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TOWARD A NEW GROWTH MEASUREMENT MODEL FOR ENTREPRENEURIAL FIRMS

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ABSTRACT

Previous literature has mainly focused on the growth of large organizations and neglected entrepreneurial firms. Unique characteristics of entrepreneurial firms make them distinguished among others and require comprehensive understanding of the growth process and the growth assessment in these kind of firms. Hence, this study focuses on firms in semi-processed food industry in Iran as a fast growing, entrepreneurial industry and tries to shed light on different growth dimensions and measurements in entrepreneurial firms. Data collected from 85 entrepreneurs through questionnaires. We used correlation matrix, Friedman's rank test and structural model to estimate growth dimensions and identify its measurements. Results show among growth dimensions, entrepreneurial orientation shows the highest coefficients and the highest rank in Friedman's test, which means this dimension, is the most effective one on firm's growth. In addition, results of structural model show subjective measurements are also included in growth measurements and they show even higher coefficient than the objective measurements.

Keywords: Entrepreneurial Firm, Growth Measurements, Food Industry.

INTRODUCTION

Growth literature show there are many theories on firm's growth however, there is no convergence or cohesion between these theories (Correa, 2003). This might be due to the fact that the definition of a firm is different in each of these theories, based on different views (classic economics theories, behavioral theories, dynamic growth, and organizational learning models). On the other hand, entrepreneurial firms have specific characteristics that distinguish their process of growth and its measurements from other firms. These firms are constantly seeking business opportunities, flexible and open minded, risk tolerant and innovative. These firms need to invest in their human capitals to be able to exploit potential opportunities (Greenwood et al., 2005; Muller and Doloreux, 2009).

Significance

This study is critical to the topic of growth in entrepreneurial firms. The target sample of this study are semi-processed food firms in Iran. This is a fast growing industry with unique characteristics like high cumulative knowledge, innovation, and technology that makes it one of the most innovative and entrepreneurial industries in Iran. Based on "Italian Trade Agency (ITA)" report in 2016, consumption of packaged and processed food increased significantly due to international investors and producers' campaign. In addition, urbanization, the increase in the population under the age of 25, changes in lifestyle and tastes of the people, as well as increased interest of the Iranian people in consuming food products similar to Western ones, has

increased the consumption and production of processed products. Hence, food industry companies in Iran are actively researching and developing to introduce new products and expand their markets. These efforts can be categorized from the presentation of new flavors, increasing the current product line, to changing packaging and providing more attractiveness for customers. Therefore, for the firms in food industry to succeed, the producer needs to rely on tactical and environmental knowledge that can quickly respond to market signals such as changing customer tastes, prices, costs, regulatory compliance, competition constraints, etc. Therefore, the main goal of this study is to provide new insights on entrepreneurial firm's growth and introduce new measurements for assessing growth that are consistent with the unique characteristics of this kind of firms.

LITERATURE REVIEW

Although these firms are very similar to the other ones, the concept of growth is not the same. The main distinguishing factor of entrepreneurial firms is the growth through innovation over time. Innovation is driven by the behavioral and sociological characteristics of entrepreneurs who manage these businesses (Carland et al, 1984). Hence, entrepreneurs employ management skills and their authorities to moderate environmental uncertainties and keep their firms active (Langlois, 2003). Therefore, judgment is at the heart of the entrepreneurial firms (Langlois, 2003).

Entrepreneurial orientation is the other distinguishing factor of entrepreneurial firms. Those firms that have competitive advantage through their knowledge-based resources and are more willing to discover and exploit their opportunities (Shepherd & Wiklund, 2005).

However, there is still no coherent theory of analyzing the effects, causes, and evolution of entrepreneurial firm's growth. This could be due to the complexity of the concept of the firm's growth and entrepreneurial firm's growth and its definition (Correa et al, 2008). Hence, many contributions have been made by other researchers to introduce indicators for growth assessment and growth analysis in the firm (Talebi et al, 2016).

