Asia-Pacific Journal of Science and Technology. Volume: 28. Issue: 03. Article ID.: APST-28-03-01. Research Article

APST

Asia-Pacific Journal of Science and Technology

https//:www.tci-thaijo.org/index.php/APST/index

Published by the Research and Technology Transfer Affairs Division,
Khon Kaen University, Thailand

The effect of the growth rate and life cycle of food industry companies on their profitability on the Tehran stock exchange

Amir H. Chizari[1] and Atefeh Karimib[1,*]

[1]Faculty of Agriculture Economics Department, University of Tehran, Tehran, Iran
[2]Applied Economics, Zanvyl Krieger School of Arts and Sciences, Johns Hopkins University, Baltimore, USA
[*]Corresponding author: chizari8000@ut.ac.ir

Received 10 November 2021
Revised 22 February 2022
Accepted 22 February 2022

Abstract

Increasing attention to the food industry and the entry of companies into the stock market is one of the most important factors influencing private sector investments and foreign investors, which will increase profitability, added value, and growth in the agricultural sector. This study attempts to examine the effect of growth rate of an asset (GRA), growth rate of sales (GRS), and growth rate of employment (GRE), financial constraints (liquidity (LIQ) and cash flow), and the company's life cycle on the profitability of 21 food industry companies listed the stock exchange from 2010 to 2019. The results show that the GRE, GRA, and GRS as corporate growth variables and cash flow variable as financial constraints have a positive and significant effect and LIQ as a financial constraint has a negative and significant effect on return on asset as a corporate profitability index. Meanwhile, the maturity stage of the company's life cycle compared to the growth stage as a Dummy variable has a positive and significant effect on the profitability of food industry companies. Therefore, if managers are looking for sustainable profits, they should also pay attention to the company's growth and its constituents.

Keywords: Company growth rate, Profitability indicators, Iranian food listed companies, Life cycle

1. Introduction

For decades, the growth and profitability of companies and the relationship between these two variables have attracted the interest of researchers in the field of financial management [1-5]. The relationship between profitability and firm growth can vary depending on the economic conditions faced by listed companies. This means that a company's management and growth pattern vary between relatively stable and unstable economic periods [6]. One of any company's traditional and main goals is to achieve profit maximization. It is difficult for managers to pursue both growth and profitability goals simultaneously, so managers tend to pursue either growth or profit.

On the other hand, in a competitive market structure, managers are faced with several choices that affect the evaluation of the company's financial performance, profitability, and growth. Besides an understanding of the factors that can affect the company's growth, profitability, and financial performance as a challenge at the corporate level. The growth of the company and the characteristics governing its growth and development management policies determine the stage of the life cycle in which the company is located. Each stage of the company's life cycle includes characteristics that can affect profitability. The definition of a company's life cycle reflects the evolution of a company that results from changes in internal factors such as the choice of the business strategy and environmental factors such as competitive pressures [7]. The importance of the company's life cycle is not limited to the company's internal decisions and choices but also includes the capital market environment. Dickinson et al [7] believes that the life cycle has important implications for the company's continued profitability. Therefore, the company's life cycle can be considered a critical factor in achieving profitability. Furthermore, the effect of different life cycle stages on the relationship between growth and profitability can also affect managerial decisions when choosing either growth or profitability. A review of existing studies on the company's life cycle shows that despite the availability of different models, the life cycle of a company in most studies can be divided into four main stages: emergence, growth, maturity, and decline.

Introduction stage: In this stage, the amount of assets (company size) is at a low level. Cash flows from operating activities and profitability are low, and companies need a high level of liquidity (LIQ) to finance and realize growth opportunities. The dividend ratio in these companies is usually low, and the internal rate of return is very low compared to the financing rate.

Growth stage: In this stage, the company's size is greater than the number of companies in the emerging stage, and sales and revenues are higher than in the emerging stage. The more financial resources are invested in productive assets, the company is more flexible in LIQ indicators.

Maturity stage: In the maturity stage, companies experience stable and balanced sales, and the need for cash is mostly financed through internal sources. The size of the assets of these companies is proportional to the size of the companies in the growth stage, and their dividend ratio fluctuates between 50% and 100%. Due to the abundance of LIQ and the reduction of reliance on external financing policies, the internal rate of return in these companies is usually equal to or greater than the financing rate.

Decline stage: The decline phase indicates the extent of the market downturn. Sales are poor due to the unattractiveness of the product to customers. Growth opportunities, if any, are slim. The company is in a very competitive environment. The cost of financing from external sources is also high so that, in most cases, the return on investment is less than the financing rate [8,9].

