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The Effect of (Homogeneous/Heterogeneous) Diversification Strategy on Corporate Performance and Market risk

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Abstract

Diversification is regarded as a state of corporate strategy. Strategy of diversification (both homogeneous and heterogeneous ones) includes the mechanisms related to strategies and criteria of measuring corporate diversity. Thus, being aware of possible relationships has an influence on diversification of organizations and firms' effectiveness and profitability. Organizations' collective tendency, especially through adoption of managerial strategies, indicates that there seems to be no consideration for strategic decision-making from this viewpoint. For this reason, firms adopt different strategies such as homogenous and heterogeneous diversification for the sake of their growth and survival. The main objective of the present study is to investigate the effect of (homogenous and heterogeneous) diversification on corporate performance and stock market risk. Thus, a sample consisting of 68 Tehran Stock Exchange member companies during 2002-2011 was chosen using systematic screening elimination method and the model of analysis and interpretation of coefficients was estimated using regression model. Results of the present study show that there is no significant relationship between heterogeneous diversification and performance and systematic risk. In addition, there is a significant relationship between homogeneous diversification and performance and systematic risk.

Keywords: Homogeneous and heterogeneous, diversification, strategy, corporate, performance, systematic risk.

Introduction

One of the most important issues facing corporate managers is taking on-time and efficient strategies which develops corporate rates and increases profitability. There are some procedures and strategies by which one can optimize corporate performance, develop rates and adopt a homogeneous and heterogeneous diversification strategy. Nowadays, most firms are getting bigger and expanding their activities so as to answer the needs of the customers. Managers are trying to ensure customers' loyalty to their firms by covering their multiple needs and requests. Because of this and other reasons such as supplying materials and intra-organizational distribution system, most firms have opted for (homogeneous and heterogeneous) diversification[1,2].

Big firms play a key role in developing the economies of the countries. Such firms are usually diversified in their marketing. With the development of commercial affairs in today's world and privatization of firms, professional managers who are expert in complicated economic and financial issues have gained control over firms. Owners give their money to the managers and request to be provided with necessary information. Accounting data cover a big part of decision makers' information needs[3]. Diversification may occur at an enterprise unit level or at a corporate level. At an enterprise level, it may probably be expanded to form a new unit of the industry in which the enterprise is active[4]. Diversification is a specific kind of corporate strategies adopted by many managers seeking to optimize their firms' performance. Due to the current revolutionized and changeable environment as well as the opportunities and threats in capital market, firms' ratings have been made dependent on their (homogeneous and heterogeneous) diversification strategies. Diversification expects profitability through enterprise unit's return and reduction of risks, all depended on managers' appropriate performance[4].

Therefore the main object of the present study is to investigate the effect of (homogenous and heterogeneous) diversification on corporate performance.

Literature review: Diversification is a kind of corporate strategy. In such a situation, the importance of (homogeneous and heterogeneous) diversification shows itself all the more fully. This strategy in capital market concerns itself with a search for the best industries, technical analysis and dealing procedures, analysis of financial invoices, investigating economical indices and the application of these indices in capital markets[5]. Homogeneous and heterogeneous diversification of a firm needs appropriate criteria for diversifying the various enterprise units and selecting the best method of diversification in order to maximize the value of the firm. Mechanisms related to strategies and the criteria of measuring diversity are important factors in (homogeneous and heterogeneous) diversification of a firm[6,7].

The main problem discussed in this century deals with the way organizations are organized and the way they would operate. Proponents of diversification and enterprise managers believe that growth and development in 21th century depends on having a diversified work environment; this will keep them in the competition[8]. Almost everybody has a notion of risk in mind and would confirm this idea that all the aspects of life are intertwined with risks. In simple language, risk is a danger which is occurred as the result of ignorance from future happenings. The less we have the knowledge of future happenings, the higher would be the probability of the risk[5].

Diversification consists in the limit in which a firm is simultaneously involved in different businesses and activities[9].