The basis for these contributions begins with neoclassical theories of economics. In neoclassical theories, it has been assumed that the primary economic function of firms is the use of productive resources for the purpose of supplying goods and services to the economy (Foss, 1998). Furthermore, the firm theory considers only the prices and outputs and is reluctant to know what happens within the firm. We believe such a theory cannot respond to other dimensions of the firm, especially firm's growth.

Neoclassicists argue that firms tend to reach the optimal size. In this view, the growth of the firm is only a mean to reach this optimal size. As according to the firm theory, when the firm is in the "efficient" state, there is no justification to grow and, in this regard, it seems even more unreasonable. Many economists later rejected this theory and stated that firms are free to add or change their product lines, or even replace their markets (Penrose, 1959, p. 130). For this reason, the firm described in the firm theory is not a real world firm.

Probably the most controversial theory in economics is Penrose's theory who tried to relate the role of human agent in the allocation of firm's resources to growth. Penrose's view of firm growth suggests that firms grow to the economical advantages, which are rooted in growth processes, not because of the advantages associated with firm size (Penrose, 1959). This view of Penrose is still consistent with the neoclassical viewpoint of considering an optimal size for the firm, after



which the firm should not grow. Nevertheless, this theory has contributed to the field of strategic management significantly.

From the early 1970s, managements scholars started to focus on the performance of small and medium-sized enterprises (SMEs). They tried to review firm's growth definition and introduce new growth measurements that include more behavioral and entrepreneurial dimensions (Davidsson, 1989; Wiklund, 1998). Later, since the 1980s, researchers in the field of entrepreneurship and strategic management also joined this stream (Delmar et al., 2003; Ostgaard and Birley, 1995; Siegel et al., 1993).

These views mainly focus on identifying the role of the human factor, and in particular the entrepreneur, in the growth process of the firm and its impact on firm's growth measurement. They believe the characteristics of entrepreneurs, their attitudes and intentions, as well as some psychological needs such as the need for success in entrepreneurs, are all effective in the growth process (Boone et al., 1996; Rotter, 1966; Mousavi et al., 2011).

In addition, scholars in these perspectives, consider different types for firm's growth, each of which leads to a different function in the firm, it can also affect the process and pace of growth. Internal growth is more consistent, but slower than external or acquisitive growth. In addition, internal or organic growth, which occurs through the introduction of new products, is immediately reflected in the sales increase, but not necessarily visible in the market share of the firm or the growth of its labor force. Conversely, acquisitive or external growth can simultaneously affect sales growth, market share or labor force growth.

In conclusion, this suggests contradictions in firm's growth theories, which insists that merely looking at economic growth factors and measurements in entrepreneurial firms cannot be sufficient because in these firms' components such as behavioral factors as well as attitudes and entrepreneurial strategies interfere with growth (McKelvie & Wiklund, 2010).

Therefore, in this study we tried to shed light on growth dimensions in entrepreneurial firms and suggest new growth measurements based on entrepreneurs' responses.

METHODOLOGY

Our target population was innovative/entrepreneurial firms within Iranian semi-processed food firms. We monitored firms' related documents from "ministry of industry, mine and trade" to identify them. Finally, 89 firms were randomly selected based on Schumpeter classes of innovative activity which are launch of a new product or a new species of already known product, application of new methods of production or sales of a product (not yet proven in the industry), opening of a new market (the market for which a branch of the industry was not yet represented), acquiring of new sources of supply of raw material or semi-finished goods, new industry structure such as the creation or destruction of a monopoly position. Other sampling criteria were: (a) being in semi-processed food industry, (b) being in the growth period of the business cycle (we did not consider start-ups). The target respondent was the CEO.