As one of the elements of the country's economy, the capital market plays an important role in attracting small savings and financial resources and allocating them to finance large economic projects. Therefore, the entry of food industry companies into the stock market can help to orient investors in the capital market of the agricultural sector. However, despite numerous studies and increasing interest in the literature about this study, the effect of growth and life cycle of food industry companies on their profitability in the capital market is not well known.

The agricultural sector of the Iran Stock Exchange consists of 5 sub-industries of food and beverage products except for sugar, agriculture and related services, textiles, and wood products. Increasing attention to the food industry is one of the most important factors in private sector investment and foreign investors, which will increase profitability, added value, and growth in the agricultural sector [1,5,10].

In the current situation, according to the statistics of the Ministry of Industries and Mines, 7370 units are active in the food industry with an investment of 12670 billion rials and employment of 200644 people. A total of 27 companies are operating in this industry [11].

Therefore, the primary purpose of this study is to investigate the impact of the growth and life cycle on the profitability of food industry companies in the stock market.

2. Materials and methods

2.1 Methodology and variable

According to the literature on the effect of growth rate and life cycle on the profitability, several indicators, including economic value added (EVA), market value added (MVA), net profit, return on assets (ROA), return on equity (ROE), and return on sales (ROS) are used to measure the profitability of stock exchange companies. Among these indicators, ROA, return on shareholders and ROS are the most widely used indicators in profitability analysis [12-14].

2.1.1 Return on assets or profitability index

This ratio is calculated as net profit after tax divided by total assets. This ratio measures the company's operating efficiency based on the company's profit from its total assets.

2.1.2 Return on equity or accounting dividend

This ratio is calculated as net profit after tax divided by the total shareholder's equity. This ratio measures the shareholders rate of return on their investment in the company. ROE indicates the profitability of a company's capital or is often referred to as business or accounting profitability.

2.1.3 Sales return, profit margin, or operating profit

Another profitability ratio sales return, which is a measure of sales revenues. Net operating profit shows the profitability of sales before taxes and interest and is used most frequently for analyzing the company's operating activities. Financial analysts often use it to help identify the strengths and weaknesses of the company's operational departments financially. Since the operating profit is related to the company's main activity, non-operating expenses and revenues are not included in it. The main foundation of the company's life cycle theory is that changing the company's capabilities has a significant impact on the company's investment, financing decisions, and operating performance. This theory assumes the management's desire for risk-taking should be in line with changes in the company's life cycle [15]. Besides, companies at different life cycle stages have special

financial and economic characteristics and behaviors. This implies that a company's financial and economic characteristics are affected by a stage of the life cycle the company is undergoing [9].

Most studies have addressed companies' life cycles based on the classification presented by Anthony and Ramesh et al [16]. They used four variables to differentiate companies into different life cycle stages: sales growth, capital expenditures, dividend ratio, and the company's age. In this study, companies are divided into growth, maturity, and decline stages using three variables of sales growth, capital expenditures, and dividend ratio. However, the company's age was excluded as it was impossible to measure this variable due to insufficient information and change or merger of companies. The division of companies into stages of growth, maturity, and decline based on the three variables proposed by Park et al [17] is done as follows:

First, the values of the above three variables are calculated for each company year. Accordingly, companies are divided into low, medium, and high categories based on statistical quantities. In the second stage, each of the sample companies is given a score according to their position in each category (each year -company) (bottom 1, average 2, and top 3). In the third stage, for each company year, a composite score is obtained, showing one of the three stages of growth, maturity, and decline. The emergence stage has been ignored due to the unavailability of information of relevant companies and the inactivity of stock trading (buying and selling) or the non-stock market of emerging companies. Finally, observations that are not included in the life cycle model based on these variables are removed from the initial and final samples [18,19].

It can be stated that the company's life cycle plays a vital role in attracting investors, which ultimately leads to higher LIQ of stocks and a lower cost of capital [20]. The focus of studies has been on the relationship between growth and profitability and the efficiency of these criteria (growth and profitability) to assess the relationship between the two variables properly. However, most of the mentioned studies have ignored differences in life cycle stages. Accordingly, considering the country's economic conditions during the years 2010 to 2019, the present study examined the difference in the growth and profitability of food industry companies listed in the stock exchange due to being in the life cycle stages.

The literature on corporate growth mainly concentrates on the framework of the Gibrat's law [21]. According to this law, growth is independent of the size (assets) of the company, which is known as the Proportional Effect Law (LPE). In economics, such a situation is referred to as economies of scale based on the long-term U-shaped cost function. In other words, as the company's size increases, so does the company's growth. Hence, companies larger than one will benefit from economies of scale and ultimately increase profitability.

