An Assessment of the Relative Contribution of Critical Performance Factors to the Discriminant Functions Associated with Competitive Performance

Review of Integrative Business & Economics Research

Ahmed A. Al-Qatamin
Arab Open University-Jordan Branch

ABSTRACT

The objective of this study was to assess the contribution of selected critical performance factors to the discriminant functions associated with the firm competitive position. To achieve this objective a sample of firms were taken from the banking sector in Jordan and data were collected utilizing secondary data sources. Several hypotheses were developed and tested using Multiple Discriminant Analysis (MDA) as a statistical tool for data analysis. To make data applicable to the multiple discriminant analysis as a statistical tool for data analysis in this study, sample was divided into two groups based on their market share, group one represents high performing firms and group two includes low performing firms in terms of market share. Results of the discriminant analysis procedures indicated that, ability to sustain strategic growth dominated the discriminant functions associated with both groups, followed by ability to maintain higher profitability levels. On the other hand, results showed that, firm ability to maintain efficient use of corporate assets and firm ability to satisfy investors failed to contribute in any significant manner to the discriminant functions of both groups.

Keywords: competitive Position, Critical organizational factors, MDA, discriminant functions, strategy.

1- INTRODUCTION

Competitive performance can be seen as a multi-facets organizational performance factor that cab be affected by external as well as internal forces (Majeed, 2011). Research in this area found that competitive performance is positively and significantly enhanced by firm total performance, (Luliya Teeratansirikool, Sununta Siengthai, Yuosre Badir, and Chotchai Charoenngam, (2013). This research intends to evaluate the ability of some of the internal organizational critical factors to distinguish between a sample of firms having high competitive performance and another sample of firms having low competitive performance based on their market share.

Four organizational critical factors were used as independent factors: ability to sustain strategic growth, ability to achieve reasonable probability level, ability to use corporate assets efficiently, and ability to satisfy investors.

The research is trying to assess the relative contribution of these four critical factors in distinguishing between the study groups by examining the multiple discriminant functions related to these two groups.

2- THEORETICAL BACKGROUND

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

For the purpose of this study four critical organizational factors are going to be used to evaluate their contribution to the discriminant functions associated with corporate competitive performance.
Following are some relevant theoretical discussions of theses four critical factors.

2.1 Ability to achieve reasonable profitability levels

This corporate ability is measured by Return on Equity Ratio. The return on equity ratio (ROE) is a profitability indicator that measures a firm's ability to generate profits from its shareholders' equity. This usually provides good answer for this question: how much profit each a dollar of common stockholders' equity can generate ?
This indicator can be considered as an important signal for potential investors as they want to be sure to which extent a firm is efficient in utilizing their money to generate net income. From another angle, (ROE) can also be considered as an indicator of how effective a firm's management in using equity financing to fund operations and help grow the company. This whole picture related to ROE characteristics can help to enhance firm's ability to improve its competitive position (Wheelen, Hunger, Hoffman & Bamford, 2014).

2.2 Ability to satisfy investors

This corporate ability is measured by Dividend Payout Ratio. The dividend payout ratio (DPR) measures the proportion of net income allocated by a firm to be distributed to shareholders in the form of dividends at specified period of time. In this way, the ratio indicates the percentage of profits the company decides to keep for internal investment purposes and the portion of profits that is distributed to its shareholders in form of money distribution.
Investors are usually interested in the dividend payout ratio, because they like to know if organizations are distributing a good percentage of net income to their investors in form of dividends. But here some caution must be practiced in this respect because some business organizations want to attract investors' interest so much that they are willing to allocate unreasonable amount of money as dividends. That is why this ratio should be analyzed over a long period of time in order to guarantee sustainability of dividends allocation (Abdul Aziz, and Latifat, 2015) .
In the aggregate means satisfying investor should help building up a base for strong competitive performance.

2.3 Ability to sustain strategic growth:

For the purpose of this study, the firm's ability to sustain strategic growth is measured by the Maximum Sustainable Growth rate (MSG). The maximum sustainable growth is a concept which measures a firm's maximum growth that can be achieved using internal resources to enhance future growth (M. M. Fonseka, 2012).
It represents the maximum growth rate that a firm can sustain without having to increase financial leverage. In other words, it measures how much a firm can grow without borrowing more money .
Solid strategic growth potential can help produce higher level of competitive performance.

2.4 Ability to Use Corporate assets efficiently

This corporate ability is measured by Return on Investment (ROI). One of the most important performance indicators is the Return on Investment. It measures the management efficiency in the utilization of firm's resources to generate net income.