Data collection

Data were collected in a two-step manner. First, the firms were contacted and confirmed by telephone yielding 85 responses (95.51%). Second, all firms interviewed were asked to fill the survey in person. We received mail responses from 79 firms after several reminders. Given the formula provided by Dillman (1978), the response rate was more than 80%. This considerable response rate helped safeguard against non-response bias. Excluding cases with severe internal



non-response, we have an effective sample of 76 firms for the main analysis. We evaluated the reliability of the measures. Given our limitation of subjects, this study was pilot tested on 20 respondents. We used a common method of internal consistency: The Cronbach's alpha (Pedhazur & Schelkin, 1991). The Cranach alpha was 0.78 so results were reliable.

Table 1: Descriptive Statistics of the Sample

	0-5	5-10	10-20	20-100	100<
Firms Size (employees)	3	33	35	4	1
	0-100	100-1000	1000-10000	10000-50000	
Initial Capital	2	5	36	33	
Converted to constant U.S. dollars					
	0-5	5-10	10-20	20<	
Number of years being in the industry	15	21	28	12	
	0-100	100-1000	1000-10000	10000-50000	
Annual R&D spending	5	16	52	3	
Converted to constant U.S. dollars					
	Savings	Government	Bank	Investors	Friends & Family
Source of Capital Funding	70	12	58	33	7
Multiple choices were possible					

Construction of the instrument and measures

After conducting a vast review of the literature, we came to conclusion that the growth measurement is dependent on the main goal of the existing firm (Lumpkin and Dess 1996; Velnampy&Nimalathasan, 2008; Zahra, 1991; Davidson&Wiklund, 2013).

Davidson & Wiklund (2013) work provided the basis for the construction of the instrument and measures utilized in this study. The domains of constructs were identified via a thorough review of the literature. Therefore, to measure growth dimensions from Davidson & Wiklund (2013), a questionnaire was designed based on content analysis. In addition, firm performance measurements were originated in the literature review. All instruments use a discrete Likert-type scale. The list of scales, items and their scopes are presented in Appendix. In addition, we used a questionnaire by Brown, et al, (2001) based on Stevenson's conceptualization of entrepreneurship to measure entrepreneurship (Table (1), Appendix).

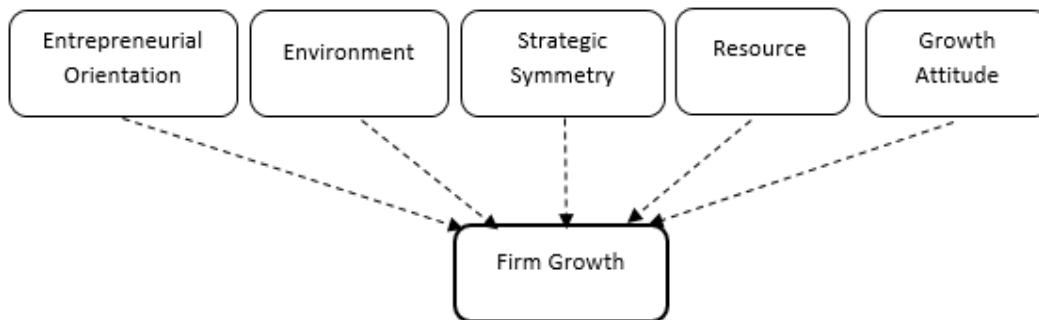


Figure 1: Growth dimensions' model (Davidson, 2012)

Entrepreneurial orientation (EO)

Strategic tendency of the firm including will, wish or desire to innovation in order to revive market demand, bearing risk or uncertainties to introduce new service and product as well as grasping new opportunities in the market to stay a head of the rest of competitors (Davidsson& Wiklund, 2013). New business environment leads firm to have a shorter life cycle for their products. Since EO helps firms to explore new opportunities constantly, we expect this factor has a positive impact on firm growth.

Environment

Environment provides growth opportunities for firms to be exploited. However, environment's effect might be positive or negative. As heterogeneity in environment facilitates finding market niches and developing them for firms but hostility in environment increases treats for firms by decreasing market demand or increasing competitiveness (Davidsson& Wiklund, 2013).

Strategic symmetry

It is very simplistic to think EO can increase firm growth unconditionally. Rather, implication of EO depends heavily on the environment and industry (Davidsson& Wiklund, 2013).