The present study examines the impact of firm growth represented by the growth rate of the asset (GRA), the growth rate of sales (GRS), and growth rate of employment (GRE) on profitability once for the whole industry and once for three sub-industries including the fruit and vegetable market, animal and vegetable oil companies, and dairy companies listed in the food industry stock exchange using Equation 1:

$$\mathrm{ROA}_{\mathrm{it}} = \beta_0 + \beta_1 \mathrm{GRS}_{\mathrm{it}} + \beta_2 \mathrm{GRE}_{\mathrm{it}} + \beta_3 \mathrm{GRA}_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \quad (1)$$

Then, the second model addresses the impact of GRA, GRS, GRE, financial constraints (including LIQ and cash flow) on the profitability of the food industry using Equation 2:

$$\mathrm{ROA}_{\mathrm{it}} = \beta_0 + \beta_1 \mathrm{GRS}_{\mathrm{it}} + \beta_2 \mathrm{GRE}_{\mathrm{it}} + \beta_3 \mathrm{GRA}_{\mathrm{it}} + \beta_4 \mathrm{zLIQ}_{\mathrm{t}} + \beta_5 \mathrm{CASHFLOW}_{\mathrm{t}} + \varepsilon_{\mathrm{it}} \quad (2)$$

Then, the effect of firm GRA, GRS, and GRE, as well as firm life cycle on the profitability of the entire food industry, is examined via Equation 3:

$$\mathrm{ROA}_{\mathrm{it}} = \beta_0 + \beta_1 \mathrm{GRS}_{\mathrm{it}} + \beta_2 \mathrm{GRE}_{\mathrm{it}} + \beta_3 \mathrm{GRA}_{\mathrm{it}} + \beta_4 \mathrm{D1}_{\mathrm{it}} + \beta_5 \mathrm{D2}_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \quad (3)$$

$\mathrm{ROA}_{i,t}$: This variable indicates the return on assets in year t. According to the existing theoretical framework, several financial ratios have been used to calculate and measure the profitability of stock exchange companies. In this study, ROA was used to evaluate the company's profitability as a dependent variable in the model following the previous studies in the literature [6,22-25]. The ROA value indicates how much profit is derived from the invested assets. This index is expressed as a percentage for each company. ROA is highly dependent on industry and group, and therefore, it is better to compare the value of this index with its corresponding value in the previous years or for similar companies either in a group or industry [26].

$$\mathrm{ROA} = \text{Net profit after taxes/Total assets} \quad (4)$$

GRS: The asset growth rate is at time t.

$$\mathrm{GRS}_{i,t} = \left(\text{Total Sales}_{i,t}\right) - \left(\text{Total Sales}_{i,t-1}\right)/\left(\text{Total Sales}_{i,t-1}\right) \quad (5)$$

GRE: The employment growth rate is in year t.

$$\mathrm{GRE}_{i,t} = \left(\text{Employees}_{i,t}\right) - \left(\text{Employees}_{i,t-1}\right)/\left(\text{Employees}_{i,t-1}\right) \quad (6)$$

GRA: The asset growth rate in year t.

$$\mathrm{GRA}_{i,t} = \left(\text{Total Assets}_{i,t}\right) - \left(\text{Total Assets}_{i,t-1}\right)/\left(\text{Total Assets}_{i,t-1}\right) \quad (7)$$

LIQ: a company's LIQ is the company's ability to meet its short-term obligations. Of course, some researchers consider LIQ to be more important and believe that if a company is not profitable, it is sick, but if it does not have LIQ, it will not survive. In other words, a company that is not profitable is likely to survive, but without LIQ, it cannot survive. Equation 8 shows how to calculate this variable:

$$\text{LIQ} = \text{Current Assets}/\text{ Current Liabilities} \quad (8)$$

Cash flow: this variable reflects the activities of a business and is derived from the sum of cash flows from operating and investment activities divided by total assets [27].

$$\text{Cash Flow}_{i,t} = \text{CashFlow from Operating Activity}_{i,t} + \text{CashFlow from Investing Activity}_{i,t}/\text{Total Assets}_{i,t} \quad (9)$$

ε_{it} It also indicates the error component in the model to which the classical assumptions should apply.

This study tries to determine the relationship between the growth and life cycle and their effects on the profitability of food industry companies listed on the stock exchange. For this purpose, the panel data method is used. This method has two major advantages over cross-sectional methods and time series: First, it allows the researcher to consider and examine the relationship between variables and even companies over time. Another advantage of this method is that it benefits from individual effects related to companies that are not observable and measurable. The estimation method in this model emphasizes the heterogeneity among sections to further differentiate the sections from each other by estimating the intercept from different sources. This distinction can be made in terms of common, fixed, and random effects.

