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Small business performance in urban tourism

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Abstract

Research findings indicate that the successful performance of small businesses is an important determinant of regional development. Successful business performance is affected by a number of firm-specific factors including human and social capital. Although, small and medium firms comprise the vast majority of the tourism production system, research on small business performance in tourism is rather limited. Drawing on recent advances and empirical evidence from entrepreneurship and small business literature we control first, for the role of human and social capital and second, for the role of owners'/managers' perceptions of place attractiveness over small business performance. We hypothesize that such perceptions should have specific effects on tourism business performance. Analysis is based on cross-sectional data gathered from face-to-face interviews with small tourism businesses owners/managers in Patras, Greece.

Keywords:

Small business performance in urban tourism

1. Introduction

In the contemporary context of global economic restructuring and de-industrialization in many cities and regions across the world, tourism and tourism development has been recognized as the locus of potential and opportunity for the renewal of urban economies that are in decline (Law 2000; Ioannides, 2003). Urban planners and policy makers have turned to tourism as a prominent strategy for economic regeneration and local economic development (Telfer, 2002). This argument is based on the associational positive impacts that tourism development offers in terms of job creation and firm development in situations where other options are rather limited (Fainstein and Gladstone, 1999).

Nevertheless, such promising urban revitalization presupposes the success of tourism destinations in world markets, while success is much influenced by the relative competitiveness of tourism businesses acting and performing in each urban tourism destination. While tourism destination competitiveness is becoming an area of growing interest among researchers (Crouch and Ritsie, 1999; Enright and Newton, 2004), the success factors and other issues of business performance and competitiveness are remaining an under-researched area. Moreover, while the industry's structure is dominated by small and medium sized firms, small business development in tourism prevails as *terra incognita* (Page et al., 1999), with a number of notable exceptions to urge for a more comprehensive analytical framework to be established and applied to the matter under study (Thomas, 2000).

Research along the evolutionary economics strand suggests that the complex process of firms' selection (Nelson and Winter, 1982) importantly affects regional development (Boschma, 2004). Regional development seems to be interlinked and affected by intra-firm organizational routines. These routines are the outcome of a firm's ability to deploy social networks and the institutional structure of the territory within which it is situated (Lawson, 1999). Therefore, networking and the institutional base of a region are factors primarily affecting organizational routines. Such routines might be separated between fit and unfit ones (Nelson and Winter, 1982). We approximate 'fitness' of organizational routines via the measurement of each firm's productive efficiency. Productive efficiency is composed of technical and scale efficiency and illustrates entrepreneurial ability with regard to two important decisions that a firm's owner/manager takes; namely the decision regarding how to combine available resources and the decision regarding the scale of resources to be deployed (Jovanovic, 1982; Audretsch, 1997).

The literature concerning the factors that are responsible for differential levels of performance is continuously growing. Recent advances and empirical evidence from entrepreneurship and small business literature suggest that social capital and the ways in which it accumulates is of immense importance to small business performance and exploitation of entrepreneurial opportunities (De Carolis and Saparito, 2006), complementing the firm-specific and human capital variables usually employed in the analysis of small business performance. Special focus has been placed upon the study of networking as perhaps the single most important means of accumulating social capital and accessing resources that are vital for the operation of small businesses (Chell and Baines, 2000).

Within this context, the aim of the present study is twofold. First, we apply an analytically informed method of measuring tourism businesses performance via the measurement of each firms' productive efficiency. Second, we relate observed efficiency levels to both the internal and the external environment of firms. This way, important interrelationships regarding the role of firms in regional processes of growth and development might be analyzed. Emphasis is placed upon the relationship between performance and different types of networking. In addition, the present study accounts for the effect of owners'/managers' perceptions of place attractiveness upon small business performance. We hypothesize that such perceptions should have specific effects on tourism business performance.

The paper is organized as follows: following the introductory section, section two briefly reviews the literature concerning small business performance and the role of firm-specific characteristics, human capital, social networks, business networking for accessing resources and the role of place attractiveness. Section three describes the empirical model used for the measurement of productive efficiency and for the analysis of the factors affecting its level. Section four presents the results. Section five concludes the paper.

2. Business performance: A key to regional competitiveness

Worldwide regions face a number of competition challenges provoked by globalization and the increasing internationalization of trade (Begg, 2002). These challenges affect both the internal and the external environment of regions, i.e. they affect both the production base of regions and the terms of trade among regions. In turn, the production base of a region and its external relationships are the most

important factors affecting regional growth and competitiveness (Porter, 1990). Policy makers have largely adopted the notion of regional competitiveness as a policy tool. The primary reason for that is that lack of regional competitiveness can be decomposed into specific factors such as non-optimal use of resources and disequilibria in the regional balance of payments (Williamson, 1994; Hansen and Roeger, 2000). Thus, in an increasingly competitive environment regions might achieve growth and social cohesion through the alleviation of specific constraints and impediments.

There is growing research, drawing mainly from economic geography, on the role of firms as entities shaping a region's competitiveness (Becattini, 1990; Camagni, 1991; Asheim, 1996; Cooke et al., 1998; Cooke, 2001; Martin, 1999; Boschma, 2004). Firms are increasingly viewed as actors enabling and constraining regional competitiveness, through a complicated process of interaction with the environment within which they are situated (Krugman, 1994). Elaborating on a large part of the literature drawing from an evolutionary perspective, Boschma (2004) suggests that the relationship between firms and regional competitiveness is spatially unique and thus, there exists no optimal development model. Regions do compete, yet they do so through largely unobserved routines embedded in the operation and behavior of local actors such as firms (Boschma, 2004). Thus, identifying localized forms of untraded interdependencies (Storper, 1997; Lawson, 1999) actually certifies the suggested complexity of the notion of competitiveness and enriches our knowledge and understanding of the variety of regional growth patterns (Krugman, 1994).

