



Small medium manufacturing enterprises in Turkey: An analytic network process framework for prioritizing factors affecting success ^{☆, ☆ ☆}

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ABSTRACT

A multiple criteria framework has been developed to prioritize the measures of success and the antecedents for Turkish small to medium sized manufacturing enterprises. Analytical network process (ANP) has been used to construct the framework because of the dependency among measures of success and the antecedents. Methodology requires expert judgments. Experts were interviewed individually without interacting and not knowing each other's judgments. Influences among the factors were elicited from each expert separately. We only asked the relative strength of direct influences of two factors with respect to the third (controlling) factor. Second, third, fourth, ..., n th degree of influences are captured by analytical network process (ANP). ANP evaluates both quantitative and qualitative criteria. Both individual and aggregated results are given. Contrary to the experts' expectation prior to study, influence of the entrepreneur turned out to have far less impact on success than some of the external factors such as regulation and policies, facility location, intensity of competition and stage of industry. Sales were the most significant measure of success in line with the literature on small medium sized enterprises.

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1. Introduction

This study is about prioritizing measures of success and the antecedents for Turkish small to medium sized manufacturing enterprises (SMMEs). We are interested in emerging markets since most of the economic growth is expected in the so called big emerging markets or BEMs (Garten, 1996). The BEMs are in Asia—The Chinese Economic Area (China, Hong Kong and Taiwan), South Korea, Indonesia, and India; in Africa—South Africa; in Europe—Poland and Turkey; in Latin America—Mexico, Brazil and Argentina.

SMEs play a pivotal role in the national economies of countries all around the world. Industry is moving away from large vertically integrated firms. Flexible value chains are replacing them. SMEs are recognized as key, not peripheral component of the value chain, as previously thought (Rivera, 2007). On the other hand, it is striking how young the field of entrepreneurial studies

is Cooper and Gascon (1992), Benzing et al. (2009), and much remains to be understood about entrepreneurs' success factors. There are even fewer journal articles on SMEs in Turkey (Coskun and Altunisik, 2002; Taymaz, 2001; Erzan and Filiztekin, 1997; Ozan et al., 2006; Benzing et al., 2009).

In the literature so far, factors affecting SMEs' success were listed but not prioritized. Yet prioritizing can guide policy makers, institutions such as KOSGEB (Small and Medium Industry Development Organization, Turkey) and business owners in SME policy formation.

Analytical hierarchy process (AHP) is one of the widely used approaches to prioritize multiple factors (Saaty and Peniwati, 2008). However, a limitation of AHP is the assumption of independence among various factors. Success factors considered in this study are not independent. For example, *credit availability in the country* affects *firms' access to credit* which affects *leading edge plant/equipment/production facilities*. All of these are among the factors affecting firms' success. In addition, measures of success are interdependent as well (such as *cost* affects *sales* and *sales* affects *survivability*.) Because of this interdependency, the factors that are less important individually might turn out to be more important when evaluated collectively. That is why we selected analytical network process (ANP) as a methodology.

We identified 5 measures of company success and 34 factors (antecedents) affecting it mostly from literature search modified and expanded by our experts. Antecedents were divided into five clusters: *Country and Business Environment, Firm Internal*

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Environment, Firm Expertise, Owner Related Factors and Institutional Support. The five measures of success were identified as sales (revenue), product cost superiority, product quality, cash flow (balance) and survivability (long term viability). We refer, from time to time, to both *measures of success* and the *antecedents* as “factors” since some measures of success affects some antecedents though in general measures of success are influenced by antecedents.

We will first briefly introduce Turkey and SMEs in Turkey. Some of the factors used in this study are self-explanatory. In section three we will give a brief description of some factors we think need clarification. Section four explains the methodology used in this study including ANP and its innovative use for this particular study. Both individual and aggregated results obtained by eliciting the influence of each factor on others with respect to a controlling factor will be given in section five. Conclusion and future studies are given in section six.

2. Turkey and SME'S in Turkey

Once the centre of the Ottoman Empire, the modern republic was established in the 1920s by nationalist leader Atatürk. Straddling the continents of Europe and Asia, Turkey's strategic location has given it major influence in the region and control over the entrance to the Black Sea. She has a population of 73.3 million (OECD, 2008) and area of 779,452 sq km (300,948 sq miles). Her capital is Ankara and the language is Turkish, majority religion is Islam. Life expectancy in Turkey is 68 years (men), 73 years (women); she has a very young population; 45% of it being under 25 years old. Monetary unit is Turkish lira (TL; \$US 1 ≈ 1.48 TL, July 24, 2009). Turkey is a middle income country; GDP per capita (at Purchasing Power Parity) is US \$12, 260 (OECD, 2008). Turkey was identified as being among the 10 big emerging markets by the US Department of Commerce. Recently she is considered among the tigers (Wall Street Journal, 2008).