To estimate the pattern from panel data and mixed data, F-Limer or Chow test, Likelihood Ratio (LR), and Lagrange Multiplier (LM) tests are used by the Pagan method. If the mixed data are measured against the fixed effects model of the composite data, F-Limer and LR statistics are used, and if the random effects model of the panel data is measured, the LM test is used by the Pagan method. If the H_0 hypothesis of F, LR, and LM tests is rejected by the Pagan methods in the integrated model, it can be concluded that the studied data are panel in nature. In this case, the Hausman test is used to select between fixed and random effects models. It should be noted that the null hypothesis in this test indicates that the random effects model is more efficient than the fixed effects model.

2.2 Data

The population in this study includes the whole food industry and three sub-industries listed in the stock exchange. The sub-industries produced fruits and vegetables, animal and vegetable oils, and dairy products. The study period also covers the period from 2010 to 2019. The collected data were analyzed using econometric analysis (EViews10) and statistical (STATA13) software.

3. Results

Given the mixed nature of the data, Levin, Fisher, and Pesaran statistics were used to examine the significance of the variables. The results show that only the LIQ variable remained stationary in the period under study after taking one differential and the other variables are at the stationary level in Table 1.

Table 1 Investigating stationary of variables during the period 2010-2019.

Variable	Fisher statistic	Significance level	Pesaran statistic	Significance level	Levin statistic	Significance level	Result
ROA	65.22	0.01	-1.51	0.06	-3.39	0.00	I (0)
GRS	61.49	0.02	-2.06	0.01	-4.01	0.00	I (0)
GRA	57.45	0.05	-1.58	0.05	-2.37	0.00	I (0)
GRE	49.13	0,06	-1.35	0.08	-6.53	0.00	I (0)
Cash flow	55.34	0.08	-1.38	0.08	-3.46	0.00	I (0)
LIQ	87.68	0.00	-2.97	0.00	-5.87	0.00	I (1)

Various tests are used to determine the type of model used in panel data. The most used tests are the Chow test for using aggregate data versus panel data and the Hausman test for using a random-effects model versus a fixed-effects model.

The results of the Chow test presented in Table 2 indicate the rejection of the null hypothesis and the confirmed use of panel data versus mixed data for all models of the food industry companies listed on the stock exchange and the results of Hausman test indicate the rejection of the null hypothesis, in other words, the acceptance of the pattern of fixed effects against the pattern of random effects. In addition, the basic assumptions for accepting regression, such as the expected sign of the coefficients and the significance of the individual coefficients, and the totality of the regression (significant F-statistic), all indicate that the regression is appropriate. Besides, Weldrich autocorrelation tests and modified parental heterogeneity variance were performed, which denied the existence of autocorrelation and heterogeneity variance in the estimated models. The results of the error component normality test (Jarco-Bra test) indicate that the error component is random, and the null hypothesis suggesting that the error component is normal is accepted for the whole food industry and the three sub-industries operating in the stock exchange.

Table 2 Chow and Hausman test results for the entire food industry and sub-industries of the stock exchange.

Result		Hausman test	Chow test	Model
Hausman	Chow	X^2	F	
Fixed effects pattern	Panel data method	3.42^{**}	7.83^{***}	The Impact of growth on profitability in the whole stock exchange food industry
Fixed effects pattern	Panel data method	15.52^{**}	11.82^{***}	Impact of growth on profitability and sub-industry of growing and preserving fruits and vegetables
Fixed effects pattern	Panel data method	13.64^{***}	14.97^{***}	The impact of growth on the profitability of animal and vegetable oils production industry
Fixed effects pattern	Panel data method	27.97^{***}	17.45^{***}	The effect of growth on the profitability of the dairy industry
Fixed effects pattern	Panel data method	13.42^{**}	8.19^{***}	The impact of company growth and financial constraints on the profitability of the common stock exchange food industry
Fixed effects pattern	Panel data method	18.91^{***}	7.96^{***}	The effect of growth and life cycle on the profitability of the food industry of the stock exchange

* and **, *** are significant at 10, 5, and 1%, respectively.

The results of estimating the relationship pattern between growth and profitability of the food industry companies active in the stock exchange are given in Table 3. As can be seen, the F-statistic confirms the fit of the estimated model. Based on the results, the model's determination coefficient value is 53%, which indicates that the explanatory variables used in the model explain 54% of the company's profitability. As a result, it can be said that the variable GRS, which indicates the growth of the food industry companies, has a positive effect on profitability. So as sales increase, the companies' profitability is expected to increase. This finding is consistent with the results of internal studies such as [28] for 85 companies among all companies listed on the Tehran stock exchange (TSE). Besides, the studies conducted by [6,23,29] also confirm the results of this study. There is a positive and significant relationship between profitability index and GRA, one of the important growth variables in the food industry. In general, an increase in a company's assets may indicate that the company is moving toward profitability. Still, the important point is that we can better understand by recognizing the components of asset growth and through what financial sources they are provided. It realized how much of this growth could generate returns by examining them. Such analyses lead investors to make fewer errors in their estimates [30]. These findings are consistent with observations made in previous studies. [6,23] As expected, the correlation between employment growth rate as a measure of the company's growth and profitability is positive. Previous studies [23] have shown that employment in the short term has positively affected the profitability of small and medium-sized construction companies.