Firms are acknowledged as the key economic actors interacting with regions and shaping their ability to develop (Boschma and Lanbooy, 1999). This is due to two reasons. Firstly, firms constitute the non-physical spatial context where a region's

environment is realized. This interaction involves the shaping and the exploitation of social networks and institutions. Secondly, firms are organizations with specific internal competences comprising a region's productive stock of knowledge. Internal organizational routines are responsible for the accumulation of knowledge that regional firms may deploy to achieve growth. These two characteristics support consensus over the argument that competitive firms are the driving force behind competitive regions (Lawson and Lorenz, 1999; Maskell and Malmberg, 1999; Lawson, 1999). This realization has resulted into the study of firms as 'localities' and the study of localities as 'firms' (Boschma, 2004). Thus, regional endowments, and in particular those related to tourism, have been incorporated into the analysis of firms' performance under the assumption that they might be of great relevance to the study of tourism businesses' performance. This might be considered as a correspondence relationship following the commonly accepted effect of firm-specific characteristics upon place development.

The literature concerning small business performance and growth is continuously increasing. Small business performance might be measured in various ways with employment, turnover and productivity being the most commonly used measures (Robson and Bennett, 2000; Smith, 1999). The choice of variable(s) to be analyzed, when made, serves the need for providing information and knowledge to particular actors involved in the operation of small businesses. When government policy design and evaluation is the issue under study employment is most commonly used due to its relevance to government policy makers (Birch, 1979; Storey, 1994).

Analysis of financial performance is usually undertaken when research focuses on the contribution of SMEs to a country's/region's economic growth and competitiveness (Robson and Bennett, 2000). The growth of sales and turnover are

such financial measures (Bartlett, 1994). These are measures of a firm's total level of activity and thus they are of interest to firms' owners as well. An additional measure that is also of interest to firms' owners is profitability. The latter measure involves a range of performance indicators as profitability might be measured either in absolute terms or in relative terms, e.g. change in profitability, profitability per employee, profitability as a percentage of turnover (Kallenberg and Leicht, 1991; Robson and Bennett, 2000).

Business performance measures also differ depending on the theoretical strand of research. Industrial organization literature focuses primarily on the study of performance as measured in terms of market share, return on capital investments and productivity (Baumol, 1959). The management literature largely focuses on objectives and behavior as indicative of a firm's positioning in the market (Porter, 1985). In this case, the owners'/managers' personal aspirations and goals, e.g. professional recognition, enter into the analysis of small business performance (Kotey, 2005).

Relative performance is a measure indicative of the way in which firms experience competition at the 'local' level (Porter, 1985). It also coincides with the evolutionary perspective of 'fitter' organizations that manage to survive and grow at the expense of 'unfit' organizations that decline and fall (Nelson and Winter, 1982; Jovanovich, 1982). The works of Nelson and Winter (1982) and Jovanovich (1982) point to a selection process determined by the efficiency of routines developed within each organization. Measures of firm performance that take account of the efficiency in the applied routines might be considered as more informative in relation to the interplay between inter-organizational routines and the external environment. That, in turn, is even more informative as to the impact of firm performance upon regional growth and development.

Here, relative performance is approximated via the firms' productive efficiency level. This measure of firm performance might be considered as more illustrative of the knowledge incorporated in an organization. This part of research focuses primarily on analyzing the differences between the fit routines that some firms employ and expand in contrast to unfit routines that cause firms to decline. Fit organizational routines are related to superior entrepreneurial ability that allows firms not only to survive but also expand and dominate their industry, whereas inferior entrepreneurial ability leads firms to decline (Jovanovic, 1982; Audretsch, 1997). Within this context, entrepreneurial ability is linked to two decisions. The first decision that an entrepreneur faces relates to whether innovative activity will be undertaken while the second refers to the firm's size.

Productive efficiency, as composed of technical and scale efficiency (Fare et al., 1994) might be used to approximate the outcomes of these two decisions. Technical efficiency refers to a firm's ability to combine resources in the best possible way, i.e. produce maximum output at a given input set or alternatively, minimize the quantity of inputs needed in order to produce a given output quantity. Deviations from that optimal combination of resources are usually assigned to either differential firm management capabilities or to the external environment in which firms operate. In either case it is the entrepreneurs' responsibility to adjust and adopt such methods of production that would resolve to optimal combination of resources. On the other hand, scale efficiency refers to a firm's ability to operate at the optimal size. In other words, scale efficiency refers to a firm's ability to choose the correct scale of inputs for the output it produces (Fare et al., 1994). Similarly, the less the deviation from the optimal scale of production the higher an entrepreneur's ability in choosing the firm's efficient size.

Business performance and the ability to survive are the focus of much theoretical and empirical research. Increasing research is devoted to the interplay between firms and their external environment. Regions constitute the spatial configuration of external environment, but even more importantly, regions are social entities. Social and business networks are important ingredients of these social entities. According to Malecki (2002), though an urban economy is defined by its private businesses, it is at the same time more than merely the sum of its firms. Social and economic issues seem to be based on a more collaborative mode of operation and trust-based relationships, learning and network competence (Malecki, 2002). The presence of social capital in a region or the existence of 'entrepreneurial social infrastructure' as Flora et al. (1997) have described it, is an important ingredient that could be found in competitive places.

Research on networks and networking emerged as an important new area of inquiry within the field of entrepreneurship, covering the creation of new businesses, innovative activity of firms, business performance and business growth or even the management of small and medium sized businesses (Hoang and Antoncic, 2003; Araujo and Easton, 1996). Nonetheless, defining networking and demonstrating its presence are tasks suffused with methodological problems. Moreover, as Chell and Baines (2000) recognize "… to establish any association between networking activity by owner – managers and the performance of their businesses is even more contestable…" (Chell and Baines, 2000: 195). Research findings are contradictory and although there are empirical studies which tend to support a positive statistical relationship between business performance and networking activity (Ostgaard and Birley, 1996; Barkham et al., 1996) the opposite is also true (Johannisson, 1995b).