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Hence, this ratio cab be viewed as a reasonable indicator of how a firm exploits its environment to enhance its competitive position. (Kennerley, 2002)6) described Return on investment as the single most comprehensive measurement of corporate efficiency in utilizing corporate assets that is influenced by so many incidents in the company. It also can be considered as fair indicator of future performance (Wheelen, Hunger, Hoffman & Bamford, 2014).

This study is going to use Return on Investment to represent the firm's ability to use corporate assets efficiently, due to the many advantages ROI has. (Ansoff, 1984)

1. ROI is the most comprehensive figure that is influenced by all happening in the firm's internal environment.
2. It measures how well management uses corporate assets to generate net income.
3. It is viewed as the common denominator that can be easily compared with and assessed along many factors.
4. It provides management with incentives to utilize corporate assets efficiently.
5. It encourages management to apply a strategy where acquiring new assets can only be done if doing so would increase the overall corporate return.
   Research in this respect indicated that Return on investment ranked at the top of all performance determinants including performance in the area of competition.
   It is therefore a well- known fact that, a firm high efficiency rate can support higher level of competitive performance.

3. OBJECTIVE OF THE RESEARCH

The objective of this research is to investigate the relative contribution of the firm critical factors to the discriminant function associated with competitive performance in firms operating in the banking sector in Jordan.

Therefore, in this research the main hypothesis that is going to be tested is that: firm's critical factors contribute significantly to the discriminant function associated with two groups of firms' competitive performance.

4- METHODOLOGY

This part of the research focuses on the identification of study factors and variables and their measurements, construction of the research model, formulation of the research groups, data sources, and statistical tool that is going to be used to test the study hypotheses.

4.1 The dependent variable and the groups

In order to be able to measure the contribution of each of the critical organizational factors to the competitive performance, a sample of 15 firms from the banking sector were selected for the inclusion in the study sample. For a firm to qualify to be included in the study sample data should be available for the period intended.

The firm in the sample was classified into two groups based on relative competitive performance in the banking industry as measured by the market share.

The first group was called "high competitive performance" and the second group called 'low competitive performance". This group classification was done based on the market share. A firm was classified in group one if the market share is 0.06 and above, and a firm is classified in group two if the market share is below 0.06.

Having at least two groups is an important condition for the utilization of the discriminant analysis as a statistical too for data analysis and hypotheses tastings and

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

in this case for the calculation of the discriminant functions associated with each group (.
Data for the dependent as well as independents variables was collected using the secondary data available in the sampled firms.

4.2 The independent variables

Four critical performance factors were chosen to be investigated in this research. The firm ability to sustain strategic growth was one of these critical performance factors. This performance ability was measured by the "sustainable growth" index. This measure indicates the maximum growth the firm can attain in the future using its current resources without debt. Therefore, it reflects the ability to achieve future growth options.
Ability to achieve high levels of profitability was measured by Return to Shareholder equity (ROE). This measure is usually used the indicate such an ability .
Another critical performance factor was the firm's ability to maintain efficient use of corporate assets as measured by Return on Investment (ROI). This is quite an important measure of management efficiency in utilizing corporate resources.
The last organizational critical factor used in the research was the firm's ability to satisfy investors as measured by dividends payout ratio.

4.3 The Research Hypotheses

For the purpose of this research, the researcher developed the following hypotheses:
H01: Firm ability to sustain strategic growth as measured by sustainable growth rate does not contribute significantly to the discriminant function associated with firm's competitive performance.
H02: *Firm's ability to maintain reasonable levels of profitability as measured by Return on Equity does not contribute significantly to the discriminant* function associated with firm's competitive performance.
H03: *Firm's ability to maintain efficient use of corporate assets as measured by Return on Investment (ROI) does not contribute significantly to the discriminant* function associated with firm's competitive performance.
H04: *Firm's ability to satisfy investors as measured by Dividends Payout ratio does not contribute significantly to the discriminant* function associated with firm's competitive performance.

4.4 Statistical Method

Since the ultimate objective of this research is to calculate the discriminant functions associated with each group. This will allow the researcher to investigate if the four organizational critical factors are able to distinguish between firms with high competitive performance and firms with low competitive performance based on their competitive performance as measured by market share, therefore multiple Discriminant analysis (MDA) seemed to be useful to achieve this end.

The linear two groups' discriminant analysis can be defined as:

$Yi = a1\ X1i + \ldots + am\ Xmi$

Where:

Y1 is a binary variable used to indicate two alternatives option.