Table 3 First model estimation results (fixed effects).

Variable	Coefficient	t-test
GRS	3.08***	1.85
GRA	7.04***	2.93
GRE	3.21***	1.98
Constant	7.00***	11.7
R^2	0.54	
F	9.73***	

*** is significant at 1%.

To influence the growth variables of the company and financial constraints on profitability, the food industry companies operating on the stock exchange are classified into three sub-industries: the companies growing and keeping fruits and vegetables, producing animal and vegetable oils, and producing dairy products as displayed in Table 4.

Table 4 Active sub-industries in the food industry of the stock exchange [10].

Company names	Name of industry or sub-industry
1. Noosh Mazandaran, Piazer Cultivation and Industry, Iranian Shahd, Pegah Azerbaijan, Pegah Isfahan, Pegah Khorasan, Kalber Dairy, Pak Dairy, Margarin, Behshahr Industrial Development, Behshahr Industrial and Murghab Plain	The entire food industry of the stock exchange
2. Noush Mazandaran, Piazer Cultivation and Industry and Iranian Shahd	Growing and preserving fruits, vegetables
3. Behshahr Industrial Development, Behshahr Industrial, Margarin Pegah Azerbaijan,Pegah Isfahan, Pegah Khorasan, Kalber Dairy and Pak Dairy	Production of animal and vegetable oils dairy production

Table 5 shows the model estimation results for each of these food sub-industries from 2010 to 2019. Based on the results, GRS and GRA as the measures of the company's growth in the three sub-industries have a positive and significant effect on the company's profitability. The growth rate of employment in the animal and vegetable oil production industry has a positive and significant effect on profitability. However, it has no significant effect in the two other sub-industries, fruits and vegetables and dairy products.

Table 5 Results of estimating the pattern of food industry sub-industries of the stock exchange.

Variable	Coefficient		
	Cultivation and maintenance of fruits, vegetable Sub-industry	The production of animals and vegetable oils sub-industry	Dairy production sub-industry
GRS	7.87*	6.10**	1.08*
GRA	23.82***	18.22***	2.59***
GRE	3.48*	35.79**	12.82
Constant	3.59**	8.98***	6.40***
R^2	0.44	0.69	0.70
F	8.48***	11.08***	14.65***

* and **, *** are significant at 10, 5, and 1%, respectively.

According to the results of the tests presented in Tables 2, the fixed effects model was selected to determine the effect of company growth and financial constraints on the profitability of the entire food industry on the TSE. The results presented in Table 6 indicate that the estimated model fits well because it has a coefficient of determination of 57%. Estimating the fixed effects model showed that the positive and significant coefficients of GRS, GRA, and GRE are the measures of the company's growth in the food industry. This suggests that these variables have a positive and statistically significant impact on firm profitability. The cash flow has had a positive and significant effect on the profitability of the entire food industry. In other words, there is a significant relationship between cash flows and the stability of profitability of companies listed on the TSE ($p<$ 0.05). According to the results, it can be suggested that the food industry companies with a high cash flow have a stable profitability index. As shown in Table 6, LIQ has had a negative and significant effect on the profitability of the food industry companies. LIQ refers to how assets or securities can be converted into ready-made cash without affecting market prices. In other words, LIQ describes the rapid purchase or sale of an asset in the market at a price that reflects its intrinsic value. According to the results, the effect of LIQ on profitability was negative [31]. They have also shown that LIQ has a negative and significant effect on profitability [32,33].

Table 6 The results of estimating the pattern of the impact of growth and financial constraints on the food industry of the stock exchange (fixed effects).

Variable	Coefficient	t-test
GRS	2.81*	1.66
GRA	7.01***	2.99
GRE	4.20***	2.63
Cash flow	2.91**	2.28
LIQ	-1.88***	-3.03
Constant	7.26***	11.40
R^2	0.57	-

* and **, *** are significant at 10, 5, and 1%, respectively.

In the model of the impact of growth and life cycle of the company on the profitability of the food industry, GRS as a measure of the company's growth has a positive effect on the profitability of the entire food industry. Therefore, it can be argued that if stock exchange companies are in the maturity stage of the company's life cycle, their sales will be in line with the company's profitability. According to the theory of the life cycle of companies, as the amount of demand decreases, the company leaves the maturity stage and enters the decline stage.

