 5 concludes and offers recommendations for academics, professionals and regulators.

2. Literature Review and Hypotheses Development

This section reviews the theoretical background for the macroeconomic factors, the firm-specific determinants, and the SMEs' growth and survival determinants in the market. Furthermore, this section sheds light on the effects of macroeconomic factors on the growth and survival of SMEs.

2.1 Macroeconomic Determinants

Kabir (2019) suggests that nowadays the global economies fluctuate significantly across the globe due to the quick changes in human skills, education, training, client preferences, physical capital availability, natural resource availability and technological advancements. These factors affect the quality and quantity of products and services and trigger the intensity of competition among the companies, leading to efficiency improvements and more affordable prices. However, the world's political instability weakens economic development and poses new challenges, which deteriorates companies' survival and growth in the markets.

Zhu et al. (2021) indicate that the higher real gross domestic product (GDP) over the years encourages more companies to be equipped with the most contemporary machines and astute laborers to produce the highest output with the least inputs to have more efficient operations and drive economic prosperity upward for higher national income and better living standards. To do so, the countries need to be equipped with the required factors of production to be ready to produce and develop outputs. Countries with qualified and well-educated laborers can efficiently manage and run the business. Additionally, having abundant resources available for production will help in saving hard currency and minimizing costs, thereby producing more output and meeting customers' demand locally and internationally, which will eventually strengthen the value of the home currency and increase the international reserves.

Alabi et al. (2019) suggest that a higher GDP increases the demand for products as the national income increases as well. Thereby, the firms produce more and achieve better financial and operational results, which will help them grow and survive in the market. On the other side, if the GDP declines over the years and starts to hit a recession, products and services reduce and prices rise in the market, reducing sales in the company and deteriorating the profit margins, which will consequently threaten firms' survival and growth.

Zhu et al. (2021) argue that when the demand for the home currency exceeds the supply, its value rises, and the imported goods and services become cheaper. Whereas, when the supply exceeds the demand, the home currency falls in value and the goods and services become more expensive. In this regard, emerging countries with more import-oriented firms have problems with their foreign reserves, which lead to devaluation in their home currencies. However, developed countries with more export-oriented firms have an appreciation for their foreign reserves.

Ocampo et al. (2000) find that business firms operating in emerging markets face depreciation of their home currencies, which leads to higher costs as imported goods become more expensive. This forces firms to raise their prices, which weaken

profitability, leading to a higher likelihood of bankruptcy. Firms that sell elastic products or services are more vulnerable to changes in sales performance than inelastic ones. The premise is that the quantity of elastic products is very sensitive to price changes, which can indeed affect the size of sales and threaten the firm's survival and growth in the markets. The study also supports that the inflation rate increases over the years when the country has too much money chasing a few goods and services in the market. In other words, when the central bank of the country reduces the interest rate to attenuate the cost of financing and encourage more demand for loans, this will lead to higher levels of investments and more spending on goods and services. However, if the firms spend more than what is available in goods, this will lead to an increase in the overall level of prices, and thus inflation will rise and disposable income of households will reduce as well, thereby reducing sales and weakening the ability of the firms to survive and grow in the markets. Finally, the study indicates that a higher unemployment rate over the years lowers the wage rate, weakens the productivity of the firms, and triggers the business firms to run under inefficiency, which eventually leads to a lower capacity of production and a drop in sales, and thus lowering the profit margin of the business firms and weakening their ability to survive in the markets.

2.2 Firm-Specific Determinants

Lekhanya (2016) suggests that business firms operate in general and specific environments, and these environments are made up of factors that affect the firms' performance either positively or negatively. The general environment has external factors that affect the business firms' performance such as changes in economic conditions, political situations, technological advancements, and sociocultural activities. Whereas, the specific environment is composed of the stakeholders of the business firms that affect and are affected by the actions of the firms such as clients, creditors, stockholders, employees, the government and society. The business firms shall work on meeting the interests of the stakeholders to receive support and positive interaction from their stakeholders for gaining higher value and more market share, which improve the operational and financial results of the firms. Therefore, the business firms shall design strategies, establish structure, and set cultures to guide the employees on how to capture the opportunities and go through the obstacles to achieve the firms' objectives and goals without delay or failure.