X1, X2, …, are independent variables

The objective of using (MDA) ARE: (Morrison, 2005)

1- To test for the mean group differences and to describe the overlaps among groups.

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

2- To construct a classification system based upon a set of variables in order to be able to assign previously unclassified observations to its appropriate groups.
3- Based on (1) and (2) above, the multiple discriminant functions can be calculated. In calculating the discriminant functions, (MDA) computes a linear combinations that maximally distinguish between groups.

5. RESULTS OF TESTING HYPOTHESES

To guarantee the adequacy of the testing procedures, results of testing model goodness of fit is presented in the following section, followed by the presentation of findings.

5.1 Testing the model goodness of fit

In order to assure that the model used to test the research hypotheses is actually fit for this type of testing, two important values must be assessed. These two values are the f-value and the probability associated with it and the value of Wilk's Lambda.
The results indicated the following values:

F-value = 16.89
Probability = 0.03
Wilk's Lambda = 0.601

5.1.1 F-value and probability level

For the model to be suitable for hypotheses testing and can give reliable results, the f-value must be more than 2 in an absolute value and the probability level associated with it must equal to 0.05 or less.
As shown in the results, the f-value is equal to 2.95 and associated probability equal to 0.04, this permits the researcher to conclude that, the model is good to guarantee its use for the data analysis.

5.1.2 Wilk's Lambda

The value of Wilk's lambda is used to assess the overall discriminatory power of the model, in other words it measures the model ability to distinguish between the groups based on the study independent variables. The value of Wilk's lambda ranges between zero and one, where values too close to one indicates low discriminatory power (McLachlan, 2004)
The value of Wilk's lambda for this research is 0.601which provides an evidence to support reasonable significance for the model.
Therefore, the values of f and Wilk's lambda allow the researcher to conclude that the model used to test the research hypotheses is reasonably fit to guarantee reliable results.

5.2 The Research findings

Table (1) presents the classification matrix which indicates that the discriminant function associated with group one was able to to distinguish between groups 57.7 percent of the time. This means that four firms out of seven in group one were reclassified in the same group while three firms misclassified in group two.

Table (1): Classification Results

		Groups	Predicted Group Membership		Total
			1	2	
Original	Count	1	4	3	7
		2	0	8	8
	%	1	57.1	42.9	100.0
		2	.0	100.0	100.0

a. 80.0% of original grouped cases correctly classified.

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Table (2) indicates that the discriminant function associated with two one was able to distinguish between groups 100 percent of time where all firms in group two were successfully reclassified in the same group.
Overall, an 80 percent of firms in both groups were successfully reclassified in their respective groups. This classification accuracy indicates the ability of the study discriminant functions to distinguish between the study groups.
Table (2) shows the relative contribution of the independent variables to the discriminant functions associated with group one.

Table (2): The discriminant function associated with group one

Independent Variables	Group1
Ability to achieve reasonable profitability rate	34.546
Ability to use corporate assets efficiently	4.013
Ability to sustain strategic growth	75.964
Ability to satisfy investors	7.221
(Constant)	-10.322

According to table (2) above the relative contribution of the independent variables to the discriminant function associated with group one is as follows:
Group one = 75.964 ability to sustain strategic growth + 34.546 ability to achieve reasonable profitability + 7.221 ability to satisfy investors+ 4.013 ability to use corporate assets efficiently……. **Discriminant function of Group one**
From the function above, we can conclude that the discriminant function associated with group one is clearly dominated by the firm's ability to sustain strategic growth with a coefficient of 75.964 followed by the firm's ability to achieve reasonable profitability
Rates. On the other hand, both the firm's ability to satisfy investors (coefficient =7.221 for) and the firm's ability to use corporate assets efficiently (coefficient= 4.013) show very week contribution to this discriminant function.

Table (3): The discriminant function associated with group two

Independent Variables	Group (2)
Ability to achieve reasonable profitability rate	19.125
Ability to use corporate assets efficiently	7.169
Ability to sustain strategic growth	119.898
Ability to satisfy investors	8.831
(Constant)	-10.519

Group two = 119.898 Ability to Sustain Strategic Growth + 19.125 Ability to Achieve Reasonable Profitability Rates + 8.831 Ability to satisfy investors + 7.169 Ability to use corporate Assets Efficiently …… **Discriminant Function of group two**
As shown in table (3), ability to sustain strategic growth is dominating the discriminant function for group two with a high coefficient of 119.898 followed by the firm's Ability to achieve reasonable profitability rate with a coefficient of 19.125.
Both ability to use corporate assets efficiently (coefficient =7.195) and ability to satisfy investors (coefficient = 8.831) failed to contribute significantly to the discriminant function associated with group two.