There is wide consensus on that, compared to other types of capital, social capital is difficult to approximate (Robison et al., 2002). For example, human capital is usually conceived as an individual's skills, attributes, knowledge, experience, etc, brought to the labor market. Contrary, social capital is not individually owned but it is a property of social interactions and networks (Cooke and Wills, 1999). A critical dimension of the presence or creation of social capital is closely related to the existence of networks providing access to financial resources. Financial resources are important resources easily transformed to other kinds of business resources. Previous research findings suggest that for small businesses it is not so much the ownership of the financial resources that is important but the access to it (Wiklund and Shepherd, 2005; Stevenson and Jarillo, 1990). According to Woolcock (1998) high local synergy is manifested, among others, through the presence of organizations like public and private banks or venture funds with local or regional investment commitment. The latter constitute a region's financial institution structure, i.e. a market of different types of financial institutions that provide credit. Equally important, in terms of social capital created, is the lending infrastructure, i.e. the set of rules and conditions according which the financial institutions decide to lend to different potential borrowers. According to Berger and Udell (2004) the rules and conditions of lending might be categorized as either transactions lending or relationship lending. Transactions lending rules are primarily based on 'hard' quantitative data that may be observed and verified at the time of a credit decision, e.g. financial ratios calculated from certified audited financial statements. On the other hand, relationship-lending rules are based primarily on 'soft' qualitative information gathered through contact over time with a small business and often with its owner and members of the local community (Berger and Udell, 2004). Qualitative information, important to the

relationship type of lending, is another critical dimension of social capital as it builds upon the long lasting relationship and contact between the institution's loan officer and the owner/manager of a small business. Access to financial resources and the type of contacts mainly affecting lending decisions are incorporated in the current analysis of business performance.

Although business relationships and networking engagement involve many different types of contacts, inter-firm networking has mainly been analyzed in terms of the business suppliers and customers relationships and the way that such relationships are used, exerting a direct or indirect effect upon business performance and growth (Chell and Baines, 2000). Yet, an equally important business relationship is the lending relationship between collaborative businesses, which trade with each other. In the present study we also account for the role of such type of contact upon business performance.

Further, business development presupposes participation in networks evolving beyond their community, a type of networks that might be ethically or regionally rooted. Businesses need external sources of learning and knowledge in order to perform successfully. Otherwise, businesses are locked into blocked development processes (Cooke and Wills, 1999). To that extent we analyze networking with extra-local knowledge-based firms, which offer technical and entrepreneurial support and advise, and we test for the existence of a causal relationship between extra-local support and business performance.

Finally, in the context of the present study analysis also focuses on owners'/managers' perceptions over place attractiveness as another field of interplay among firms and regions. From a tourist perspective, the competitive advantage of a destination lies upon the variety of its tourism related resources, a variety that enables

tourism businesses within a region and among regions to compete (McIntosh et al., 1995). Tourism related resources are natural and cultural resources, amenities and facilities, basic or higher level infrastructure, place attributes such as accessibility and an extensive range of services that a region has to offer to visitors (Smith and Edington, 1992; Andersen, 1996). All these environmental features of the tourism destination are assumed to be important for the business success of tourism businesses. Nevertheless, research regarding their effect upon business performance is quite limited. With the exception of the work of Lerner and Haber (2001), no empirical evidence is available as to this relationship. Lerner and Haber (2001) empirically test the hypothesis that the level of attractiveness of a tourism venture's location is positively related to the business performance of the venture. In the present study we assume that the owners'/managers' perceptions over a destination's attractiveness relates to the performance of their business. Such an opetarionalization might enrich our understanding of business performance as a context specific outcome of the interplay between internal and external factors.

3. Empirical model: Measuring productive efficiency via the DEA method

In the present study a two-stage DEA model is used in order to first measure productive efficiency and second to identify the factors that determine each firm's efficiency level. According to this two-stage procedure, first a DEA model is applied using data on output and inputs at the firm level in order to measure each firm's efficiency level. At the first stage, technical and scale efficiency may be empirically measured as deviations from a given production boundary that relates aggregate input quantities to aggregate output quantities in technological terms. Technical efficiency

represents a firm's current input-output combination distance from that boundary. For any technical efficient firm, scale efficiency represents its deviation from the most productive scale size, i.e. the distance from the constant returns to scale area (Banker et al. 1984).

There are two widely used approaches for estimating technical and scale efficiency. The parametric approach, known as Stochastic Frontier Approach (SFA), is based on econometric techniques (frontier). The non-parametric approach, known as Data Envelopment Analysis (DEA), is based on linear programming techniques (envelope). The DEA approach, which is used here, refers to constructing a piecewise linear surface over the data so that the observed input/output combinations may lie either onto or above this surface. Since the DEA method is nonparametric it attributes the total deviation from the boundary to inefficiency. The alternative method, SFA, allows for the coexistence of inefficiencies and random errors in the data. Nonetheless, such a specification requires the imposition of a particular functional form for the production function, which is considered a quite restrictive assumption in the context of the present study.

The way in which consistent estimates of technical and scale efficiency may be derived through the specification and estimation of a production boundary using the DEA method is analytically presented in Coelli et al. (1998). Let us consider the model proposed by Charnes et al. (1978) which had an input orientation and assumed Constant Returns to Scale (CRS). Assume that there are K inputs and one output for each of the N firms in a sample. For the $i-th$ firm these are represented by a column vector $\mathbf{x_i}$, as regards the inputs, and by a scalar q_i as regards the output. The $K \times N$ input matrix, $\mathbf{X}$, and the $1 \times N$ output matrix, $\mathbf{Q}$, represent the data for all N firms in a sample. An intuitive way to introduce DEA is via the *ratio* form. For each firm, we

would like to obtain a measure of the ratio of output over all inputs, such as $q_i / \mathbf{v}'\mathbf{x}_i$, where $\mathbf{v}$ is a $K \times 1$ vector of input weights. The optimal weights are obtained by solving the mathematical programming problem:

$$\begin{aligned} &\max_V \quad \left(q_i \Big/ \mathbf{v}'\mathbf{x}_i \right) \\ &st \qquad q_j \Big/ \mathbf{v}'\mathbf{x}_j \le 1, \quad j = 1,2,...,N \\ &\qquad \mathbf{v} \ge \mathbf{0} \end{aligned} \tag{1}$$

This involves finding values for $\mathbf{v}$, such that the efficiency measure for the $i-th$ firm is maximized, subject to the constraints that all efficiency measures must be less than or equal to one. One problem with this particular ratio formulation is that it has an infinite number of solutions. To avoid this, one can impose the constraint $\mathbf{v}'\mathbf{x}_i = 1$, which provides (Coelli et al., 1998):

$$\begin{aligned} &\max_V \quad q_i \ , \\ &st \qquad \mathbf{v}'\mathbf{x}_i = 1, \\ &\qquad q_j - \mathbf{v}'\mathbf{x}_j \le 0, \quad j = 1,2,...,N \\ &\qquad \mathbf{v} \ge \mathbf{0} \end{aligned} \tag{2}$$