While Alabi et al. (2019) recommend that the firms shall carefully watch the debt size relative to their equity and measure the financial risk because the debt is considered a double-edged sword that can either maximize or minimize the value of the firms depending on the nature of the business and the stability level of the earnings. In other words, those firms that see a stable increase in earnings over the years can use more debt to maximize earnings, while those with unstable earnings shall reduce their debt usage to avoid deterioration in earnings and the company's value. During COVID-19, the tourism and airline industries were firstly affected by the pandemic as they faced high debt levels relative to equity, causing huge drops in earnings that eventually threatened their survival and growth.

Therefore, Le et al. (2020) agree that the relationship between leverage and firms' survival and growth depends on the nature of the business. If the firms have a high level of earnings and stability over the years, it means there is a positive impact on their survival and growth. On the other side, if the firms have unstable earnings over the years, the leverage lowers the probability of their survival and growth in the markets.

2.3 SMEs Determinants

Trung (2021) argues that the importance of studying the performance of SMEs derives from several salient aspects. First, SMEs have a major influence on both gross domestic product (GDP) and unemployment. As previously mentioned, both in the EU and globally, SMEs are responsible for an important share of GDP and the reduction of unemployment. Second, in the current context of rapid changes in the world economy, the interdependencies between national economies (a direct effect of globalization) and a difficult recovery after the global economic crisis highlight the increased role of SMEs. Third, SMEs represent the framework of free entrepreneurial initiative and entrepreneurship. Although different, it was found that SMEs play a major part in the process of promoting technical progress in society and innovation in economic activity.

Trung (2021) also indicates that although most studies are useful to entrepreneurs in their efforts to find the most appropriate ways to increase organizational performance in the context of limited resources, they do not contribute significantly to understanding the specific mechanisms and determinants of SMEs sector performance in a specific country.

Based on the literature review, it has been revealed that there is a relationship between macroeconomic factors, firm-specific determinants, and the SMEs' growth and survival, but no attention has been paid to examining these variables in the Egyptian economy. The next section will illustrate the previous studies that tackle the relationship between the variables.

2.4 Extensive Review on The Relationship Between Macroeconomic Factors and Firm Specific Determinants and How it Affects SMEs' Growth and Survival

In Nigeria, Okpara (2011) points out that several factors significantly affect the survival and growth of SMEs by employing a survey questionnaire distributed across 211 owners and managers of SMEs and the multiple linear regression used for data analysis. The findings show that poor management, lack of financial support, poor infrastructure, corruption, lack of training and experience, low demand for products and insufficient profits are the main drivers of SMEs' survival and growth. The author recommends that such results shall be considered by the officials of the government to improve the current policies and to enable the SMEs to overcome the outstanding dilemmas that exacerbate the problems. The results of the study reveal that the most common constraints hindering small business growth and survival in Nigeria are lack

of financial support, poor management, corruption, lack of training and experience, poor infrastructure, insufficient profits and low demand for products and services.

Additionally, Liu and Pang (2006) examine the impact of macroeconomic and firm-specific factors on the survival and growth of listed SMEs in China by employing the generalized model of moments (GMM) regression for data analysis using time-series data from 1990-2003 and a sample size of 1247 companies from different industries and considering operation risk, public equity offerings, R&D activities, ownership, age and size as the independent variables of the study. According to the findings, a firm's size and seasoned equity offering have a positive significant impact on the survival and growth of SMEs, whereas state ownership and R&D activities only have a positive significant impact on the survival of SMEs. Moreover, a firm's age has a significant negative impact on the growth of SMEs.

Moreover, Yeboah and Polytechnic (2015) investigate the factors that significantly affect SMEs' growth in Ghana using a survey questionnaire distributed across 121 SMEs for data collection and employing the Cramer's V statistical test for data analysis. Findings show that the size of the SMEs and the educational qualification level of the management have a positive and significant impact on the SMEs' growth. In this regard, the authors suggest that the managers and owners of the SMEs shall be well-educated in their fields by taking workshops and seminars guiding them on how to run the business and how to manage risks to maximize profits and survive in the markets.

In Ghana, Kusi et al. (2015) examine the factors that prevent the growth and survival of SMEs by conducting a case study on the SMEs of the Kumasi Metropolitan Area using a survey and case study for data collection. The findings reveal that most of the employees are youths and females, usually with low levels of education and a lack of qualified personnel. Furthermore, there is limited access to financing programs and the majority of them are self-financed, which hinder SMEs from growing and surviving. The authors thus far recommend allowing wealthy investors to establish investment funds to help SMEs and investors to achieve their financial objectives.