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Table(4): Results of classification procedures

Case Number	Actual Group	Predicted Group
1	1	1
2	1	1
3	2	2
4	1	1
5	2	2
6	2	2
7	2	2
8	2	2
9	2	2
10	2	2
11	2	2
12	1	1
13	1	2**
14	1	2**
15	1	2**

As shown in table (4) all firms in group two were classified correctly into their group while three firm from group one were misclassified in group two. This gives us an overall accuracy classification rate of 80%.

6. DISCUSSIONS OF THE RESEARCH FINDINGS

Findings of this research seemed to indicate that firms in the banking industry in Jordan tend to emphasize strategic growth rather than the traditional emphasis on profitability considerations, which is in fact, good news.

In both groups the discriminant functions showed heavy dominance of ability to sustain strategic growth while ability to achieve reasonable profitability rates came second with very wide range. These results indicate that firms in the banking sector in Jordan are in fact conducting proper growth strategies and consider them central in their strategy making processes. But, while it is true that strategic growth is central as firms' performance objectives, it should not be emphasized at the expense of other critical factors such as ability to use corporate assets efficiently and ability to satisfy investors. Both showed very weak significance in both discriminant functions, and thus their contribution to firm's competitive performance is almost neglected.

7. CONCLUSIONS

This research main objective was to evaluate the relative contribution of selected organizational critical performance factor to the discriminant functions related to firm's competitive performance in a sample of high-competitive performance and another sample of low-competitive performance in the banking sector in Jordan.

To reach this end multiple discriminant analysis was used to compute the discriminant functions associated with both groups.

Results showed that firms both discriminant functions were reflecting same pattern of performance. Contribution of the organizational critical factors in the discriminant functions for both group was moving in the same direction in both group. Only ability to sustain strategic growth showed highly significant influence on firms' competitive

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

performance, followed by ability to achieve reasonable profitability rate with a moderate significance.
Both ability to satisfy investors and ability to use corporate assets efficiently failed to contribute significantly to the firms' competitive performance.

REFERENCES

[1] Ansoff, I., Implementing Strategic Management, (1984). Englewood Cliffs, New York: prentice Hall.

[2] Fonseka, M. , Constantino Ramos, and Gao-liang Tian, (2012). The Most Appropriate Sustainable Growth Rate Model For Managers And Researchers, Journal of Applied Business Research, Vol 28, No 3, pp. 481-498.

[3] Kennerley, M. & neely, A., (2002). A framework of the factors affecting the evolution of performance measurement system. International Journal of Operation & Production Management, 22, 1222-1245.

[4] Luliya Teeratansirikool, Sununta Siengthai, Yuosre Badir, and Chotchai Charoenngam, (2013). Competitive strategies and firm performance: the mediating role of performance measurement", International Journal of Productivity and Performance Management, Vol. 62 Iss: 2, pp.168 – 184 DOI: http://dx.doi.org/10.1108/17410401311295722

[5] McLachlan Geoffrey, (2004). Discriminant Analysis and Statistical Pattern Recognition, New York: Wiley.

[6] Morrison, Donald F., (2005), Multivariate Statistical Methods, 4th Edition. New York: Mac Graw-Hill book company.

[7] Sadia Majeed, (2013), The Impact of Competitive Advantage on Organizational Performance. International Journal of Arts and Commerce Vol. 2 No. 2. 145-160.

[8] Samuel O. Mokaya, Duncan M. Nyang'ara, and Lilian T. James, (2011). The Effect of Dividend Policy on Market Share Value in the Banking Industry: the

[9] Case of National Bank of Kenya https://www.academia.edu/8007092/The_Effect_of_Dividend_Policy_on_Market_Share_Value_in_the_Banking_Industry_the_Case_of_National_Bank_of_Kenya

[10] Venables, W. N. and Ripley, B. D. (2002) Modern Applied Statistics with S. Fourth edition. Springer.

[11] Vinh, S.C. (2008). The relationship of strategic performance management to team strategy, company performance and organizational effectiveness. Team Performance Management, Vol. 14 (3/4),113-117. DOI: http://dx.doi.org/10.1108/13527590810883398.

[12] Thomas L. Wheelen, J. David Hunger, Alan N. Hoffman, and Charles E. Bamford, (2014).

[13] Strategic Management and Business Policy: Globalization, Innovation and Sustainability. New 14/E. New York: Pearson Publishing Inc.

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)