Resource

Resources include not only financial and human resources but also entrepreneurial networks to develop inter/intra-organizational and inter-personal networks. Entrepreneurial networks provide growth requirements and decrease growth costs (Koeller&Lechler, 2006).

Growth attitude

People act in a way to maximize their benefits. Psychologists believe this is a universal behavior and includes all human's behaviors which is the foundation of economic behavior. That is, managers who are more open toward innovations and new ideas are more likely to get involved in organizational growth activities (Davidsson& Wiklund, 2013).

We designed different questions for each of these dimensions. We also asked entrepreneurs about how they measure growth of their firms based on multiple choice questions which we fit them into different categories. We presented these factors in our final model.

METHODOLOGY

In this study, in order to test the hypothesis, we used three different statistics. Correlation estimation, Friedman rank test and Structural model.

Prior to evaluating the structural equation model (SEM), the validity of the measurement models was tested (Byrne, 1998). In other words, the resulting scales in exploratory factor analysis were evaluated and refined by a confirmatory factor analysis (CFA) before testing the full latent variable model (Gerbing and Anderson, 1988). The measurement model for each factor was estimated separately, then, after combining the factors into pairs, each pair was estimated separately. After estimating the measurement model for all factors without constraining the covariance matrix of the factors, the SEM for the factors together with the measurement models was estimated. At each step, whether or not the model fits the data was assessed. This assessment of the model was done by examining the standard errors, t-values, standardized residuals, modification indices, and a number of goodness-of-fit statistics (Jöreskog and Sörbom, 1993a). We used LISREL 8.14 software (Jöreskog and Sörbom, 1993b) to test the measurement models and the research model. We used different fit indices to test the assumptions of multivariate



analysis—normality, linearity, and homoscedasticity—for the variables used in the measurement models. Fit indices we used are measurement models which are the ratio of χ^2 to degree of freedom, Root Mean Square Error of Approximation (RMSEA), a consistent version of the Akaike's Information Criterion (CAIC), the Parsimony Goodness-of-Fit Index (PGFI), the Parsimony Normed Fit Index (PNFI), and the Comparative Fit Index (CFI). These fit indices, with the exception of RMSEA, were chosen because of their abilities to adjust for model complexity and degrees of freedom. Although RMSEA is sensitive to model complexity, it is one of the most informative criteria as to an absolute fit (Kaynak, 2003). Table (2) shows the recommended values of these fit indices for satisfactory fit of a model to data. Results show there is no assumption violation of multivariate model. An examination of the modification indices and standardized residuals revealed redundant items in some scales. These redundant items were eliminated, which resulted in better-fitted models (Kaynak, 2003). A comparison of goodness-of-fit statistics relating to each measurement model to the recommended values of these fit indices (Table 2) reveals satisfactory fit of the measurement models to the data.

Table 2: The Results of the Measurment Models and Structural Model

Goodness-of-fit statistics	Measurement model for Firm growth	Measurement model for growth dimensions	Structural model	Recommended values for satisfactory fit of a model to data
χ^2/df	1.98	2.45	1.58	<3.0
Root Mean Square Error of Approximation(RMSEA)	0.048	0.084	0.064	<0.08
Akaike's Information Criterion(CAIC)	1284.5	195.64	1546.95	<Saturated model and independence mode
CAIC for Saturated Model	3456.15	456.25	5624.13	
CAIC for independent Model	6542.15	1268.85	7849.35	
Parsimony Goodness-of-Fit Index(PGFI)	0.87	0.58	0.98	>0.50
Parsimony Normed Fit Index(PNFI)	0.84	0.53	0.75	>0.50
Comparative Fit Index(CFI)	0.97	0.98	0.94	>0.90

CONCLUSION AND IMPLICATIONS

In this study, in order to test our hypothesis, we used three statistic tests: correlation test, regression and Friedman's rank test.