In Egypt, El-Sady et al. (2022) investigate the determinants of Egyptian SMEs financial failure predictability based on a sample of 32 failure SMEs and 28 non-failure SMEs for the period 2013–2019. The determinants of SMEs financial failure are categorized into four groups: working capital, asset structure, liquidity and leverage. The factor and logistic regression analyses are used to identify the most significant independent variables that differentiate between failure and non-failure Egyptian SMEs and to identify the cause of their financial failure. The findings significantly show that failing SMEs suffer from long cash conversion cycles resulting from a long inventory holding period, an average collection period, and a short average payment period, lower liquidity, excessive use of debt to assets and a lower fixed asset percentage.

Furthermore, Lekhanya (2016) examine the factors that affect the survival and growth of the SMEs in the rural area of KwaZulu-Natal by employing a survey

questionnaire distributed across 150 owners or managers of SMEs. The findings show that the infrastructure is poor and doesn't facilitate the trading process, which impedes the SMEs' growth. Moreover, there is no sufficient financial support to help the SMEs expansion because of the higher costs of financing, and thus restricting SMEs' actions and growth.

Moreira (2016) examines the factors which may affect the growth of the SMEs in Europe by employing multiple linear regression for data analysis with a sample size of 1327 enterprises from the internet and high-tech industries, considering firm growth as the dependent variable and the operating revenue, total assets, number of recorded subsidiaries, profit or loss for the period, solvency ratio, and liquidity ratio as the independent variables of the study. Findings reveal that the R2 of the regression model is 99.49%, indicating that the independent variables can explain 99.9% of the total variation in the growth of SMEs. This implies that the regression model is very useful and can be used as an early alert to predict potential growth. Furthermore, the findings reveal that firm size, net income or loss, and operating revenue have a positive significant impact on SMEs' growth, whereas the numbers of recorded subsidiaries are found to be significant and have a negative relationship with SMEs' growth. The solvency and liquidity ratios are found to be insignificant, implying that their variations cannot affect SMEs' growth. Finally, the growth rate of SMEs does not strongly depend on financial access in Europe.

In addition, in Namibia, Baporikar et al. (2016) investigate the factors that prevent SMEs from growing by conducting a case study using unstructured in-depth interviews and deep observations as a qualitative method for data collection, content and discourse for data analysis. Their findings reveal that customer theft, fights, security problems, outdated technology, limited access to finance, a lack of skilled manpower, poor customer service and inappropriate marketing strategies are the main factors that prevent SMEs from growing.

Alabi et al. (2019) examine the impact of government policies on SMEs growth by employing a survey questionnaire for data collection using structured questions distributed across 520 SMEs respondents in six states in southwestern Nigeria. Findings show that lack of quality in education, custom, religion, and traditions, an inefficient financial system, poor infrastructure, an inefficient legal system, a high level of political corruption and political instability are the main factors that threaten SMEs' survival and growth in the markets. In this regard, the authors recommend that the officials of government need to consider such factors in their policy enactments to improve SMEs' ability to survive and grow in the market for better economic conditions full of prosperity and flourishment.

Moreover, Kristanti et al. (2019) investigate the factors that significantly affect the survival level of the SMEs by employing regression for data analysis on a sample size of 34 SMEs listed on the stock exchange of Indonesia, utilizing time-series data from 2009 to 2018. The findings reveal that net working capital to total assets and SMEs' age are significant and have a negative relationship with SMEs' survival, while inflation and economic growth have a significant positive impact on SMEs' survival.

Therefore, the authors recommend that the officials of the governments shall consider both the significant micro and macro factors that improve SMEs' ability to grow and survive in the markets and diminish bankruptcy likelihood.

Le et al. (2020) examine the factors which affect the survival and the growth of SMEs in Thanh Hoa province by employing a survey questionnaire distributed across 512 respondents for data collection, considering the tax-supporting policy, preferential policies, insurance policy, the act of public administration, capital support packages and the role of a professional association as the independent variables in the questions of the survey. Based on the findings, the author recommends that the officials of government have to reduce lending interest rates in the credit markets and extend the period of repayment or the due date of the loan contracts to empower the SMEs and enable them to survive and grow. Moreover, the government shall promptly deploy support packages to enhance SMEs'

production capacity, reduce taxes and exempt those startup SMEs from paying taxes for a longer time. The government shall further pass acts and policies suspending the payment to retirement funds due to COVID-19 and to strengthen the cooperation level among the SMEs. Finally, it is suggested that focusing on improving the competency of the staff in the state administrative system enables the employees to be sufficiently educated to manage the financial crisis and survive in the markets.