Using the duality in linear programming one can derive an equivalent envelope form of this problem (Coelli et. al., 1999):

$$\begin{aligned} &\min_{\theta,\lambda} \quad \theta, \\ &\text{st} \qquad -q_i + \mathbf{Q}\boldsymbol{\lambda} \ge 0, \\ &\qquad \theta\mathbf{x}_i - \mathbf{X}\boldsymbol{\lambda} \ge 0, \\ &\qquad \boldsymbol{\lambda} \ge \mathbf{0} \end{aligned} \tag{3}$$

where θ is a scalar and $\boldsymbol{\lambda}$ is a $N \times 1$ vector of constants. The value of θ obtained will be the efficiency score for the *i-th* firm. It will satisfy: $\theta \le 1$, with a value of 1 indicating a point on the frontier that is a technically efficient firm, according to the definition provided by Farrell (1957). Note that the linear programming problem must

be solved N times, one for each firm in the sample. A value of θ is then obtained for each firm in the sample.

To the extent that the CRS assumption is only appropriate when all firms operate at an optimal scale, Banker et al. (1984) considered a different set of assumptions to that of Charnes et al. (1978) and introduced an extension of the CRS DEA model to account for Variable Returns to Scale (VRS). The use of the CRS specification when not all firms operate at the optimal scale results in measures of technical efficiency, which are biased by scale efficiency. Thus, in order to measure pure technical efficiency we must subtract scale effects from technical efficiency scores. The use of the VRS specification permits the calculation of technical efficiency scores free of scale efficiency effects.

The CRS linear programming problem can be easily modified to account for VRS by adding the convexity constraint: $\mathbf{N1'\lambda} = 1$ to equation (3) to provide:

$$\begin{aligned} &\min_{\theta,\lambda} \ \theta, \\ &\text{st} \quad -q_i + \mathbf{Q\lambda} \geq 0 \\ &\qquad \theta \mathbf{x_i} - \mathbf{Z\lambda} \geq 0, \\ &\qquad \mathbf{N1'\lambda} = 1 \\ &\qquad \mathbf{\lambda} \geq \mathbf{0} \end{aligned} \tag{4}$$

where $\mathbf{N1}$ is a $N \times 1$ vector of ones. This approach forms a convex hull of intersecting planes which envelope the data points more tightly than the CRS conical hull and thus provide technical efficiency scores which are greater than or equal to those obtained using the CRS model. The convexity constraint $\left(\mathbf{N1'\lambda} = 1\right)$ essentially ensures that an inefficient firm is "benchmarked" only against firms of a similar size.

Given that the technology is of the VRS type, a scale efficiency measure can be obtained for each firm. This is achieved by conducting both a CRS and a VRS DEA. The technical efficiency scores obtained from the CRS DEA are decomposed

into two components, one that is due to scale inefficiency and one that is due to "pure" technical inefficiency. If there is a difference in the CRS and VRS technical efficiency scores for a firm, then this indicates that the firm is suffering from scale inefficiency. This scale inefficiency can be approximated from the difference between the VRS and the CRS technical efficiency scores. Technical efficiency may be decomposed into pure technical efficiency and scale inefficiency by using the following ratio (Coelli et al., 1998):

$$SE = \frac{TE_{CRS}}{TE_{VRS}} \tag{5}$$

Finally, it is relevant to identify whether a DMU is operating in an area of increasing or decreasing returns to scale. This may be determined by running an additional DEA model with non-increasing returns to scale imposed (NIRS – DEA) (Fare et al., 1985). In that case, the convexity constraint $\left(\mathbf{N1'\lambda} = 1\right)$ included in equation 4, is substituted with the constraint $\left(\mathbf{N1'\lambda} \le 1\right)$ and each DMU's NIRS technical efficiency score is compared to the VRS technical efficiency score. If they are unequal then increasing returns to scale exist for that DMU. If they are equal then decreasing returns to scale apply (Fare et al., 1985).

Once a firm's productive efficiency level has been estimated the determinants of that efficiency level might be identified at the second stage of the analysis. At this stage, regression analysis is applied using the firm's efficiency level as the dependent variable and a number of environmental variables as explanatory ones (regressors). Since the dependent variable is confined to the (0,1] vector, the Tobit model is applied at the second stage in order to acquire consistent estimates of the associated parameters (Greene, 1997). The environmental variables used at this stage typically include the demographic characteristics of the entrepreneur (age, education, training,

etc.), firm specific variables and a set of other variables usually set in accordance with the relevant literature. Here, the last set of variables has been set to account for human capital, social networks, business networking for access to resources, and for the entrepreneurs' perceptions over place attractiveness.

4. Study area and data

4.1. Study area

Empirical analysis refers to tourism related businesses located in Patras, Greece. Patras is the capital city of the Prefecture of Achaia and constitutes the largest urban center of the Western Greece region (NUTS II level) in which it administratively belongs. The prefecture of Achaia concentrates 2,9% of Greece's population and produces 2,6% of the country's GDP (NSSG, 2001). Per capita GDP accounts to 10,68 thousand euros according which the area is ranked 24th among the 51 Greek prefectures (NSSG, 2001). Per capita GDP constitutes 89,7% of the country's average and 62% of the EU-15 average (NSSG, 2001). The prefecture of Achaia heavily depends upon the tertiary sector of the economy as 67% of its GDP refers to services provision (NSSG, 2001).

Patras constitutes the largest urban center of the wider region and concentrates more that half of the prefecture's population and the vast majority of the services that the wider area provides. Apart from being the administrative center of both the Prefecture of Achaia and the Western Greece Region, Patras hosts one of the largest ports in Greece. Given the area's dependence upon tourism, the trends regarding tourism development are crucial. It might be said that the area experiences very slow development trends recovering from a period of tourism decline. An indicative figure of that trend is the ratio of foreign tourists overnights per capita. This ratio fell from

1,08 at the beginning of the 1990's to less than 1 during the whole decade to rise at 1,26 in 2000 (NSSG, 2001).