Correlations estimation

Table 3 shows the result of the Spearman Rank Correlation test between dependent variable (firm's growth) with independents ones (Environment, EO, Resources, Growth Attitude, strategic symmetry). The results show the strong correlations between dependent and independents variables and there were all significant. The correlation between firm's growth and environment is very high and negative, about 0.758. Although negative sign is consistent with our story of hostile environment, being negative does not necessary indicate the direction of effectiveness. Therefore, for more confidence, the result of regression analysis should be obtained. In addition,

according to table (3), there is a significant positive relationship between EO, resource, strategic symmetry, growth attitude and firm's growth.

Table 3: Correlation Matrix for Firm's Growth and Growth Dimensions

	1	2	3	4	5	6
Firm's growth	1					
Environment	-.758**	1				
EO	.894**	-.452**	1			
Resource	.525**	.343*	.365**	1		
Growth Attitude	.786**	-.142*	.856**	.624**	1	
Strategic Symmetry	.658**	.354**	.564**	.40*	.854**	1

*Correlation is significant at the 0.05 level (two-tailed); n =99. **Correlation is significant at the 0.01 level(two-tailed).

Friedman's rank test

To determine whether firm's growth dimensions are different in terms of importance, we used Friedman's rank test. The Friedman test is a nonparametric alternative test to a repeated measures analysis of variance. "The scores of each variable are ranked and the mean ranks of the variables are compared. The Friedman test statistic is approximately distributed as a chi-square distribution. The idea behind this statistic is that if there is no difference between groups, each subject's rankings would be random, and there would be no difference in the mean ranks across the variables (Kaynak, 2003)".



Table 4: Rank of Growth Dimensions in Iranian Semi-Processed Food Firms

Growth Dimensions	Rank Mean	std	Rank
EO	4.98	0.662	1
Growth Attitude	3.59	0.6	2
Strategic Symmetry	3.14	0.626	3
Resource	2.84	0.651	4
Environment	2.07	0.64	5

According to Table (4), we found that EO has the highest importance among growth dimensions. Growth attitude, strategic symmetry, resource and environment are in the next places.

Structural model

Fig.2 depicts the structural model results of relationship between firm's growth and growth dimensions. In the light of recommended values of fit indices, a review of the goodness-of-fit indices pertaining to the hypothesized model reveals a good fit of the model to the data. All of the paths in the model are supported (t-values for path coefficients greater than 1.65 are significant at $P < 0.10$; t-values greater than 1.96 are significant at $P < 0.05$; t-values greater than 2.58 are significant at $P < 0.01$).

