

Behavioral Trends of Export Firms of Turkey in Crisis Period

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Abstract

Globalization, despite all of its advantages, poses serious threats to the world economies. One of the vital issues is global crisis arising from various sources. Firms develop strategies for crisis management in order to be least affected from the global crisis. The main purpose of this study is to put forward behavioral trends of the firms in crisis period. A questionnaire study is conducted to 167 agri-products export firms. Factor analysis is used to identify behavioral dimensions of the firms during global crisis. These dimensions are used as input to cluster analysis in order to cluster the firms on the basis of their decision trends (expansion, contraction or maintain the current position) in risky environment. The results show that 21% of the firms make expansion decisions and 34.7% of them decide to go for contraction. These behavioral trends of the market participants in the face of crisis might be important for policy makers to take necessary measures in order to create a rational environment for firms to continue their operations.

Keywords

Economic Crisis, Decisions, Export Firms, Behavioral Trends, Growth, Downsizing

1. Introduction

Globalization is a phenomenon that is rapidly connecting the world. It has turned the world into so called “global village”. It has changed the way we live, behave and trade. Despite all of its benefits, globalization has also brought global crisis arising from various sources. During crisis period, banks, in order to lower their portfolio risk, seem reluctant to issue credits to firms. Consumers are more careful in the purchasing decisions and be-

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come more sensitive to prices. They may also postpone or cancel their purchases at all. All these developments may raise serious problems for firms and their stakeholders [1]. This may also force firms to close down their operations. Especially, small firms are more vulnerable to market volatilities [2]. To be on the safe side and be less affected during crisis period, firms go for crisis management. The main purpose of the crisis management is to effectively manage the firms' operations during crisis [3]. Firms may go for reduction in expenses in order to maintain their liquidity or postpone their investment decisions [4]. However, besides these traditional strategies, modern world requires the firms to find more innovative ways to manage and successfully continue their operations in the face of economic stagnation; for example, increase product variety, creating new opportunities and effective corporate management strategies [5]. Likewise, [6] proposes proactive marketing strategies like different marketing programs for different products, focused communication, before and after sale services, promoting the popular products etc. [7] suggests alternative marketing strategies, innovative tactics and developing novel concepts to small and medium enterprises (SMEs) in order to cope with crisis. [8] proposes to develop innovative products or follow a differentiation strategy to the SMEs facing market contraction.

There are some studies specifically focusing on the behavioral trends of the firms in various sectors in developed and emerging markets. For example, [6] studies the behavior of 154 firms during economic stagnation period. The results show that the managers do not show proactive behaviors. [9] found that most of Brazilian firms reduced costs and investments during 2007-08 crisis. [10] finds that, in the period of economic stagnation, family firms follow a proactive marketing strategy and big firms go for increase in advertisement and promoting new products. [11] studies behavioral aspects of the firms from furniture and agriculture sector during crisis. [12] analyzes crisis management strategies of the firms in construction sector in USA; and finds that the small firms are able to increase sales even in crisis because of their sales flexibility and close relations with their customers. [13] studies the effects of banking sector crisis on the firms in Iceland; and shows that the firms, instead of downsizing, prefer to make efficient use of their managerial and environmental resources. This brief literature review shows that the firms follow various strategies in order to cope with crisis.

The basic purpose of this study is to understand the behavioral aspects of agri-products export firms of Turkey in the face of crisis. Agriculture is an important pillar in the Turkish economy. Major part of its total exports comes from agriculture. This study will add value to literature by analyzing the behavioral trends of the firms from an emerging market.

The organization of the text is as follows. The next section presents data and methodology. Later section provides findings and discussion. Lastly, conclusion of the study is given.

2. Data and Methodology

The data of this study is based on a specially designed questionnaire study focusing on agri-products export firms of Turkey. Following procedure is followed in this regard.