Zhu et al. (2021) examine the impact of inventory stickiness on the survival of SMEs in China by employing the quadratic regression method for data analysis and utilizing time-series data from 1999 to 2007. They use a sample of 188,065 SMEs, considering financial constraints and environmental dynamism as the moderating variables, while selecting the firm size, productivity, capital intensity, average firm age, average firm size and industry entry rate as the control variables, and the survival of SMEs as the dependent variable of the study. Inventory stickiness is found to have an inverted U-shape relationship with SME survival, whereas financial constraints moderate the relationship. Finally, the authors recommend that SMEs managers shall improve their inventory stickiness before enhancing their lean inventory management. Hence, inventory stickiness plays an important role in helping SMEs survival in a dynamic environment.

Furthermore, Iwasaki et al. (2021) examine the determinants of SMEs' survival in Europe by employing regression for data analysis using a sample size of 94,401 SMEs in 17 European emerging markets. They utilize time-series data from 2007-2017, considering firm size, ownership structure, financial performance and firm age as the independent variables of the study. The findings show that 36,060 firms failed at the end of 2017, while 58,341 SMEs survived in the market. Furthermore, financial development is found to be very important for keeping SMEs alive in European emerging markets., Foreign ownership, profit margin and solvency ratio can reduce SMEs' failure in the markets. Moreover, SMEs' age is found to be significant and to have a positive non-linear relationship with their survival. SMEs' size and state ownership are drivers of SMEs' failures in the markets. Finally, the authors

recommend that managers and owners of SMEs in Europe shall consider such factors to avoid failures and bankruptcy filings.

Resende et al. (2015) examine the long-term viability of newly formed SMEs in the Brazilian manufacturing sector using newly formed corporations from 1996 to 2005. A time-varying variant of Cox's proportional hazards model is employed in the econometric study. The findings provide evidence consistent with the favorable effects of firm size, industry size and industry growth on survivability, as well as the negative effects of the efficient level, the industrial concentration level and the sub-optimal scale on survivability. Finally, geographical disparities are a significant cause of heterogeneity in overall survival.

Rahman et al. (2016) investigate the theoretical framework of technological innovation on SME survival and indicate that studies on survival are still sparse. The practice of technical innovation is highly related to corporate success in the prior literature, but its impact on SME survival is still controversial. SME survival relates to the number of years that a company exists, the accessibility of long-term plans, and the variety of products and services it offers. Among the main technological advances emphasized in the literature are social scientists and business executives, advanced machines and equipment, integration of different technologies, appliances and equipment and merging of various technologies and gadgets as tools of innovation. Finally, since online consumers are larger than normal physical customers, the findings give some insight into social networking as part of online marketing. Furthermore, because of the potential to reach clients regardless of geographic location, the impact of internet marketing via social media is crucial.

Rattanapongpinyo (2018) investigates the criteria for measuring SMEs' survival and flourishing, then investigates the elements that impact their survival and flourishing and finally investigates the aspects that are associated with survival and flourishing. Questionnaires are used to collect data from 400 SMEs and entrepreneurs in Thailand's Western Regions. Means, standard deviation, t-test, ANOVA, and correlation coefficient are utilized to analyze the data. The findings reveal that achievement in corporate branding, enterprise value, recognition and measurement of deals and employee involvement are the parameters for assessing SMEs' survival and prosperity. Leadership, organizational and business environment characteristics are found to be associated with the survival and prospering of SMEs in Thailand's western districts, with correlation coefficient values of 0.84, 0.76, and 0.65, respectively. The relevant personnel shall improve the knowledge and capabilities of SME entrepreneurs, make financing more accessible and assist them in taking advantage of exports.