Another variable is the GRA which has a positive and significant effect on the profitability of the entire food industry. According to the theory, this follows the principle of the economics of scale. Since the firm growth increases the size (assets) of the firm, larger firms can benefit from economies of scale and thus increase their profitability. Therefore, the company's growth (an increase in assets) increases the company's profitability.

GRE, as a proxy of the company's growth, has a positive but non-significant effect at the level of 10%, on the entire food industry's profitability, considering the company's life cycle. The reason for this can be the weakness of companies in internal controls due to lack of adequate training, lack of effective processes and procedures, lack of segregation of duties, and inadequate adaptation. The main problem can be significantly reduced by having qualified accounting staff.

LIQ has had a negative and significant effect on the profitability of food industry companies on the stock exchange. Studies by Nasiri et al [32] and Dahiyat [33] have also shown that LIQ has a negative and significant (inverse) effect on profitability.

The cash flow variable has a positive and significant effect on the profitability of the entire food industry of the stock exchange. In other words, there is a significant relationship between cash flows and the stability of profitability of companies listed on the TSE. According to the results, it can be said that the food industry companies of the stock exchange, which have a high cash flow, will have stable profitability. The LIQ variable refers to the ease with which assets or securities can be converted into ready-made cash without affecting market prices. In other words, LIQ describes the rapid purchase or sale of an asset in the market, given the price of that asset's intrinsic value. Cash is considered to be the most liquid asset in the world because it can be converted into other assets more quickly and easily.

The results show that the maturity stage of the company's life cycle Dummy variable 1 (D1) is positive and significant at the level of 1% compared to the growth stage. According to the results of the model estimate, the closer the companies to the food industry in the stock exchange, the closer their profitability will be to the growth stage. The maturity stage is the most important stage in a company's life cycle due to its stable level of investment. The growth of the company (GRA and GRS) increases with the company's evolution during its life cycle, and this increase in the maturity stage of the companies' life cycle causes the company to be highly profitable. Thus, as expected, the maturity stage of the food industry companies had the greatest impact on the profitability of companies. These findings are largely consistent with Anthony and Ramesh's observations [16]. The present study results are in line with a study by Maliki et al [31] on 125 stock exchange companies. Dummy variable 2 (D2), which indicates the decline of the company's life cycle, has not significant effect on the company's profitability compared to the company's growth phase.

Table 7 The results of estimating the growth pattern and life cycle of the profitability of the food industry of the stock exchange (fixed effects).

Variable	Coefficient	*t*-test
GRS	4.27***	2.65
GRA	1.08***	1.05
GRE	0.07	0.69
D1	5.14***	1.86
Maturity stage		
D2	5.01	0.56
Decline stage		
Constant	4.32***	1.44
R^2	0.54	
F	8.88***	

*** is significant at 1%.

4. Discussion

This study explored the impact of growth (GRA, GRS, and GRE), financial constraints (LIQ and cash flow), and company life cycle on the profitability of 21 food industry companies active in the stock exchange during the period from 2010 to 2019. The results obtained after examining this model showed that LIQ has a negative and significant effect, and GRA, GRS, GRE, and cash have a positive and significant effect and among the stages of growth, maturity and decline of the cycle. The life of the company, the stage of maturity not to the stage of growth, has a positive and significant effect on the profitability of the entire food industry. According to the estimated model and the obtained results, the following suggestions are presented:

The present study also showed that the number of companies' sales has a positive effect on the profitability of food industry companies in the stock market. Phillips Carter's theory emphasizes that sales are one of the essential elements in marketing, so it is suggested that more attention be paid to sales in the food industry. In other words, sales should be combined with sales techniques in marketing, such as recognition. Be yourself, a competitor, and target customers. Companies can increase their sales by increasing the number of individual sales, increasing sales volume per customer, and increasing the number of sales per customer. Therefore, the process that needs to be taken by companies should be as need, want product, exchange, market, marketing, and finally, sales.

Food industry companies active in the stock market need to target the sales of their products and give direction and meaning to their sales activities with the right targeting. Therefore, they should first state their goals accurately and clearly to motivate employees. Their goals should be measurable and achievable and follow a specific schedule. They can also clearly state the benefits of using the product and service for the customer and consumer. It is also suggested that one of these important goals should be customer oriented. These companies should note that before producing and selling a product, they should evaluate all aspects of the customer's needs in advance and not leave anything to chance. A company that has spent a lot of time getting to know the customer's specific needs will succeed in creating the highest level of trust and establishing the best relationship with the customer, which will in turn increase profitability through customer satisfaction.