2.1. Data Collection: Techniques and Instruments

The study focuses on the agri-products export firms that are members of the export union of Turkey. Sample size is calculated using the following [14]:

$$n = \frac{Np(1-p)}{(N-1)\sigma_p^2 + p(1-p)} \quad (1)$$

Here n is the sample size, N is the population size (4 896), and p is the prediction rate (0.5 for the maximum sample size) and the probability level confidence interval (95% confidence interval, σ_p : 0.038265 for %7.5 margin of error from the equation of 1.96 σ_p : 0.075). Accordingly, the sample size, determined as 167 firm, was distributed per the respective populations of the regions.

2.2. Methodology

The firms' managers are exposed to a simulated risky environment and are provided various options to choose in order to document their behaviors in the face of crisis. The significance level of the questions is tested using Cronbach Alpha reliability test. Nine of the questions passed the significance test. On the basis of the answers to these questions, the behavioral dimensions of the managers are identified using factor analysis. There are two

important diagnostic tests in factor analysis. One of them is Bartlett test; it uses chi-square statistic to test whether the correlation matrix is a unit matrix or not. The second one is KMO test. This test is used for sample size adequacy.

$$KMO = \frac{\sum_{i \neq j} \sum r_{ij}^2}{\sum_{i \neq j} \sum r_{ij}^2 + \sum_{i \neq j} \sum a_{ij}^2}. \quad (2)$$

Here, a_{ij} shows partial correlation, r_{ij} represents the correlation between the observations [15].

In the second part, the results obtained from factor analysis are grouped using k-means cluster analysis. The cluster analysis distributes the observations into homogeneous groups. The main advantage of this method is that it gives option to predetermine the number of clusters. This method is suitable especially for small samples. Another advantage is being less sensitive to outliers. The following equation is used for k-means cluster analysis.

$$\text{Summed Squared Error} = \sum_{i=1}^K \sum_{R \in G_i} \text{dist}^2(n_i, R). \quad (3)$$

Here, “dist” represents Euclid distance between two objects, R shows the object itself, n_i is the cluster’s center and G_i shows the cluster [16]. The results of the cluster analysis help in clustering the firms’ behavioral trends in risky environment.

3. Findings and Discussion

Table 1 shows the general characteristics of the firms included in our sample. The percentage of the firms involved in the exports of fruits & vegetables, olive oil, grains seeds and dry fruits & vegetables are 38.9%, 9.6%, 29.9% and 21.6%, respectively.

In the first step, behavioral dimensions of the firms in crisis period are identified using factor analysis. The results show that the firms have three dimensional behavioral factors ($KMO = 0.732$; $\chi^2 = 107,754$; $sd = 3$; $p = 0.000 < 0.05$). The first factor shows the downsizing trends in the firms during risky environment. The firms in this factor say that, in crisis period, they will prefer to invest in low risk investments like bank deposits, foreign currencies or gold instead of their trading business. Downsizing of a firm means intentionally reducing the size of firm by lowering staff, minimizing cost and other business processes. Extensive downsizing is decreasing number of business units and product range and services; whereas scale downsizing means process reorganization and updating organizational structure and technology [17]. The type of downsizing in the above mentioned factor can be regarded as extensive downsizing.

Table 1. General characteristics of the firms.

Characteristic	N	%	Characteristic	N	%		
Operating area	Fresh fruits & vegetables	65	38.9	Ownership structure	Local	141	84.4
	Olive-olive oil	16	9.6		Foreign	26	15.6
	Grain	50	29.9	Experience		<11 years	102
	Dry fruits & vegetables	36	21.6		11 - 20 years	59	35.3
Legal status	Private	102	61.1		>20 years	6	3.6
	Public	59	35.3	Total exports (year/TL)	0 - 2 million 999	49	29.3
	Others	6	3.6		3 million - 4 million 999	48	28.7
Education level of personnel interviewed	Primary	3	1.8		5 million - 6 million 999	41	24.6
	High school	39	23.4		7 million - 9 million 999	18	10.8
	Graduate	108	64.7		10 million and above	11	6.6
	Post-graduate	17	10.2				

*1 TL = 2.67 USD (average rate of the year 2015).