4.2. Data

Data were collected through a cross-section questionnaire survey conducted in tourism related businesses located in Patras, Greece. Analysis is based on a random sample data set of 95 usable cross-sectional questionnaires containing all the information that is needed for the current analysis. These questionnaires are the result of personal interviews conducted with owners/managers of tourism related businesses. The personal interviews conducted involved three different types of businesses, namely tourist agencies, hotels and restaurants. The structured questionnaire recorded a wide range of information regarding firm specific characteristics (economic indicators, business demographics, such as the firm's age, legal form, etc, the type of enterprise, e.g. family owned, education and training of the employed personnel, technology adoption, the firm's strategic orientation, etc), human capital variables (owner's/manager's gender, age, education, training, previous experience in management), social networks variables (participation in cultural associations, cooperation with other businesses, residence in the area), a set of variables depicting networking for access to resources (technical and financial advise and support, sources of finance, information), and finally a set of variables depicting owners'/managers' perceptions over the area's attractiveness (in terms of natural beauty, history, culture, accessibility, quality of offered products and services).

The sample consists of micro and small-sized businesses, according to the Commission's definition of Small and Medium-sized enterprises (SMEs) (*Commission Recommendation 2003/361/EC of 6 May 2003*, OJ L124, 2003, p.36). In

particular, the vast majority of the surveyed firms (78,95% of the sample) are micro businesses as they employ less than ten employees while their turnover is far below the 2 million euros threshold defined by the EU. Average employment at these businesses accounts to 4 persons (stdev = 2,39) and average turnover accounts to 262.972,97 euros (stdev = 284.695,08). The rest of the surveyed firms (21,05% of the sample) are small-sized businesses as they satisfy the corresponding employment and financial criteria set by the Commission's definition. Average employment at these firms accounts for 18 persons (stdev = 9,94) while average turnover accounts for 781.666,67 euros (stdev = 1.088.098,49).

For the estimation of the production boundary, which is used to determine the firms' technical and scale efficiency, we regard one output and two inputs. As output (Q) we consider the total value of sales. As inputs we consider; capital (K), which is proxied by the enterprise's net current value, and labor (L), which is measured by the number of full time employees per year. An analytical description of all capital investments undertaken was not available for all firms in the sample. Thus, capital investments are approximated with the use of the firm's net current value. Regarding employment it should be noted that part time employment has been translated into full time employee equivalents based on the months reported as part time employment. Table 1 presents the definitions and descriptive statistics of the output and inputs used in the production frontier estimation.

For the estimation of the Tobit models used to explain technical and scale efficiency scores five sets of variables have been included in the analysis. These include firm specific variables, human capital variables, social networking varaiobles, networking for access to resources variables and owners'/managers' perceptions variables. It should be noted that the variables presented here are the ones that have

been found to exert a statistically significant effect upon the firms' technical and scale efficiency scores. Other variables, which have been tested for their effect upon the dependent ones, but have been found not to exert a statistically significant effect, are not included here.

Firm specific variables include two dummies accounting for two out of the three types of the surveyed firms (Type2, Type3), a dummy variable taking the value of 1 to account for firms that are in their adolescence (FAge), a variable reflecting differences in the input mix of resources used by the firms (Inpratio), a variable reflecting advertising expenditures paid to local advertising firms (Advertising), a dummy variable taking the value of 1 to account for the adoption and use of information and communication technologies (ICT Adoption), a dummy variable taking the value of 1 to account for firms that are family run businesses (Family business), and finally a dummy variable taking the value of 1 to account for firms which are oriented towards increasing market share and attracting new customers (Strategic orientation).

The second set of explanatory variables refers to human capital variables and includes a dummy variable taking the value of 1 to account for the entrepreneurs who have followed training courses regarding tourism (Training), two dummies taking the value of 1 to account for previous management and work experience (Management experience, Work experience), and a variable reflecting the owner's/manager's age (EAge).

The third set of explanatory variables refers to social networking variables, which according to the relevant literature account for the social networks an entrepreneur belongs to. In other words, these variables reflect personal ties of the entrepreneur. This set of variables includes a dummy variable taking the value of 1 to

account for the owners/managers that belong to socio-cultural associations (Socio-cultural associations), a dummy variable taking the value of 1 to account for owners/managers that permanently reside in the area (Residence), and finally a dummy variable taking the value of 1 to account for firms that cooperate with certain businesses (providers and customers) because they keep personal relationships with the owners/managers of these firms (Cooperation).

The fourth set of explanatory variables includes variables reflecting networking for access to resources. Access to resources reflects the impact of belonging to more formal networks that are tightly structured. This set of variables includes a variable accounting for the percentage amount of expenditures for technical and financial support and advice that the businesses pay to firms located outside the area (Techincal/financial advising bodies), a dummy variable taking the value of 1 to account for those owners/mangers who seek information regarding financial incentives for SMEs in the area (Information), a dummy variable taking the value of 1 to account for firms that keep steady, long-standing relationships with formal financial institutions, mainly banks, (Formal finance), and finally a dummy variable taking the value of 1 to account for firms that use as a source of finance the businesses they associate with (Informal finance).

Finally, the fifth set of explanatory variables includes variables reflecting the owner's/manager's perceptions over the area's attractiveness as a tourism destination. These variables are included in the analysis as personal evaluations of the area's appropriateness as an urban tourism destination. The used variables include a dummy variable taking the value of 1 to account for the entrepreneurs' perceptions over the area's recreation opportunities (Recreation), a dummy variable taking the value of 1 to account for the owners'/managers' evaluations of the area's tourism infrastructure

resources (Infrastructure), a dummy variable taking the value of 1 to account for the owners'/managers' perceptions over the area's accessibility (Accessibility), a dummy variable taking the value of 1 to account for owners'/managers' perceptions over the cost required for traveling to the area (Travel cost), and finally a dummy variable taking the value of 1 to account for the owners'/managers' evaluations over the degree in which the area has capitalized its cultural heritage (Culture).

Table 2 presents the definition and descriptive statistics of all variables that have been used in the second – stage analysis (Tobit models) of the factors that determine the observed levels of productive efficiency. See left-hand part of Table 2 for a description of the explanatory variables used. Descriptive statistics of the used variables are presented in the right-hand part of Table 2.