Finally it can be argued that the scope of performance, profitability, growth possibility, the size and kind of activity and seizing opportunity in the capital market will determine the appropriate kind of diversification strategy. Therefore, focusing on managers' financial thinking and firms' specific strategies for diversification will stabilize their position in the capital market; additionally, it would result in a correct rating by raters of capital market. For this reason, selecting a kind of (homogeneous and heterogeneous) diversification strategy may be affected by managers' decision so that the current value of the firm can be maximized by choosing the best method of diversification[10].

Mechanisms related to strategies and the criteria of measuring diversity are important factors in (homogeneous and heterogeneous) diversification of a firm. Thus, being aware of possible relationships has an influence on diversification of organizations and firms' effectiveness and profitability.

When there is an intense competition among firms or risks are taken to a high extent, managers opt for this strategy in order to reduce risks and ease the competition pressure. Said otherwise, diversification is opposed to concentration. For example, single product forms start producing multiple products[11, 12].

Ramanujam and Varadarajan define diversification as the limit or field in which a firm is active in many different businesses. These definitions reflect theoreticians' ideas.

Firms can expand their bases using the following two approaches: Establishment of extra units for new activities, Reconsidering expansion in units that are suitable for more diversifications.

In fact, this is exactly what managers do after deciding on the kind of diversification strategy. They specify the number of units and different expansions in each of them[9].

Doucuse and Long state that diversification may be the result of financial accrual and increased debt capacity; this is true about both homogeneous (related) and heterogeneous (unrelated) diversification strategies. Therefore it can be concluded that homogeneous diversification has higher level of performance compared with the heterogeneous one.

Stoff sees diversification as the entrance to new markets with new products. The definitions given fir diversification have undergone changes through history. Louis points to the increased businesses that firms are concerned about. In this regard, we can relate diversity to products, markets and knowledge. Baldvin believes that diversity is the expansion of corporate activities, whether in fields completely related to corporate activities or those activities which open a new way to the firm. A comprehensive definition of diversification that reflects the views of all the experts in the field would be as follows: diversification is a limit within which a firm is involved in many activities at a single time[9]. Evaluation of enterprise units is, therefore, of high importance for conscious decision making and determining the degree to which it is possible to achieve the goals. Selecting the best kind of (homogeneous and heterogeneous) diversification affects corporate performance and consequently the risks. Firms and international firms in particular are increasingly attracting customers in different markets mainly due to quick growth of globalization. Not only the structure of the market and its customers has been diversified, but also the firms themselves have been turned into multicultural organizations[13,14].

William Burgers, Dan Pedget, Brian Berdu and Andi Sun (2010) deal with the diversification of products and industry and its effect on profitability. This idea triggers the mind that diversification has a positive effect on returns by reducing the risks. They highlighted the fact that early returns are directly related to diversification strategy; so a good understanding of the effect of diversification strategy on returns calls for an analysis of firm early returns.

Andro et al. investigated the relationship between diversification and corporate value and concluded that multiple-product firms compared with single-product firms lose stockholders' wealth to a great extent.

Taghi Pour and Musavi in a paper titled "An analysis of export diversification and its effect on non-oil revenues" identified the concentration of exported products between 1979 and 1999 using two-digit codes of Hirschman index. The results showed that after the start of the plan number 1, the above index had been descending which means that concentration on a limited number of products had been reduced[15].

Samadi in a paper titled "Export diversification and economic growth" has analyzed structure of Iranian non-oil exports and has investigated the effect of export diversification on economic growth from 1968 to 1988 in 17 different industrial sections. Two main results of his study are as follows: 1. Iranian export industry has undergone a great degree of diversification; and 2.

Export diversification and economic growth have been moving in a same direction in many years[16].

Methodology

The main purpose of the present paper is to investigate the effect of homogeneous and heterogeneous diversification on corporate performance and stock market risks. It is a descriptive research in which we are trying to describe the relations between (dependent and independent) variables using statistical tests. Having developed a model, we determine the coefficients of independent variables and the extent of their effects on dependent variables (i.e. performance and systematic risk) using econometrics and regression. This research is, thus, correlational, too and regarding its objective, it is a functional one. As for data collection, it can be considered an e-post facto research in that it uses firms' past information.