SMEs in Turkey have been operating in an unstable and unfavorable macroeconomic environment for many years: there has been high inflation, a succession of deep recessions and sharp upturns (resulting in modest growth), as well as considerable exchange rate instability. The government's economic policies and structural reform programs which were expected to work in favor of SMEs in the long run initially exacerbated the climate of instability.

SMEs in Turkey comprise 99.8% of the total number of enterprises, 76.7% of the total employment. They are under-capitalized (38% of capital investment), not very efficient (26.5% of value added) and do not play a significant role in Turkey's exports (10% by value) and only utilize 5% of bank credit (OECD, 2004).

A very large share of SMEs is in the trade, crafts and industry (roughly 4 million). Only a small share of the 4 million, roughly 210,000 companies are in the manufacturing sector. Small to medium sized manufacturing enterprises employ 1 million persons (64% of the manufacturing total) and account for 34.5% of the sector's value added. The average number of people employed by SMEs in manufacturing is 4.8, but for 95% of SMMEs the average is 3.1. And yet the informal economy could represent about 50% of SME activity. Because of the large size of Turkey's informal sector, previous data underestimate the relative importance of SMEs and overestimate their typical size.

3. Measures of success and the antecedents

We found very few articles on small to medium sized business success and its antecedents. In literature, longevity is sometimes used to indicate success. We contend that longevity by itself is not

sufficient to measure success and concur with Rogoff et al. (2004) that one business might continue to exist yet yield minimum profits, disappointing its owners, whereas a liquidated business might leave its owners wealthy.

In entrepreneurship and small business research a firm's performance is often considered the ultimate objective in both empirical and theoretical models (Man et al., 2002). Murphy et al. (1996) reviewed 51 published number articles and concluded that a majority of performance measures were related to one of eight performance dimensions: efficiency, growth, profit, size, liquidity, success/failure, market share and leverage. Cooper and Gascon (1992) contend that return on equity which is the most cited efficiency dimension in Murphy et al. (1996), can be difficult to obtain and can be heavily influenced by decisions about the owner–manager's compensation. We did not include this dimension among our measures of success. Instead of profit we included cost of the product and sales since identifying influence of antecedents on these measures are easier. For size we selected sales which were the most frequent measure in this dimension. For liquidity we included cash flow, again the most frequently cited measure for liquidity. There is no consensus in entrepreneurship research on the selection of an appropriate set of measures for assessing organizational performance. The variables that contribute to the success of small medium enterprises are not agreed upon by researchers (Benzing et al., 2009). Murphy et al. (1996) found out that not many of the studies included measures of more than one dimension and recommend that studies include multiple dimensions of performance whenever possible.

According to Murphy et al. (1996) relative quality would seem to measure operational performance. We, therefore, included quality of the product among the measures of success. We contend that there are multiple measures of success for enterprises. In addition to survivability we thought sales, cost of the product, product quality, cash flow balance are also success measures. Our experts agreed with us.

Rogoff et al. (2004) identified 11 factors affecting small business success: Individual characteristics, management issues, financing issues, marketing activities, human resource issues, economic conditions, product characteristics, competition, regulation, technology, environmental factors. Following a review of the literature on SME success Man et al. (2002) distinguished three key aspects affecting an SME's success, including internal factors, external environment, and the influence of the entrepreneur. The entrepreneur's demographic, psychological and behavioral characteristics, as well as his/her managerial skills and technical know-how are often cited as the most influential factors related to the performance of an SME. The relationship is also affected by many industrial, environmental, firm-specific characteristics and firm strategies.

We have augmented these factors with institutional support which is unique to Turkish SMMEs. With this augmentation 34 antecedents (success factors) are identified affecting 5 measures of success.

Success factors are divided into five clusters: Country and Business Environment, Firm Internal Environment, Firm Expertise, Owner Related Factors and Institutional Support (Figs. 1 and 2).

Five measures of success are: A1 Sales (Revenue), A2 Cost of the product, A3 Product Quality, A4 Cash flow (balance) and A5 Survivability (long term viability).

Factors and brief descriptions in Country and Business Environment, Firm Internal Environment clusters, and Owner Related Factors are given in Tables 1–3 consecutively.

Under Firm Expertise we considered product and process technology expertise, firm's expertise in different functional areas and firm's having leading edge plant/equipment/production facilities (Figs. 1 and 2).

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