5. Results

Technical and scale efficiency scores

The technical and scale efficiency estimates are derived through the estimation of an output-oriented DEA model using the DEAP 2.1 software (Coelli, 1996). Table 3 shows the frequency distributions and basic descriptive statistics of the technical and scale efficiency scores. The last three rows of the same table show the number of firms that have been identified to operate at increasing, decreasing or constant returns to scale. Firms in the sample present low technical and scale efficiency scores. Average technical efficiency accounts for 43% while average scale efficiency accounts for 51%. These two measures indicate that the surveyed firms have considerable room for improving their operation. A better combination of available inputs might result in producing 57% more output while adjustments in the scale of production might increase output by 49%. Highly technically efficient firms (TE

scores above 80%) represent almost 17% of the sample. Highly scale efficient firms (SE scores above 80%) represent almost 14%. Finally, analysis indicates that efficient firms, i.e. firms that operate at the constant returns to scale area, represent 12% of the sample. The majority of the surveyed firms (60%) operate at decreasing returns to scale.

Factors affecting technical efficiency scores

The Tobit models used to identify the factors affecting the observed technical and scale efficiency scores have been estimated using the LIMDEP 7.0 econometric software (Greene, 1998). Regarding the firm specific variables included in the analysis of technical efficiency scores four have been found statistically significant. In particular, of the three types of tourism businesses included in the sample, tourist agencies are likely to present higher technical efficiency levels. Technical efficiency levels are also positively related with firms that are in their adolescence, i.e. their age ranges between 6 and 10 years of age. This is consistent with previous empirical findings suggesting that firms in their adolescence tend to be more efficient in combining their resources and thus able to survive and grow (Agarwal, 1997; Audretsch, 1991; 1994; 1995). Technical efficiency levels are positively affected by increases in capital investments. Results show that as the capital to labor ratio increases so does increase the levels of technical efficiency. Being a family business negatively affects a firm's technical efficiency score. Family businesses have been reported to follow a strategic orientation that does not coincide with profit maximization only. Performance might not be separated from the goals and strategies followed by businesses (Kotey, 2005). Finally, advertising expenditures paid to local businesses negatively affect the firms' technical efficiency scores.

Of the human capital variables included in the analysis training and previous work experience positively affect technical efficiency scores. These findings are consistent with the literature suggesting that business performance is positively affected in the case of owners/managers who have attended training courses related to their business. Similarly, previous work experience increases an entrepreneur's ability to run his/her business more effectively (Glancey and Pettigrew, 1997).

Regarding the social networking variables that account for personal ties three variables have been found statistically significant. An interesting finding is that being a member of socio-cultural associations negatively affects technical efficiency levels. This finding supports the hypothesis that devoting time to socio-cultural associations does not coincide with positive gains for the firms. This might be the outcome of an underlying inverse relationship between the time devoted to a network and the network's impact (Petrou et al., 2007). Technical efficiency is positively affected by cooperation among businesses. Results show that the technical efficiency of firms increases when they cooperate with certain businesses (providers and customers) with whom they keep personal relationships.

Of the access to resources variables reflecting the impact of belonging to more formal networks only the expenditures for technical/financial advising bodies variable has been found to bear a significant effect upon firms' technical efficiency levels. Results indicate that as the percentage of a firm's extra-local expenditures for technical/financial advice increases the firm's technical efficiency score also increases.

The last set of explanatory variables includes variables reflecting entrepreneurs' perceptions over various factors that comprise the area's attractiveness. Results indicate that their beliefs and views significantly affect their businesses'

levels of technical efficiency. More specifically, technical efficiency scores are positively affected by entrepreneurs' positive evaluations regarding the area's appropriateness as an urban tourism destination. Technical efficiency scores are higher when entrepreneurs view the place as a low travel cost destination, as a destination offering good recreation opportunities, and as a destination endowed with adequate tourism related infrastructure. Technical efficiency scores are negatively affected when entrepreneurs consider the area as less accessible.

Factors affecting scale efficiency scores

Of the firm specific variables three have been found to exert a statistically significant effect upon the firms' scale efficiency levels. As regards the type of tourism businesses, scale efficiency is higher for restaurants. Scale efficiency increases with the adoption of information and communication technologies. This result supports the hypothesis that firms, which introduce innovations, tend to present better performance rates (Buhalis, 1997). Scale efficiency is also positively affected when firms are oriented towards increasing sales and their market share. According to Poutziouris (2003), strategic orientation of small businesses might explain variations in observed performance.

Regarding the human capital variables included in the analysis three have been found to exert a statistically important effect upon the observed levels of firms' scale efficiency. As in the case of technical efficiency scores, entrepreneurs' training is positively associated with a firm's scale efficiency score. Scale efficiency is also positively related to the entrepreneurs' age. An interesting finding concerning the human capital variables is that previous management experience has been found to exert a negative effect upon a firm's scale efficiency score. This finding suggests that

previous managerial experience makes entrepreneurs more reluctant towards scale adjustments of their businesses. One might conclude that there is a positive relationship between past managerial experience and present risk aversion.

Of the social networking variables included in the analysis only permanent residence to the area exerts a statistically significant effect upon scale efficiency. This finding is anticipated to the extent that permanent residence to the area in which the enterprise is located relates to direct contact with the business and direct managerial control over its scale.

Of the networking for access to resources variables, reflecting the effect of belonging to more formal networks, three variables have been found to exert a statistically significant effect upon scale efficiency. In particular, scale efficiency scores are higher for firms that use formal lending channels (mainly banks) with which they keep strong, long-standing relationships. On the other hand, scale efficiency scores are negatively affected in the case of owners/managers that choose informal channels in order to cover their lending needs. This involves businesses that acquire funds mainly through other businesses with which they keep trading relationships. Finally, scale efficiency is positively affected in the case of entrepreneurs seeking information about the financial incentives applying for SMEs in the area.

Regarding the last set of explanatory variables reflecting owners'/managers' perceptions over the area's attractiveness, two variables have been found to exert a statistically significant effect upon firms' scale efficiency scores. Scale efficiency is positively affected when owners/managers consider the area as offering good recreation opportunities. On the other hand, scale efficiency is negatively affected in

the case of owners who believe that the area has not valorized properly the cultural attractions that it might offer to visitors.

6. Conclusions

The present study proposes a more informed framework for the analysis of the relationship between small business performance in urban tourism and the environment within which small businesses operate. Emphasis is placed upon the interplay of internal as well as external to the businesses factors. Productive efficiency as composed of technical and scale efficiency is introduced in order to measure small tourism businesses performance. Technical and scale efficiency scores are obtained through the estimation of a non-parametric production frontier. Analysis indicates that the area's tourism sector is dominated by businesses that present low levels of productive efficiency. Tourism businesses in the area have great latitude for improving both their technical and scale efficiency levels.