Objectives of the research: Theoretical specification of (homogeneous and heterogeneous) diversification basics and related issues to strategies of diversification, Investigating the factors affecting corporate diversification factors, Identifying different strategies used for corporate diversification, Analyzing the methods adopted for measuring diversification, Investigating the relationship between diversification strategies and corporate performance, Investigating the relationship between diversification strategies and systematic risk and market risk

Research hypotheses: Main hypothesis: There is a significant relationship between (homogeneous and heterogeneous) diversification and corporate performance.

Minor Hypotheses: There is a positive relationship between homogeneous diversification and corporate performance. There is a positive relationship between homogeneous diversification and returns on assets. There is a positive relationship between homogeneous diversification and Tobin's. There is a significant relationship between heterogeneous diversification and corporate performance. There is a significant relationship between heterogeneous diversification and return on assets. There is a significant relationship between heterogeneous diversification and Tobin's q. There is a positive relationship between homogeneous diversification and systematic risk. There is a significant relationship between heterogeneous diversification and systematic risk.

A sample of 68 firms affiliated with 10 different industries was chosen using systematic screening elimination method; these firms are all Tehran Stock Exchange members during 2002-2011. At first, the gathered data were entered into Excel broadsheet and initial calculations were done. Regression model was adopted for the final analysis and interpretation of coefficients using Eviews software. As for the reliability of all independent, dependent and control variables, it is observed that the significant relationship of Levin's unit test, Lean and Cho is below 0.05 which means that these variables are reliable. In other words, mean and variance of the variables have remained constant through the time and covariance has been constant in different years. Thus, the firms studied in this research have experienced no structural change and accordingly using these variables in the model does not produce false regression.

Research variables and method of measuring them are presented in the table-1.

Research model: We have used the following model to investigate the effect of (homogeneous and heterogeneous) diversification on corporate performance. There is a positive relationship between homogeneous diversification and corporate performance. There is a positive relationship between homogeneous diversification and return on assets. There is a positive relationship between homogeneous diversification and Tobin's q. So it is expected that α_1 be more than zero.

$$PERF(Q, ROA)_{it}=\alpha_0+\alpha_1 \text{ HOMO DIVER}_{it}+\alpha_2 SIZE_{it}+\alpha_3 DEBT_{it}+\alpha_4 EVOLCA_{it}+\alpha_5 ETYP+\varepsilon_{it} \quad (1)$$

Homogeneity = homogeneity of the products which is calculated by the following formula:

$$R_{Jt}=\beta_0+\beta_1 R_{it}+\beta_2 R_M+\varepsilon_{it} \quad (2)$$

In which: R_{Jt}= firm monthly return, R_{it}= industry monthly return, R_{Mt}= market rate of return

The correlation coefficient drawn from above model is the criteria of determining homogeneity (R) and heterogeneity (R-1) in a year.

R= HOMO, 1-R=HETRO

Homogeneity: it measures the relationship between corporate stock returns in an industry. As a criterion based on changes of stock price, it is deemed an appropriate measurement of homogeneity. The more is the value of HOMO, the more homogeneous will be the firms.

There is a relationship between heterogeneous diversification and corporate performance. There is a relationship between heterogeneous diversification and return on assets. There is a relationship between heterogeneous diversification Tobin's q. So it is expected that α_1 does not equal to zero.

$$PERF(Q, ROA)_{it}=\alpha_0+\alpha_1 \text{ HETRO DIVER}_{it}+\alpha_2 SIZE_{it}+\alpha_3 DEBT_{it}+\alpha_4 EVOLCA_{it}+\alpha_5 ETYP+\varepsilon_{it} \quad (3)$$

The following model is adopted in this research to measure the effect of diversification on corporate risk. There is a positive relationship between homogeneous diversification and systematic risk. Therefore it is expected that α_1 be above zero.

$$SRISK_{it}=\alpha_0+\alpha_1 \text{HOMO DIVER}_{it}+\alpha_2 SIZE_{it}+\alpha_3 DEBT_{it}+\varepsilon_{it} \quad (4)$$

There is a relationship between heterogeneous diversification and systematic risk. So it is expected that α_1 does not equal to zero.