Gamage et al. (2020) argue that due to the fast growth in rivalries, economic globalization poses several obstacles for SME businesses. As a result, SMEs face higher rates of failures within a short amount of time after they start operating. As a result, SMEs shall implement survival strategies and strategic tactics in order to overcome the different worldwide problems that the SME sector faces. The purpose of the study is to critically review the available literature on global problems for SMEs to better understand SMEs' survival and subsequent strategies in the highly competitive

marketplace. To accomplish the purpose of the study, multilateral institutions' published information on the topic and 110 research articles published by four reputable publishing organizations, Emerald, Elsevier, Taylor & Francis, and MDPI, are chosen. In the context of economic globalization, the assessment shows important worldwide issues for SMEs Including global market rivalry, global finance and economic crises, ICT technologies, the creation of multinational and transnational firms, consumer shifts and preferences, trade dumping, international terrorism, religious conflicts and trade. Furthermore, the study investigates SMEs' survival mechanisms in the industrial system to identify survival policies required to face global difficulties.

Latif et al. (2021) support the fact that business model innovation (BMI) may help a company gain a competitive edge and increase performance. Many SMEs fail to achieve the desired results when they innovate their business model. BMI causes permanent, fundamental changes in critical parts of a company's business model, posing severe risks, ambiguity and confusion. Using data from 563 European SMEs from a variety of industries and employing structural equation modeling to examine how changing a company's business model affects its performance. To investigate how organizational capacities and the implementation of a profit- or growth-oriented strategy, as manifested in BMI, impact a firm's overall performance, a conceptual model is built. While the direct relationship between BMI and firm success is not substantial, the findings show that this relationship is moderated by efficiency growth, organizational capacities and revenue growth.

McGuinness et al. (2018) examine whether trade credit assisted cash-strapped SMEs during the latest financial crisis. The findings show that trade credit has a strong beneficial influence on business survival, a one standard deviation increase in trade credit results in a 21% drop in the chance of distress while using data from 202,696 SMEs in 13 European nations from 2003 to 2012. The findings also provide evidence of a strong redistribution impact, cash-rich or unrestricted SMEs offering much more net trade credit than their less financially resourced peers. The findings are unaffected by several econometric problems. The premise is that trade credit can significantly lower the chance of financial trouble, particularly in the aftermath of the 2008 financial crisis. During the crisis years, greater levels of financing provided by cash-rich or unconstrained SMEs play a crucial role in supporting less liquid and financially restricted SMEs for a length of time, and thus maintaining their survival. All other things being equal, a one standard deviation rise in trade credit corresponds to a 21% drop in the chance of distress.

Nunes et al. (2012) employe the two-step estimate approach to evaluate two samples of SMEs in manufacturing industries to investigate whether there is a comparable link between R&D intensity and growth in high-tech and non-high-tech SMEs firms. Results indicate that at lower levels of R&D intensity, high-tech SMEs' development can be restricted. However, at higher levels, growth is stimulated. Nevertheless, despite the amount of R&D, the intensity of R&D limits the growth of non-high-tech SMEs. This implies that the associations found between various

characteristics in the prior literature and the growth of high-tech and non-high-tech SMEs that is smaller, non-high-tech SMEs grow faster than non-high-tech SMEs. When compared to non-high-tech SMEs, high-tech SMEs face more challenges to fund their expansion plans. Internal funding is found to be more important for growth in high-tech SMEs than in non-high-tech SMEs, indicating that high-tech SMEs face more difficulties when obtaining external financing. The fact that research and development investments in high-tech SMEs contribute to reduced development in situations of financial distress and interest on debt, strongly supports the notion that high-tech SMEs have a harder time financing their growth opportunities through external financing instruments.

Based on the prior literature regarding the macro and micro variables that affect the survival and growth of SMEs, no clear conclusion has been reached by the researchers, especially in Egypt. Moreover, some of the researchers employ qualitative approaches in their analysis while others use quantitative methods for data analysis, and both provide different results. Some studies conclude that economic growth, exchange rate and interest rate have a significant impact on the growth and survival of SMEs, whereas solvency, profitability and operating management efficiency are micro factors that have a significant impact on the survival and growth of SMEs. To the best of our knowledge, no attention has been paid to thoroughly examining the impacts of these variables on the survival and growth of SMEs. Finally, most studies employ multiple linear regression to validate the significant factors and the most influential variables.

2.5 Hypotheses

Based on the literature review, the research hypotheses can be stated as follows:

H1: The economic growth has a relationship with the survival and growth of the SMEs.
H1-A: Economic growth has a positive relationship with SMEs survival.
H1-B: Economic growth has a positive relationship with SMEs growth.