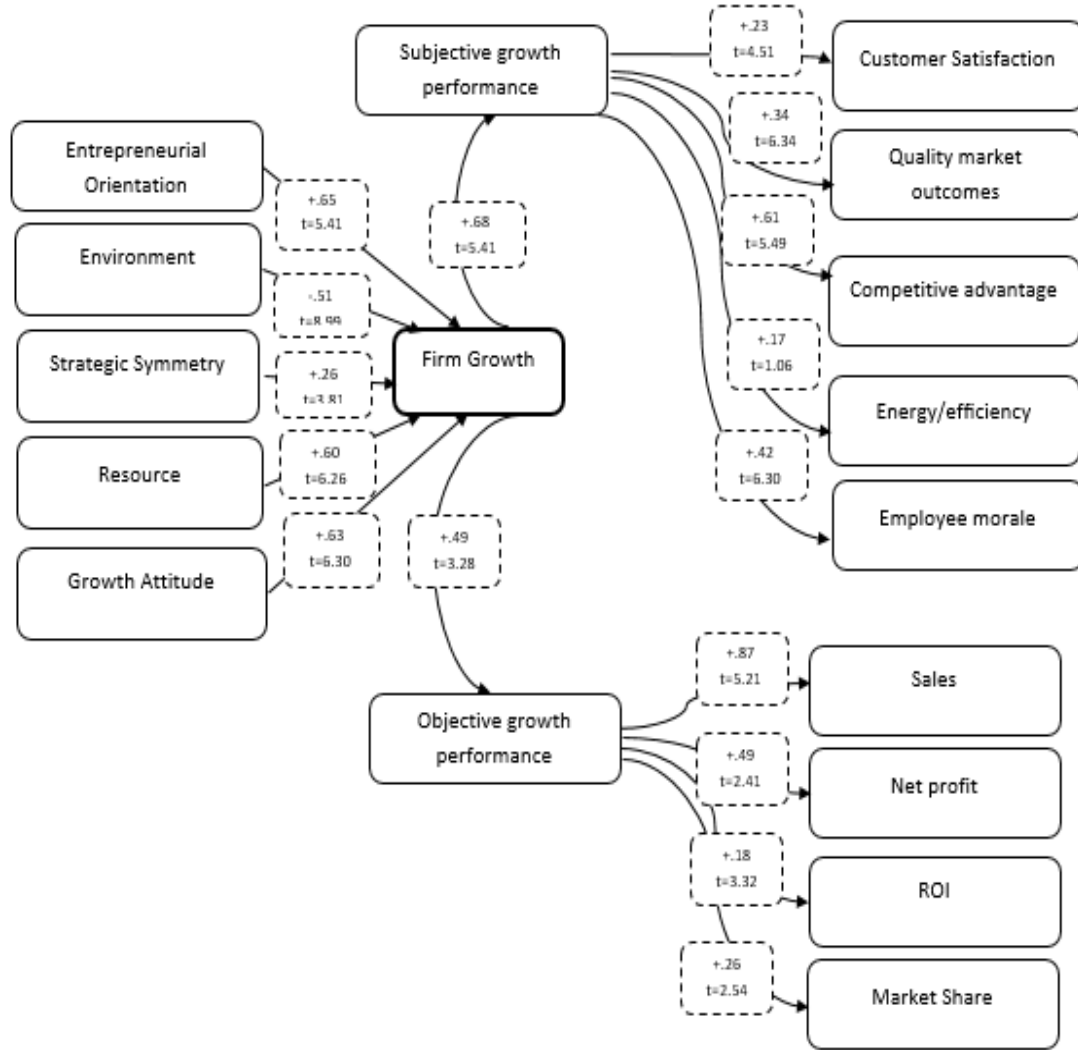


Figure 2: Structural model

The findings suggest growth dimensions, except for environment, have positive effect on firm's growth. In addition, our results show, entrepreneurs perceive firm's performance not only with objective measurements but also with subjective ones. These findings are consistent with Delmar et al., 2003; Davidsson et al., 2006; Delmar, 2006; Delmar & Wiklund, 2008. This is an important finding because previous studies used regression models estimating firm's growth while this study uses structural model. Furthermore, previous literature only mentioned subjective growth measurements and did not estimate these measurements.

The findings also show that identifying growth dimensions is necessary when different firm's performance measurements is investigated. Among growth dimensions, EO shows the highest coefficients which means this dimension is the most effective one on firm's growth. Moreover, environment coefficient has a negative sign. This might be due to the turbulent and hostile business environment in Iran. Dramatic fluctuations of currency rate, onerous regulations, export challenges and tariff are only some examples of negative effect of Iran's business environment on entrepreneurial firms.

EO and growth attitude are highly significant. This is also intuitive and consistent to what we expected from previous literature. In other words, managers who have positive attitude toward innovations and creative ideas and are also more willing to get involved in entrepreneurial activities have the highest impact on firm's growth.

Resource and strategic symmetry are also statistically significant however they have lower coefficients than other growth dimensions.

As mentioned in the methodology part, we used another designed questionnaire to investigate different firm's growth measurements. Our results show objective growth measurements are not the only measurements that entrepreneurs use to estimate their firms' growth. Our results also show that the coefficient of subjective measurements are even higher than the coefficient of objective measurements. This results confirm our hypothesis and show that all subjective measurements, except than energy/waste are statistically significant. It seems that to entrepreneurs, higher customers and employee satisfaction are most important performance measurements. In addition, among objective growth measurements, sales, seems to have the highest coefficient.