Table- 1
The method of measuring research variables

Kind of variable	Variable	Index	Symbol
Dependent	Systematic risk	Covariance between industry return and stock return divided by the variance of industry return	SRISK $\beta=\frac{cov(R_I R_{Ind})}{\sigma^2 R_{Ind}}$
Control	Market risk	R= monthly stock return of i firm	ETYP RISK=σR_i
Control	Sales fluctuations	Standard deviation of firm's sales	EVOLCA =σSALEE
Control	Financial leverage	Total debts, divided by total income of stockholders	DEBT=$\frac{TD}{TE}$
Dependent	Return on assets	Operational interest divided by total assets	ROA= $\frac{OI}{TA}$
Dependent	Tobin's q	Value of stock market plus total debts divided by total assets	Q=$\frac{MVE+TD}{TA}$
Control	Size	Ln of all assets	SIZE=ln (TA)
Independent	Homogeneous diversification	R	The same as model N0. 2
Independent	Heterogeneous diversification	1-R	The same as model N0. 2

Table- 2
Descriptive statistics of research variables

Variables	Abbreviation	Number of observation	Mean	Maximum	Minimum	Standard deviation
Return on assets	ROA	680	0.198	0.803	- 0.136	0.144
Tobin's q	Q	680	1.702	11.804	0.564	1.341
Systematic risk	SRISK	680	0.168	4.592	- 2.487	0.675
Homogeneous diversification	HOMO	680	0.411	0.980	0.011	0.222
Heterogeneous diversification	HETRO	680	0.558	0.989	0.020	0.222
Corporate size	SIZE	680	13.05	17.977	9.561	1.244
Financial leverage	DEBT	680	2.283	12.494	0.134	1.632
Sales fluctuations	EVOLCA	680	0.214	5.444	0.000	0.366
Market risk	ETYP	680	0.133	0.996	0.016	0.096

$$SRISK_{it}=\alpha_0+\alpha_1 HETRO\ DIVER_{it}+\alpha_2 SIZE_{it}+\alpha_3 DEBT_{it}+\varepsilon_{it} \quad (5)$$

Results and Discussion

For the purpose of initial data analysis, descriptive statistics related to each variable is analyzed.

As it is illustrated in the above table, the variable of sales fluctuations has the highest mean and the variable of market risk has the lowest mean. The variable of sales fluctuations has the highest standard deviation which means that it has the highest number of distributions. The mean of homogeneous diversification in sample firms was 0.412; this number for heterogeneous diversification was 0.588. So it can be said that heterogeneous diversification is more than homogeneous one in Tehran Stock Exchange firms. Other descriptive information on research variables are also presented in this table.

Testing of hypothesis 1.1: There is a positive and significant relationship between homogeneous diversification and return on assets. The results of Chow test and Hausman test used for the purpose of selecting the best model are presented in table 3.

Table -3
Results of testing of hypothesis 1.1.

Test	Statistic	Significance	Choice of model
Chow test	3.39	0.000	Constant effects
Hausman test	29.66	0.000	

Regarding the above table, the model of constant effects is chosen for this hypothesis. A summary of the results is given in table 4 below.