At a second stage, five sets of variables are used as factors explaining observed business performance. Factors typically affecting business performance include firm-specific characteristics and human capital variables. In the present study, we account for the effect of variables reflecting social networking, networking for accessing resources and perceptions of place attractiveness.

Analysis reveals that businesses are important socio-economic agents whose decisions are either constrained or enhanced by social interactions, human capital and firm-specific characteristics. Successful business performance is related to existing patterns of networking and forms of interdependencies as these are manifested within the urban region under study. In addition, success is closely related to existing extra-

local communication, which provides important entrepreneurial learning and knowledge. Finally, analysis of business perceptions over the area's attractiveness evolves as an important new area of research, thus strengthening the view that business procedures and practices are unique characteristics of the dynamic interplay between firms and regions.

References

Agarwal, R., (1997), 'Survival of firms over the product life cycle', *Southern Economic Journal*, 63, 571-84.

Andersen, A. (1996), Yield Management in Small and Medium-Sized Enterprises in the Tourism Industry. Brussels: European Commission, Directorate General 23, Tourism Unit.

Araujo, L. and Easton, G., (1996) Networks in socioeconomic systems: a critical review, In Iacobucci, D. (Ed.), *Networks in Marketing*, pp. 63-107.

Asheim, B.T. (1996), Industrial districts as 'learning regions': a condition for prosperity, *European Planning Studies*, 4, 379-400.

Audretsch, D. B., (1991), 'New firms survival and the technological regime', *Review of Economics and Statistics,* 73, 441- 450.

Audretsch, D. B., (1994), 'Business survival and the decision to exit', *International Journal of the Economics of Business*, 1, 125-37.

Audretsch, D.B., (1995), *Innovation and Industry Evolution*. The MIT Press: Cambridge, MA.

Audretsch, D.B., (1997), Technological Regimes, Industrial Demography and the Evolution of Industrial Structures, *Industrial and Corporate Change*, 6, 49-82.

Banker R. D., Charnes, A. and Cooper W. W., (1984), Some models for estimating technical and scale inefficiencies in Data Envelopment Analysis, *Management Scienc*e, 30, 1078-1092.

Barkham, R. Gudgin, G., Hart, M. and Hanvey, E., (1996) *The Determinants of Small Business Growth: An Interregional Study in the United Kingdom 1986-90*, London: Jessica Kingsley.

Bartlett, W., (1994), Employment in small firms: are cooperatives different? Evidence from southern Europe, In Atkinson, J. and Storey, D. (Eds) *Employment, the Small Firm and the Labor Market*. London, Routledge.

Baumol, W.J. (1959), *Business Behavior, Value and Growth*. New York, Macmillan.

Becattini, G. (1990), The Marshallian industrial districts as a socio-economic notion, In Pyke E. (ed.) *Industrial Districts and Inter-firm Cooperation in Italy*, pp. 37-51. International Institute for Labour Studies, Geneva.

Begg, I. (2002), *Urban Competitiveness*, Bristol, Policy Press.

Berger, A. and Udell, G., (2004) *A more complete conceptual framework for SME finance*, Paper prepared for presentation at the World Bank Conference on Small and Medium Enterprises: Overcoming Growth Constrains, World Bank, MC 13-121, October 14-15, 2004.

Birch, D.L. (1979) The job generation process, In MIT Program on Neighborhood and Regional Change, Cambridge, MA, MIT Press.

Boschma, R.A. (2004), Competitiveness of regions from an evolutionary perspective, *Regional Studies*, 38 (9), 1001-1014.

Boschma, R.A. and Lambooy, J.G. (1999), Evolutionary economics and economic geography, Journal of Evolutionary Economics, 9, 411-429.

Buhalis, D., (1997), Information technology as a strategic tool for economic, social, cultural and environmental benefits enhancement of tourism at destination regions, *Progress in Tourism and Hospitality Research*, 3, 71-93.

Camagni, R. (Ed.) (1991), *Innovation Networks. Spatial Perspectives*. London, Bellhaven.

Charnes A., Cooper W. W, and Rhodes E., (1978), 'Measuring the efficiency of decision making units', *European Journal of Operational Research*, 2, 429-444.

Chell, E. and Baines, S. (2000), Networking, entrepreneurship and microbusiness behavior, *Entrepreneurship and Regional Development*, 12, 195-215.

Coelli T. J., Rao, D. S. P. and Battese, G. E., (1998). *An Introduction to Efficiency and Productivity Analysis*. Kluwer Academic Publishers: Boston/London/Dordrecht.

Coelli, T. J., (1996), A Guide to DEAP version 2.1: A Data Envelopment Analysis (Computer) Program. *CEPA Working Paper 96/08*, Australia: Department of Econometrics, University of New England.

Cooke, P. (2001), Regional innovation systems, clusters, and the knowledge economy, *Industrial and Corporate Change*, 10, 945-974.

Cooke, P. and Wills, D. (1999), Small firms, social capital and the enhancement of business performance through innovation programmes, *Small Business Economics*, 13, 219 – 234.

Cooke, P., Uranga, M.G. and Extebarria, G. (1998) Regional innovation systems: an evolutionary perspective, *Environment and Planning A*, 30, 1563-1584.

Crouch, G.I. and Ritchie, J.R.B. (1999), Tourism competitiveness and social prosperity, *Journal of Business Research*, 44, 137-152.

De Carolis, D.M. and Saparito, P. (2006), Social capital, cognition, and entrepreneurial opportunities: a theoretical framework, *Entrepreneurship Theory and Practice*, , 41-56.

Enright, M.J. and Newton, J. (2004), Tourism destination competitiveness: a quantitative approach, *Tourism Management*, 25, 777-788.

Fainstein, S.S.and Gladstone, D. (1999), Evaluating urban tourism, In, Judd, D.R. and Fainstein, S.S. (eds), *The Tourist City*, pp. 21-34. New Haven, Yale University Press.

Färe, R., Grosskopf, S., Norris, M., and Zhang, Z., (1994), 'Productivity growth, technological progress, and efficiency change in industrialized countries', *American Economic Review*, 84, 66-82.