H2: The exchange rate has a relationship with the survival and growth of the SMEs.
H2-A: Exchange rate has a negative relationship with SMEs survival.
H2-B: Exchange rate has a negative relationship with SMEs growth.

H3: The inflation rate has a relationship with the survival and growth of the SMEs.
H3-A: Inflation rate has a negative relationship with SMEs survival.
H3-B: Inflation rate has a negative relationship with SMEs growth.

H4: The lending interest rate has a relationship with the survival and growth of the SMEs.

H4-A: lending interest rate has a negative relationship with SMEs survival.
H4-B: lending interest rate has a negative relationship with SMEs growth.

H5: Management efficiency has a relationship with the survival and growth of the SMEs.
H5-A: Management efficiency has a positive relationship with SMEs survival.
H5-B: Management efficiency has a positive relationship with SMEs growth.

H6: Solvency has a relationship with the survival and growth of the SMEs.
H6-A: Solvency has a negative relationship with SMEs survival.
H6-B: Solvency has a negative relationship with SMEs growth.

H7: Profitability has a relationship with the survival and growth of the SMEs.
H7-A: Profitability has a positive relationship with SMEs survival.
H7-B: Profitability has a positive relationship with SMEs growth.

Table (1): Summary of Research Variables

Symbol	Variables	Type	Category	Measurement
G	SMEs Growth	Dependentvariable	Firm-specific	% Change inassets
Z	SMEs Survival	Dependentvariable	Firm-specific	Z score model
GDP	Economic Growth	Independentvariable	Macroeconomic	% Change in GDP
EX	ExchangeRate	Independentvariable	Macroeconomic	EGP/USD
INF	Inflation Rate	Independentvariable	Macroeconomic	% Change in consumer priceindex
INT	Lending Interest Rate	Independentvariable	Macroeconomic	Annual average interest rate
FS	Management Efficiency	Independentvariable	Firm-specific	Asset turnover
Debt	Leverage	Independentvariable	Firm-specific	Debt ratio
ROA	Profitability	Independentvariable	Firm-specific	ROA, ROE

3. Methodology

This study examines the impact of firm-specific and macroeconomic factors on the survival and growth of SMEs using quantitative methods and multiple linear regression for data analysis over the period 2017-2021. The employed regression is commonly used in the literature and is effective in measuring the effect of the exploratory variables on the dependent variables, as a result predicting the future movement of SMEs' survival and growth. The research population contains 26 SMEs listed at the Stock Exchange of the Nile in Egypt. The sample size of the study comprises 23 firms and the sample size constitutes 88.5% of the population which can help generalize the findings on all the listed SMEs of the Nile Exchange of Egypt. The study period is relevant because many of the listed SMEs started to operate after 2017.

The study relies on secondary data, the bank-specific data are gathered from the annual reports of the Nile Stock Exchange of Egypt's listed SMEs and the macroeconomic data are gathered from the Central Bank of Egypt's annual reports. The panel data of this study comprises (5 x 23) 115 observations covering the period from 2017 to 2021. Notably, the study period includes an economic and political transitional stage in Egypt.

4. Data Analysis and Hypotheses Testing

Table (2): Multicollinearity Test

	Collinearity Statistics	
Variables	Tolerance	VIF
Management Efficiency	.922	1.085
Leverage	.951	1.051
Profitability	.940	1.064
GDP	.108	9.251
Exchange Rate	.026	**38.659**
Inflation	.107	9.359
Interest Rate	.017	**57.649**

	Collinearity Statistics	
	Tolerance	VIF
Management Efficiency	.926	1.080
Leverage	.953	1.049
Profitability	.946	1.057
GDP	.226	4.415
Exchange Rate	.077	**13.067**
Inflation	.126	7.956

	Collinearity Statistics	
Variables	Tolerance	VIF
Management Efficiency	.926	1.079
Leverage	.953	1.049
Profitability	.950	1.053
GDP	.966	1.035
Inflation	.927	1.078

The research applies the Variance Inflation Factor to examine the multicollinearity of the collected data. The findings show that the interest rate and exchange rate are multicollinear variables. Therefore, the research excludes the highest one first which is the interest rate as it has 58 VIF which exceeds 10. Then, the study reexamines the VIF analysis and finds that the exchange rate has VIF above 10 which results in its exclusion as well. Consequently, five variables are only considered under the study (Management Efficiency, Leverage, Profitability, GDP, and Inflation Rate) as they are classified as non-multicollinear variables.