Table -4
Calculation model for hypothesis 1.1

Variables	Coefficients	t-statistic	Significance
y-intercept	0.092	2.290	0.022
Homogeneous diversification	0.048	3.056	0.002
Size	-0.006	-2.108	0.035
Financial leverage	-0.003	-1.437	0.151
Sales fluctuations	0.017	1.851	0.064
Market risks	0.073	1.955	0.051
ROA (-1)	0.774	29.728	0.000
F-statistic: 78.002		Significance of F-statistic: 0.000	
Coefficient of determination: 0.646		Moderated coefficient of determination: 0.638	
Correlation coefficient: 0.80		Durbin-Watson: 1.922	

If in a multiple regression analysis there is no relationship between dependent variable and independent and control variables, the coefficients of independent and control variable have to be zero. For this reason, significance of the regression is to be tested. This is done by F-statistic. As illustrated in table 5, F-statistic and its significance are 78.002 and 0.000, respectively. This means that H0, i.e. non-significance of the whole model (all coefficients being zero) is rejected and the calculated regression is significant.

It is observed in the table that the P-Value of independent variable is less than 5% (i.e. 0.002) and is significant. The coefficient of homogeneous diversification is positive, indicating a direct relationship with return on assets. Hypothesis 1.1 is thus a research based on the existence of a significant and positive relationship between homogeneous diversification and return on assets.

In this model, the coefficient of determination is 0.63, meaning that 63% of changes in dependent variable can be justified by variables which are inserted in the model. In the initial calculations, due to the low Durbin-Watson coefficient-an indication that there is the problem of self-correlation in the model- LAG (last year number) of dependent variable was used (ROA (-1) variable). Having corrected this problem, in the new calculation of the model, Durbin-Watson coefficient was equal to 1.922 which means there's no self-correlation problem in the model. In accordance with the significance of Jarque-Bera statistic which is equal to 0.000, skewed distribution does not follow normal distribution. For normalizing the rest of the model, dummy variable approach was adopted to nullify the effect of outlier observations; this method, however, failed to normalize the remainders. Two things can be pointed out here. First, regarding the central limit theorem, numerous data follow normal distribution, even though they are not being normalized via test results. The sample size used in this research (in which the number of observations is approximately 680) is big enough to think of data normality. Besides, sometimes data are inherently abnormal and disregarding outlier observations would not affect normality.

Testing of hypothesis 1.2: There is a positive and significant relationship between homogeneous diversification and Tobin's q

The results of Chow test and Hausman test used for the purpose of selecting the best model are presented in table-5.

Table -5
Results of testing of hypothesis 1.2

Test	Statistic	Significance	Choice of model
Chow test	8.49	0.000	Constant effects
Hausman test	75.33	0.000	

Regarding the above table, the model of constant effects is chosen for this hypothesis. A summary of the results is presented in the following table.

As it can be seen in the table, significance of F-statistic is 0.000, an indication that regression model is wholly significant. The P-Value of independent variable is more than 5% (i.e. 0.682) and is not significant. Consequently, hypothesis 1.2 stating the significant and positive relationship between homogeneous diversification and Tobin's q is, thus, rejected. In addition, the coefficient of determination is 0.74 which means that 74% of changes in dependent variable can be justified by variables which are inserted in the model. In the initial calculations, due to the low Durbin-Watson coefficient-an indication that there is the problem of self-correlation in the model - LAG (last year number) of dependent variable was used (Q (-1) variable). Having corrected this problem, in the new calculation of the model, Durbin-Watson coefficient was equal to 2.10 which means there's no self-correlation problem in the model. In accordance with the significance of Jarque-Bera statistic which is equal to 0.000, skewed distribution does not follow normal distribution. For normalizing the rest of the model, dummy variable approach was adopted to nullify the effect of outlier observations; this method, however, failed to normalize the remainders. So the rule pointed out in the previous section was followed.

Table -6
Calculation model for hypothesis 1.2

Variables	Coefficients	t-statistic	Significance
y-intercept	0.935	3.210	0.001
Homogeneous diversification	0.047	0.409	0.682
Size	-0.052	-2.413	0.016
Financial leverage	-0.010	0.655	0.512
Sales fluctuations	0.000	0.002	0.998
Market risks	0.480	1.777	0.076
Q (-1)	0.755	38.678	0.000
F-statistic: 129.02		Significance of F-statistic: 0.000	
Coefficient of determination: 0.751		Moderated coefficient of determination: 0.745	
Correlation coefficient: 0.86		Durbin-Watson: 2.10	

Testing of hypothesis 2.1: There is a significant relationship between heterogeneous diversification and return on assets.