CONCLUSION

Existing growth theories have tried to analyze the growth process using quantitative indexes and fail to account for multi-dimensional growth concepts (Penrose, 1959; Rugman & Verbeke, 2002; Davidsson & Wiklund, 2013; Westhead & Storey, 1997; Weinzimmer et al., 1998).

On the other hand, these concepts have been employed in the growth analysis of various firms and have not yielded the same results. In other words, the firm's growth processes, which have been quantitatively defined and analyzed, have failed in firms with entrepreneurial characteristics and have shown different results (Davidsson & Wiklund, 2013; Macpherson & Holt, 2007; Wiklund & Shepherd, 2005; Storey, 1994; Weinzimmer et al, 1998).

Our result confirms this hypothesis and emphasis on entrepreneurial variables such as behavior, opportunity and risk. We believe that entrepreneurial intelligence, entrepreneurial sketches, outstanding innovations, or charisma (Weinzimmer et al, 1998) in individuals and employees through which entrepreneurship occurs, are among the most important factors in developing and evaluating them in today's enterprises. Hence, the definition of growth and the way we assess growth in such firms should be consistent with the components and variables of entrepreneurship.

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*Appendix***Table 1: Operationalization of Stevenson's Conceptualization (Brown Et Al, 2001)**

As we define our strategies, our major concern is how to best utilize the resources we control.	1	2	3	4	5
We limit the opportunities we pursue on the basis of our current resources.	1	2	3	4	5
The resources we have significantly influence our business strategies	1	2	3	4	5
Since we do not need resources to commence the pursuit of an opportunity, our commitment of resources may be in stages	1	2	3	4	5
All we need from resources is the ability to use it	1	2	3	4	5
We like to employ resources that we borrow or rent	1	2	3	4	5
In exploiting opportunities, having the idea is more important than just having the money	1	2	3	4	5
We prefer tight control of funds and operations by means of sophisticated control and information systems	1	2	3	4	5
We strongly emphasize getting things done by following formal processes and procedures.	1	2	3	4	5
We strongly emphasize holding to tried and true management principles and industry norms.	1	2	3	4	5
There is a strong insistence on a uniform management style throughout the firm.	1	2	3	4	5
There is a strong emphasis on getting line and staff personnel to adhere closely to their formal job descriptions.	1	2	3	4	5
Our employees are evaluated and compensated based on their responsibilities.	1	2	3	4	5
Our employees are usually rewarded by promotion and annual raises	1	2	3	4	5
An employee's standing is based on the amount of responsibility s/he has	1	2	3	4	5
It is generally known throughout the firm that growth is our top objective	1	2	3	4	5
It is generally known throughout the firm that our intention is to grow as big and as fast as possible	1	2	3	4	5
We have many more promising ideas than we have time and the resources to pursue.	1	2	3	4	5
Changes in the society-at-large often give us ideas for new products and services.	1	2	3	4	5
We never experience a lack of ideas that we can convert into profitable products/services	1	2	3	4	5



Table 2: First Stage Questionnaire

Questions
Which of the following options better represents your position in the company? a) Board Member b) President c) Vice-president d) Director e) Partner f) Senior-manager
Firm Size: Initial capital of the firm a) Up to \$100 millions b) \$100 to \$1000 c) \$1000 to \$10000 d) \$10000 to \$50000 e) More than \$50000
Firm Experience: For how many years the firm operates in this sector a) 0 to 5 years b) 5 to 10 years c) 10 to 20 years d) More than 20 years
Firm size: Number of employee a) 0 to 5 years b) 5 to 10 years c) 10 to 20 years d) 20 to 100 e) More than 100
Annual R&D funding a) Up to \$100 millions b) \$100 to \$1000 c) \$1000 to \$10000 d) \$10000 to \$50000 e) More than \$50000
Source of Capital Funding a) Savings b) Government c) Bank d) Investors e) Friends and Family