According to the results of this study, there is a positive and significant relationship between asset growth and profitability in the entire food industry. Accordingly, it is suggested that companies pay special attention to increasing their assets as an increase in assets will increase the profitability of these companies. Given that the profitability of the food industry of the stock exchange has a high variance, it is suggested to managers that if they are looking for a stable profit, they should pay more attention to the growth of the company and its constituent factors. Capital market financial analysts as well as stock market investment advisors often use technical analysis to buy stocks. However, the present study showed that in addition to technical analysis, paying attention to profitability and profitability factors based on accounting and economic standards are also important for shareholders.

LIQ has had a negative and significant effect on the profitability of food industry companies on the TSE. LIQ variable is considered as an important item of assets of units and enterprises that play a significant role in financial decisions. Cash in a bank account is the best asset of a company; Because the degree of financial flexibility of the company depends on the amount of cash it has. But as important as the existence of cash is for the company, its lack of proper management can pave the way for the company to go bankrupt. Lack of LIQ causes serious problems and its excess leads to recession. Lack of LIQ causes serious problems and its excess leads to recession. As a result, proper management of the cash flow helps to revitalize the company's capital. In fact, cash capital is like a living thing that needs mobility to stay healthy and stay damaged [34]. Due to the inflationary situation and the decrease in the purchasing power of money, most Iranian companies prefer to convert cash into other assets, which causes companies to lack LIQ at the maturity of their debts and damage the organization's credibility.

On the other hand, lack of LIQ in most companies that are facing financial distress and eventually some of them will go bankrupt is one of the main reasons for the importance of liquidity. Liquidity is considered the company's lifeblood, and LIQ management is one of the necessities for the organization's survival. A simplistic approach to liquidity in the organization threatens survival. LIQ management decisions cannot be considered separately from other company investment and financing decisions [32].

According to the results on the study concerning the effect of life cycle stages of companies on the relationship between growth and profitability of listed companies, it is suggested that investors and analysts monitor investment plans in assets. They should pay special attention to the effect of corporate life cycle stages (growth, maturity, and decline) on the growth and profitability of companies because considering these important factors leads to choosing the optimal investment portfolio with the lowest risk and highest return while doubling the transparency of the decision environment and the results. Considering that more than half of the food industry companies operating in the TSE are in their maturity stage, and on the other hand, several food industry companies are out of the stock market, so it is necessary to consider the characteristics of the maturity stage to create a competitive market between these companies. Therefore, it is suggested that companies

produce a new product to maintain their market share. Given that several food industry companies are not present in the stock market, it is suggested that this research be conducted for non-listed TSE companies.

5. Conclusion

This study explores the impact of growth, life cycle, and financial constraints on the profitability of the food industry on the TSE. It also examines the effect of growth (GRA, GRS, and GRE), financial constraints (LIQ and cash flow), and the company's life cycle on the profitability of 21 food industry companies in TSE from 2010 to 2019. The present study examines the impact of firm growth represented by GRA, GRS, and GRE on profitability once for the whole industry and once for three sub-industries including the fruit and vegetable market, animal and vegetable oil companies, and dairy companies listed in the food industry in TSE. They are considering that more than half of the food industry companies operating in the Tehran stock exchange are in their maturity stage. It is suggested that companies produce a new product to maintain their market share. But several food industries companies share are not in TSE, so it is necessary to consider the characteristics of the maturity stage to create a competitive market between these companies.