The results of Chow test and Hausman test used for the purpose of selecting the best model are presented in table 7

Table -7
Results of testing of hypothesis 2.1

Test	Statistic	Significance	Choice of model
Chow test	3.39	0.000	Constant effects
Hausman test	29.66	0.000	

Regarding the above table, the model of constant effects is chosen for this hypothesis. A summary of the results is presented in the table-8.

As shown in the table-8, significance of F-statistic is 0.000, an indication that regression model is wholly significant. The coefficient for heterogeneous diversification is negative that shows a reverse relationship with the variable of return on assets. Therefore, hypothesis 2.1 stating the significant relationship between heterogeneous diversification and return on assets is not confirmed. Additionally, the coefficient of determination is 0.63 which means that 63% of changes in dependent variable can be justified by variables which are inserted in the model. In the initial calculations, due to the low Durbin-Watson coefficient-an indication that there is the problem of self-correlation in the model- LAG (last year number) of dependent variable was used (ROA (-1) variable). Having corrected this problem, in the new calculation of the model, Durbin-Watson coefficient was 1.922 which means there's no self-correlation problem in the model. In accordance with the significance of Jarque-Bera statistic which is equal to 0.000, skewed distribution does not follow normal distribution. For normalizing the rest of the model, dummy variable approach was adopted to nullify the effect of outlier observations; this method, however, failed to normalize the remainders. So the rule pointed out in the previous sections was followed.

Table -8
Calculation model for hypothesis 2.1

Variables	Coefficients	t-statistic	Significance
y-intercept	0.140	3.366	0.000
Homogeneous diversification	-0.048	-3.056	0.002
Size	-0.006	-2.108	0.035
Financial leverage	-0.003	-1.437	0.151
Sales fluctuations	0.017	1.851	0.064
Market risks	0.073	1.955	0.051
ROA (-1)	0.774	29.728	0.000
F-statistic: 78.002		Significance of F-statistic: 0.000	
Coefficient of determination: 0.646		Moderated coefficient of determination: 0.638	
Correlation coefficient: 0.80		Durbin-Watson: 1.922	

Testing of hypothesis 2.2: There is a significant relationship between heterogeneous diversification and Tobin's q. The results of Chow test and Hausman test used for the purpose of selecting the best model are presented in table-9.

Table- 9
Results of testing of hypothesis 2.2

Test	Statistic	Significance	Choice of model
Chow test	8.49	0.000	Constant effects
Hausman test	75.33	0.000	

With regard to the table 10, the model of constant effects is chosen for this hypothesis. A summary of the results is presented in the following table.

Table -10
Calculation model for hypothesis 2.2

Variables	Coefficients	t-statistic	Significance
y-intercept	0.982	3.260	0.001
Homogeneous diversification	-0.047	-0.409	0.682
Size	-0.052	-2.413	0.016
Financial leverage	-0.010	-0.655	0.512
Sales fluctuations	0.000	0.002	0.998
Market risks	0.480	1.777	0.076
Q (-1)	0.755	38.678	0.000
F-statistic: 129.029		Significance of F-statistic: 0.000	
Coefficient of determination: 0.751		Moderated coefficient of determination: 0.745	
Correlation coefficient: 0.86		Durbin-Watson: 2.10	

As illustrated in this table, significance of F-statistic is 0.000 which means that regression model is wholly significant. The P-Value of independent variable is more than 5% (i.e. 0.682) and is not significant. Consequently, hypothesis 2.2 stating the

significant relationship between heterogeneous diversification and Tobin's q is rejected.