The firms in the second factor try to maintain their current position during risk environment (Table 2). The firms in this behavioral dimension say that, during crisis period, they would avoid to borrow or lend money and reduce firm's expenses. These are some of the common strategies used to cope with crisis. The third factor includes firms having growth trends during crisis. The managers of these firms say that they would try to be better than before crisis position; search alternative markets and increase the budget to cover the prospective increase in firm's expenses. Horizontal growth is to increase the current market share by developing innovative marketing strategies for product and services [18]. Therefore, the behavioral dimension in the third factor can be regarded as growth trends.

The results obtained from the factor analysis are then used to group the firms on the basis of their behavioral trends using cluster analysis. The results of one-way analysis of variance (ANOVA) show the statistically significant parameters in creating clusters (see Table 3). ANOVA is also a performance criterion for the cluster analysis. The results show viability of three dimensional behavioral trends (downsizing, growth and maintaining the current position) of the firms for cluster analysis and the findings of the cluster analysis are meaningful.

Table 4 shows the cluster centers for the behavioral dimensions of the firms in risky environment. The cluster analysis groups the firms' behavioral trends during crisis into three clusters (growth, maintain the current position, downsizing). The results show that 21% of the firms intend to go for downsizing and 44.3% of them want to maintain the current position. However, 34.7% of the firms intend to adopt a growth strategy during crisis period. Overall, 65.3% of the firms want to avoid losses. Table 5 shows the distribution of the firms' behavioral trends during crisis period using cluster analysis.

Table 2. Factor loading matrix of the firms' behavioral trends in risky environment.

Observed variables	Component		
	1	2	3
BE1. I will search for alternative markets	0.008	0.101	0.731
BE2. I will try to bring my firm better than before crisis position	-0.010	-0.010	0.840
BE3. I will increase the budget to cover the prospective increase in firm's expenses	-0.084	-0.387	0.713
KE1. During crisis, I will prefer to invest the firm's reserves in less risky asset like gold instead of trading business	0.881	0.144	-0.186
KE2. During crisis, I will prefer to invest the firm's reserves in less risky asset like bank deposits instead of trading business	0.958	-0.004	0.058
KE3. During crisis, I will prefer to invest the firm's reserves in less risky asset like foreign currencies instead of trading business	0.904	-0.104	0.041
MDKE1. To be on the safe side, I will try to decrease firm's expenses.	-0.038	0.757	-0.057
MDKE2. I will avoid borrowing	0.006	0.826	-0.021
MDKE3. I will avoid lending	0.047	0.804	-0.026

Note: Extraction Method: Basic Component Analysis. Rotation Method: Varimax.

Table 3. ANOVA test results of the behavioral dimensions of the firms for cluster analysis.

	Among groups		Within group		F	Prob.
	Sum of squares	Sd	Sum of squares	Sd		
Growth	25,479	2	0.701	164	36,322	0.000
Maintain the current position	51,265	2	0.387	164	132,463	0.000
Downsizing	26,612	2	0.688	164	38,699	0.000

Table 4. Cluster centers of the behavioral dimensions of the firms in risky environment.

Behavioral trend	Clusters		
	1	2	3
Growth	0.32331	-0.61022	0.58346
Maintain the current position	-1.51454	0.47704	0.30530
Downsizing	-0.28836	-0.46591	0.76845

Table 5. The distribution of the firms' behavioral trends during crisis period using cluster analysis.

Behavioral Trend	Frequency	Percentage	Cumulative
Growth	35	21.0	21.0
Maintain the current position	74	44.3	65.3
Downsizing	58	34.7	100.0
Total	167	100.0	

4. Conclusion

Economic crisis may affect business world significantly. Therefore it is vital for the firms to design strategies for crisis management. This study put forward the behavioral aspects of the firms in risky environment. A questionnaire study is conducted on 167 agri-products export firms in Turkey. Factor analysis is used to identify the behavioral dimensions of the firms in risky environment. The findings are used in cluster analysis to cluster the firms on the basis of their behavioral trends. The results show that 21% of the firms decide to adopt expansion strategy and 34.7% of the firms go for downsizing. Knowing the behavioral trends of the market participants will help policy makers in finding rational solutions to the problems.

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