Table (3): Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
SMEs Survival	115	-2.671	41.348	5.43510	8.877363
SMEs Growth	115	-.552	11.113	.22571	1.121357
Management Efficiency	115	.000	2.320	.47081	.531437
Leverage	115	.014	1.978	.42789	.341759
Profitability	115	-.288	.260	.00855	.079788
GDP	115	3.57	5.60	4.4540	.85275
EXR	115	15.6	17.8	16.760	.9456
INF	115	5.0	29.5	12.680	9.1312
IntR	115	9.4	18.3	14.680	3.6532
Valid N (listwise)	115				

As shown above in Table 3, the study comprises 115 observations, as it will use a sample of 23 listed firms during 2017–2021. The minimum column indicates that there are no anomalies in the collected data, whereas the maximum column indicates that the survival rate of SMEs is 41.348, indicating that such businesses are unlikely to fail but are far from the mean (5), thus, they are outliers. Moreover, the standard deviation of the SMEs' survival is 8, which implies that the data are highly volatile from the mean, but on average the data are 5, indicating that the majority of the SMEs are unlikely to go bankrupt as long as their Z-score is exceeding 3. Moreover, the maximum profitability in the listed SMEs of the Nile Stock Exchange of Egypt is 26%, while the minimum is approximately -29. Inflation has the highest standard deviation in the data set at 9%, which implies that inflation is fluctuating notably in Egypt during 2017–2021. The remaining data sets have low volatility, as they are less than 1%, except for the lending interest rate, which is 3%, indicating that it is slightly volatile compared to SMEs' survival and inflation. The maximum leverage in SMEs is 1.9%, implying that the Nile Exchange-listed SMEs do not use excessive debt in their early stages, instead relying on equity financing sources.

The multiple linear regression analysis is employed to examine the impact of firm-specific and macroeconomic variables on the SMEs' growth and survival during 2017–2021. The paper uses two regression models. The first model is concerned about the SMEs' survival, and the second is concerned about the SMEs' growth. Five independent variables are considered in the regression models namely "GDP", "inflation", "management efficiency", "leverage" and profitability, after excluding the interest rate and exchange rate since they are multicollinear variables.

Table (4): Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.864[a]	.747	.730	.830634	.747	43.152	5	73	.000	.707

a. Predictors: (Constant), INF, Leverage, Profitability, GDP, Management Efficiency.
b. Dependent Variable: SMEs Survival.

Table (5): ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	148.866	5	29.773	43.152	.000[b]
	Residual	50.367	73	.690		
	Total	199.232	78			

a. Dependent Variable: SMEs Survival.
b. Predictors: (Constant), INF, Leverage, Profitability, GDP, Management Efficiency.

Table (6): Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.679	.525		5.101	.000		
	Management Efficiency	.747	.183	.249	4.076	.000	.926	1.079
	Leverage	-3.179	.302	-.635	-10.531	.000	.953	1.049
	Profitability	6.264	1.038	.364	6.034	.000	.950	1.053
	GDP	.064	.110	.035	.585	.561	.966	1.035
	INF	-.007	.011	-.040	-.661	.511	.927	1.078

a. Dependent Variable: SMEs Survival

As shown in Table 6, the multiple linear regression results of the SMEs' Survival model show that the model is statistically significant. Moreover, the adjusted R square is 73%, indicating that the regression model can predict 73% of the total variation in the SMEs' survival. Furthermore, as shown in Table 6, management efficiency and profitability are statistically significant and have a positive association with SMEs' survival, while leverage has a negative relationship with SMEs' survival. In addition, the GDP and inflation rates are found to be statistically insignificant, implying that their movements cannot predict the future movement of SMEs' survival. In this regard, the findings show that the firm-specific variables have a severe impact on SMEs' survival compared to the macroeconomic variables.

Table (7): Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.383[a]	.147	.089	.175098	.147	2.515	5	73	.037	2.000

a. Predictors: (Constant), INF, Leverage, Profitability, GDP, Management Efficiency.
b. Dependent Variable: SMEs Growth.