In addition, the coefficient of determination is 0.74 which means that 74% of changes in dependent variable can be justified by variables which are inserted in the model. . In the initial calculations, due to the low Durbin-Watson coefficient-an indication that there is the problem of self-correlation in the model - LAG (last year number) of dependent variable was used (Q (-1) variable). Having corrected this problem, in the new calculation of the model, Durbin-Watson coefficient was equal to 2.10 which means there's no self-correlation problem in the model. In accordance with the significance of Jarque-Bera statistic which is 0.000, skewed distribution does not follow normal distribution. For normalizing the rest of the model, dummy variable approach was adopted to nullify the effect of outlier observations; this method, however, failed to normalize the remainders. So the rule pointed out in the previous section was followed.

Testing of hypothesis 3: There is a positive and significant relationship between homogeneous diversification and systematic risk.

The results of Chow test and Hausman test used for the purpose of selecting the best model are presented in table 11.

As it can be observed in the table-11, significance of F-statistic is 0.000 which means that the whole regression model is significant. The P-Value of independent variable is less than 5% (i.e. 0.000) and is not significant. The coefficient for homogeneous diversification is positive that indicates a direct relationship with the variable of systematic risk. Therefore, hypothesis 3 stating the significant relationship between homogeneous diversification and systematic risk is rejected.

Table -11
Results of testing of hypothesis 3

Test	Statistic	Significance	Choice of model
Chow test	0.944	0.485	Constant effects
Hausman test	5.13	0.162	

With regard to the above table, the model of constant effects is chosen for this hypothesis. A summary of the results is presented in the table 12.

Additionally, the coefficient of determination is 0.31 in this model, meaning that 31% of changes in dependent variable can be justified by variables which are inserted in the model. In the initial calculations, due to the low Durbin-Watson coefficient-an indication that there is the problem of self-correlation in the model-AR was adopted to solve this problem. Therefore, after solving this problem, in the new calculation of the model, Durbin-Watson coefficient was 1.988 which means there's no self-correlation problem in the model. In accordance with the significance of Jarque-Bera statistic which is equal to 0.000, skewed distribution does not follow normal distribution. For normalizing the rest of the model, dummy variable approach was adopted to nullify the effect of outlier observations; this method, however, failed to normalize the remainders. So the rule pointed out in the previous sections was followed.

Table- 12
Calculation model for hypothesis 3

Variables	Coefficients	t-statistic	Significance
y-intercept	-0.376	-0.819	0.412
Homogeneous diversification	0.353	3.921	0.000
Size	0.027	0.788	0.430
Financial leverage	0.027	1.558	0.119
AR (-1)	0.503	15.046	0.000
F-statistic: 69.91		Significance of F-statistic: 0.000	
Coefficient of determination: 0.315		Moderated coefficient of determination: 0.310	
Correlation coefficient: 0.561		Durbin-Watson: 1.988	

Testing of hypothesis 4: There is a significant relationship between heterogeneous diversification and systematic risk.

The results of Chow test and Hausman test used for the purpose of selecting the best model are presented in table-13.

With regard to the table-13, the model of constant effects is chosen for this hypothesis. A summary of the results is presented in the table-14.

Table -13
Results of testing of hypothesis 4

Test	Statistic	Significance	Choice of model
Chow test	0.944	0.485	Constant effects
Hausman test	5.13	0.162	

Table -14
Calculation model for hypothesis 4

Variables	Coefficients	t-statistic	Significance
y-intercept	-0022	-0.048	0.961
Heterogeneous diversification	-0.353	-3.921	0.000
Size	0.027	0.788	0.430
Financial leverage	0.027	1.588	0.119
AR (-1)	0.503	15.046	0.000
F-statistic: 69.91		Significance of F-statistic: 0.000	
Coefficient of determination: 0.315		Moderated coefficient of determination: 0.310	
Correlation coefficient: 0.561		Durbin-Watson: 1.988	

As shown in the table, significance of F-statistic is 0.000 which means that the whole regression model is significant. The P-Value of independent variable is less than 5% (i.e. 0.000) and is not significant. Therefore, hypothesis 4 stating the significant

relationship between homogeneous diversification and systematic risk is proved. The coefficient for heterogeneous diversification is negative that indicates a reverse relationship with the variable of systematic risk.