6. References

[1] Grau A, Reig A. Operating leverage and profitability of SMEs: agri-food industry in Europe. Small Bus Econ. 2021;57(1):221-242.
[2] Zimon G, Tarighi H. Effects of the COVID-19 global crisis on the working capital management policy: evidence from Poland. J Risk Financial Manag. 2021;14(4):169.
[3] Zimon G, Zimon D. The impact of purchasing group on the profitability of companies operating in the renewable energy sector-the case of Poland. Energies. 2020;13(24):6588.
[4] Zimon G. Issues of financial liquidity of small and medium-sized trading companies: a case study from Poland. J Entrep Sustain Issues. 2020;8(1):363-372.
[5] Blazkova I, Dvoulety O. Investigating the differences in entrepreneurial success through the firm-specific factors Microeconomic evidence from the Czech food industry. J Entrep Emerg Econ. 2019;11(2):154-176.
[6] Yoo S, Kim J. The dynamic relationship between growth and profitability under long-term recession: the case of Korean construction companies. Sustainablity. 2015;7(12):15982-15998.
[7] Dickinson V. Cash flow patterns as a proxy for firm life cycle. Account Rev. 2011;86(6):1969-1994.
[8] Steffens P, Davidsson P, Fitzsimmons J. Performance configurations over time: implications for growth and profit-oriented strategies. Entrep Theory Pract. 2009;33(1):125-148.
[9] Karami GH, Omrani H. Life cycle effect on the value relevance of risk measures and performance measures. 2010;2(3):49-64.
[10] Tehran. Securities and exchange organization of Iran, https://en.seo.ir/ [accessed 5 March 2021].
[11] Tehran. Statistical Centre of Iran, https://www.amar.org.ir/ [accessed 5 March 2021].
[12] Almasi M. Investigating the impact of privatization on the financial performance of companies listed in the Tehran stock exchange [thesis]. Shiraz: Shiraz University; 2002.
[13] Omran M. Performance consequences of privatizing Egyptian state-owned enterprises: the effect post-privatization ownership structure on firm performance. Multinatl Financial J. 2004;8(1):73-114.
[14] Saeedi P, Soflu JQ. Investigating the effect of transfer of ownership (privatization) on ROS and ROE, ROA of companies listed on the Tehran stock exchange. Strat Manag Res J. 2008;42(1):89-108.
[15] Aghaei MA, Nowruz M. Bayat M. Mohabbatkhah M. Company life cycle, risk-taking, and shareholder sentiment: evidence from the Tehran stock exchange. JAA.2018;1(10);1-29.
[16] Anthony H, Ramesh K. Association between accounting performance measures and stock prices: a test of the life cycle hypothesis. J Account Econ.1992;15(2):203-227.
[17] Jang S, Park K. Inter-relationship between firm growth and profitability. Int J Hosp Manag. 2011;30:1027-1035.
[18] Hajiha Z, Bahadori M. Comparative study of financial information reliability based on life cycle theory. J Manag Account. 2017;12(40):97-108.
[19] Rostami V, Seyedi A. Salmanian L. Company life cycle and performance evaluation criteria. JAK. 2014;1(1):129-141.
[20] Mendelson H. Organizational architecture and success in the information technology industry. Manag Sci. 2000;46:513-529.
[21] Geroski P, Machin S. Think again: do innovating firms outperform non-innovators? Bus Strateg Rev. 2013;2:82-86.
[22] Padachi K. Trends in working capital management and its impact on firms performance. Int Rev Bus Res. 2006;2:45-58.

[23] Yolanda F, Beatriz C. Inter-relationship between firm growth and profitability in a context of economic crisis. J Bus Econ Manag. 2018;20(1):86-106.
[24] Ebrahimpour M, Babanejad H, Ahangar MTT. Investigating the relationship between liquidity and financial leverage on the profitability of companies listed on the Tehran stock exchange (automotive and parts manufacturing, chemical and pharmaceutical industries), http://iranjoman.org/fckeditor/editor/filemanager/connectors/aspx/Image/file/26-7.pdf [accessed 5 March 2021].
[25] Piri P, Imani M, Allahordizadeh S. The effect of different life cycle periods on the profitability and growth of businesses. J Empir Account Res. 2011;2:49-66.
[26] Pattitoni P, Petracci, B, Spisni M. Determinants of profitability in the EU-15 area. Appl Financial Econ. 2014;24:763-775.
[27] Vahidi N, Dehghanpour M, Nasirizadeh H. Comparison between accounting profit and economic profit and its effect on optimal point of production. Eur Online J Nat Soc Sci. 2013;2(3):493-499.
[28] Nezhad IA, Khodamipour A. Examining the relationship between profit and sales growth; evidence from Tehran stock exchange. International Conference on Management Economics and Social Sciences (ICEMSS); 2015 Apr 14-15; Barcelona, Spain. Warsaw: International Center of Academic Communication (ICOAC); 2015. p.1-16.
[29] Cowling M. The growth-profit nexus. Small Bus Econ. 2004;22:1-9.
[30] Fazzari SM, Hubbard RG, Petersen BC, Blinder AS, Poterba JM. Financing constraints and corporate investment. 1st ed. Maryland: Johns Hopkins University Press; 1988.
[31] Maliki A, Najafi M, Baghzian A. Examining the life cycle of companies admitted to the Tehran stock exchange. Annual Conference on Business Management and Economics; 2015 Dec 18; Tehran, Iran. Tehran: Bom Saze Publishing; 2015. p.1-14.
[32] Nasiri Y, Fallahpour M, Emsia A. Relationship between working capital management and profitability of companies listed on the Tehran stock exchange. 1st International Conference on Economics, Management, Accounting and Social Sciences; 2014 Jun, 21. Guilan, Iran. Guilan: New Science Series Journals; 2014, p.1-14.
[33] Dahiyat A. Does liquidity and solvency affect banks' profitability? Evidence from listed banks in Jordan. Int J Acad Res Account Fin Manag Sci. 2016;6(1):35-40.
[34] Kamiaei Y, Rostamabadi M. An overview of the dimensions of Tehran: Bom Saze Publishing; 2016. p.1-9.