Table (8): ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.386	5	.077	2.515	.037[b]
	Residual	2.238	73	.031		
	Total	2.624	78			

a. Dependent Variable: SMEs Growth
b. Predictors: (Constant), INF, Leverage, Profitability, GDP, Management Efficiency

Table (9): Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.020	.111		.179	.859		
	Management Efficiency	-.009	.039	-.025	-.225	.822	.926	1.079
	Leverage	.199	.064	.347	3.131	.003	.953	1.049
	Profitability	.348	.219	.177	1.592	.116	.950	1.053
	GDP	-.017	.023	-.082	-.745	.459	.966	1.035
	INF	.002	.002	.080	.709	.480	.927	1.078

a. Dependent Variable: SMEs Growth

The results of the multiple linear regression model of SMEs' growth, as shown in Table 9, show that the model is statistically significant. Moreover, the adjusted R square is 8.9%, indicating that the regression model can predict 8.9% of the total variation of SMEs' growth. This implies that this model is weak and cannot strongly predict future movements of SMEs' growth. Furthermore, all the variables are found to be statistically insignificant except for the leverage which is found to be statistically significant and has a positive association with SMEs' growth. In this regard, the findings show that the considered firm-specific and macroeconomic variables are not appropriate for predicting the future movement of SMEs' growth.

Hypotheses Testing

Based on the regression results, the hypotheses testing results are shown below:

H#	Hypotheses	Accepted/Rejected
H_{1-A}	Economic growth has a positive relationship with SMEs' survival	Rejected
H_{2-A}	The exchange rate has a negative relationship with SMEs' survival	N/A
H_{3-A}	The inflation rate has a negative relationship with SMEs' survival	Rejected
H_{4-A}	The lending interest rate has a negative relationship with SMEs' survival	N/A
H_{5-A}	Management efficiency has a positive relationship with SMEs' survival	Accepted
H_{6-A}	Solvency has a negative relationship with SMEs' survival	Accepted
H_{7-A}	Profitability has a positive relationship with SMEs' survival	Accepted
H_{1-B}	Economic growth has a positive relationship with SMEs' growth	Rejected
H_{2-B}	The exchange rate has a negative relationship with SMEs' growth	N/A
H_{3-B}	The inflation rate has a negative relationship with SMEs' growth	Rejected
H_{4-B}	The lending interest rate has a negative relationship with SMEs' growth	N/A
H_{5-B}	Management efficiency has a positive relationship with SMEs' growth	Rejected
H_{6-B}	Solvency has a negative relationship with SMEs' growth	Rejected
H_{7-B}	Profitability has a positive relationship with SMEs' growth	Rejected

5. Conclusion and Recommendations

This study investigates firm-specific and macroeconomic factors that may affect the growth and survival of SMEs in Egypt. After ensuring that the collected data meet the linear regression assumptions, multiple linear regression is employed in the current research paper. In this regard, the research examines the impact of five independent variables after excluding the exchange rate and interest rate as they are multicollinear.

Regarding the multicollinear hypotheses, the researchers mention N/A in the accepted or rejected column of the hypotheses testing table. The research findings can help financial managers to have better insights into the factors that may affect their organization, and they can also predict the future movements of the SMEs' growth and survival.

Academic Recommendation: Findings can be of great interest to academics concerned about determining the main factors that drive SMEs' survival and growth. Management efficiency, leverage and profitability are the main influential factors that affect SMEs' survival. The paper also recommends that future researchers shall consider other variables to increase the adjusted R2 of the SME growth model and to have a more informative estimated model that can predict the future movement of SME growth. Moreover, the research recommends employing the Generalized Methods of Moments (GMM) regression on the same selected variables to indicate whether there is any discrepancy in the findings or not. Importantly, the research recommends that future researchers need to examine also the impacts of public debt, external debt, capital ratio, government subsidies, liquidity and stock performance on SMEs' survival and growth and extend the panel data.

Professional Recommendation: Research findings help the financial managers of SMEs to gain better insight into the factors that affect their survival. The regression analysis results help predict the survival probability of the SMEs, and accordingly, the financial managers can use the model as an early alert to take proactive actions against bankruptcy. The financial managers of the SMEs shall observe the movement of management efficiency, leverage and profitability to predict the company's future financial health and accordingly, they can take decisive actions that can help enhance the company's survival. The greater the management inefficiency and leverage, the lower the probability of market survival. Whereas the greater the profitability, the greater the probability of market survival for SMEs.

Regulatory Recommendation: Research results can further help the regulators to have better insight into the factors that affect firms' survival, and accordingly suggesting future modifications to the outstanding regulation that better control SMEs' behavior towards management inefficiency, leverage, and profitability.

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