Additionally, the coefficient of determination is 0.31 in this model, meaning that 31% of changes in dependent variable can be justified by variables which are inserted in the model. In the initial calculations, due to the low Durbin-Watson coefficient-an indication that there is the problem of self-correlation in the model-AR was adopted to solve this problem. Therefore, having solved this problem, in the new calculation of the model, Durbin-Watson coefficient was 1.988 which means there's no self-correlation problem in this model. In accordance with the significance of Jarque-Bera statistic which is equal to 0.000, skewed distribution does not follow normal distribution. For normalizing the rest of the model, dummy variable approach was adopted to nullify the effect of outlier observations; this method, however, failed to normalize the remainders. So the rule pointed out in the previous sections was followed.

Conclusion

Concerning the results of the study which are achieved via hypotheses testing and the importance attached to decisions made about diversification strategies, it is necessary to be especially careful in evaluating effective aspects; the reason is that such decisions are usually regarded as long-term objectives of firms and the cost paid for their realization is high. Therefore, any mistakes in decision-making will have terrible, and sometimes irrecoverable, consequences. Managers have to consider all the aspects of a decision and get to know with its benefits and threats before making a decision.

Moreover, the results showed that homogeneous diversification has a better impact on corporate performance; it highlights the fact that activity in multiple industries and markets is a specialized task and firms are recommended to extend their field of activities within their related framework so as to increase the value of their brand name. Adoption of heterogeneous diversification has a different and significant effect on corporate performance.

There have been many studies devoted to the issue of diversification and other variables related to firms (such as performance, value, profitability, risk, etc.). However, the results of these studies have been contradictory in some cases. As an example investigating the relationship between diversity and corporate performance has been the subject of many previous studies (from 1971onward). Researchers have arrived at three different conclusions regarding this relationship. Some have argued that there is a positive relationship between the two variables, others have proved the negative relationship and still others did not find any relationship between them. So concerning the ways diversity is measured, the available literature about diversity has failed to reveal the relationship between diversification and corporate performance. For example, William Burgers, Dan Padget, Brian Berdu and Andy Sun have focused on product and industry diversification and its resulting profitability. The findings of their study showed that initial profits are directly related to diversification strategy; so a good understanding of diversification strategy calls for the analysis of early returns. Andro et al. concluded in their paper that compared with non-diversified firms, diversified firms reduce stockholders' wealth to a significant degree. Anderson et al. found out that corporate diversification lowers risks in some firms and increases them in others[1].

Lee et al. also illustrated in their paper that increased value resulting from diversification and fundamental changes is achieved through time. Considering these contradictory findings and because of the fact that there is no evidence about the existence of a direct relationship between the abovementioned variables in Iran, it is necessary that future researches address this issue.

Based on the results of this study, it can be argued that homogeneous diversification has a positive effect on the performance of Iranian firms. Moreover, this strategy increases firms' systematic risks which-considering the positive relationship between risk and return-seems to be reasonable.

Recommendations for further studies: Based on the results of this study in which it was shown that homogeneous diversification has a positive effect on corporate performance, managers are recommended to use this strategy. In addition, homogeneous diversification has a direct relationship with systematic risks. As firms take more risks, their returns increase, but the probability of loss also rises. Therefore, managers have to take systematic risk into account. Stockholders are also recommended to be mindful of their risk appetite in selecting a homogeneous or heterogeneous diversification strategy.

If the aim of board of directors is to increase profitability or performance in the capital market, homogeneous strategy is a good choice. If they want to decrease the risk, they are suggested to use heterogeneous strategy.

Limitations of the study: Industries are classified following instructions issued by Stock Exchange Organization, while the classification introduced by Fama and French is different. It is possible that any change in industry classification would cause a change in correlation coefficient and homogenous /heterogeneous diversification.

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