Färe, R., Grosskopf, S., Logan, J. and Lovell, C.A.K., (1985) Measuring efficiency in production: With an application to electric utilities. In Färe, R., Grosskopf, S. and Lovell, C.A.K. (eds.) The Measurement of Efficiency of Production, Boston: Kluwer-Nijhoff Publishing, Kluwer Academic Publishers.

Farrell, M. J., (1957), 'The measurement of productive efficiency', *Journal of the Royal Statistical Society*, Series A, CXX Part 3, 253-290.

Glancey, K. and Pettigrew, M., (1997) Entrepreneurship in the small hotel sector, *International Journal of Contemporary Hospitality Management*, 9 (1), 21-24.

Greene, W. (1997). *Econometric Analysis*. 3rd Edition. Prentice-Hall International, New York.

Hansen, J. and Roeger, W. (2000), Estimation of real equilibrium exchange rates, Economic Papers No 144, DGII, European Commission.

Flora, J.L., Sharp, J. and Flora, C.B. (1997), Entrepreneurial social infrastructure and locally initiated economic development in the non-metropolitan United States, *Sociological Quarterly*, 38, 623-645.

Greene, W., (1998), *LIMDEP version 7.0. Econometric Software*. New York.

Hoang, H. and Antoncic, B. (2003), Network-based research in entrepreneurship. A critical review, *Journal of Business Venturing*, 18, 165-187.

Ioannides, D. (2003), The economics of tourism in host communities, In Singh, S., Timothy, D.J. and Dowling, R.K. (eds), Tourism in Destination Communities, pp. 37-54, Wallingford, CABI Publishing.

Johannisson, B., (1995), Paradigms and entrepreneurial networks – some methodological challenges, *Entrepreneurship and Regional Development*, 7, 215-231.

Jovanovich, B., (1982), 'Selection and evolution of industry', *Econometrica*, 50, 649-670.

Kalleberg, A.L. and Leicht, K.T., (1991), Gender and organizational performance: determinants of small business survival and success, *Academy of Management Journa*l, 34 (1), 136-161.

Kotey, B. (2005), Goals, management practices and performance of family SMEs, *International Journal of Entrepreneurial Behavior and Research*, 11 (1), 3-24.

Krugman, P. (1994), Competitiveness. A dangerous obsession, *Foreign Affairs*, 73, 28-44.

Law, C.M., (2000), Regenerating the city center through leisure and tourism, *Built Environment*, 26 (2), 117-129.

Lawson, C. (1999), Towards a competence theory of the region, *Cambridge Journal of Economics*, 23, 151-166.

Lawson, C. and Lorenz, E. (1999), Collective learning, tacit knowledge and regional innovative capacity, *Regional Studies*, 33, 305-317.

Lerner, M. and Haber, S. (2001), Performance factors of small tourism ventures: the interface of tourism, entrepreneurship and the environment, *Journal of Business Venturing*, 16, 77-100.

Malecki, E. (2002), Hard and Soft Networks for Urban Competitiveness, *Urban Studies*, 39 (5-6), 929-945.

Martin, R. (1999), The new 'geographical turn' in economics: some critical reflections, *Cambridge Journal of Economics*, 23, 65-91.

Maskell, P. and Malmberg, A. (1999), Localized learning and industrial competitiveness, *Cambridge Journal of Economics*, 23, 167-185.

McIntosh, R.W., Goeldner, C.R. and Brent Ritchie, J.R. (1995), *Tourism: Principles, Practices, Philosophies*. New York: Wiley.

Nelson, R.R. and Winter, S.G., (1982), *An Evolutionary Theory of Economic Change*. Harvard University Press: Cambridge, MA.

National Statistical Service of Greece (2001) Statistical Yearbook, 2001, Athens, (in Greek).

Ostgaard, T.A. and Birley, S. (1996), New venture growth and personal networks, *Journal of Business Research*, 36, 37-50.

Page, S.J., Forer, P. and Lawton, G.R. (1999), Small business development and tourism: Terra incognita?, *Tourism Management*, 20, 435-459.

Petrou, A., Fiallo-Pantziou, E., Dimara, E. and Skuras, D., (2007), Resources and Activities Complementarities: the Role of Business Networks in the Provision of Integrated Rural Tourism, *Tourism Geographies*, (forthcoming).

Porter, M.E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*. New York, The Free Press.

Porter, M.E. (1990), *The Competitive Advantage of Nations*. London, Macmillan.

Poutziouris, P. (2003), The strategic orientation of owner-managers of small ventures: evidence from the UK small business economy, *International Journal of Entrepreneurial Behavior and Research*, 9 (5), 185-214.

Robison, L.J., Schmid, A.A. and Siles, M.E., (2002), Is social capital really capital?, Review of Social Economy, LX (1), 1-21.

Robson, P.J.A., and Bennett, R.J. (2000), SME growth: the relationship with business advice and external collaboration, *Small Business Economics*, 15, 193-208.

Smith, J.A., (1999), The behavior and performance of young micro firms: evidence from businesses in Scotland, *Small Business Economics*, 13, 185-200.

Smith, V. L. and Edington, W.R. (eds.) (1992), Tourism Alternatives: Potentials and Problems in Development of Tourism. Philadelphia: University of Pennsylvania Press.

Stevenson, H.H. and Jarillo, J.C., (1990) A paradigm of entrepreneurship: Entrepreneurial Management, *Journal of Strategic Management*, 11, 17-27.

Storey, D.J., (1994), Understanding the Small Business Sector. London, Routledge.

Storper, M., (1997), *The Regional World: Territorial Development in a Global Economy*. New York and London, The Guilford Press.

Telfer, D.J., (2002), Tourism and regional development issues, In Sharpley, R. and Tefler, D.J. (eds), Tourism and Development: Concepts and Issues, pp. 112-148, Clevedon, Channel View Publications.

Thomas, R. (2000), Small firms in the tourism industry: some conceptual issues, *International Journal of Tourism Research*, 2, 345-353.

Wiklund, J. and Shepherd, D. (2005), Entrepreneurial orientation and small business performance: a configurational approach, *Journal of Business Venturing*, 20, 71-91.

Williamson, J. (1994), *Estimating Equilibrium Exchange Rates*. Institute for International Economics.

Woolcock, M., (1998), Social Capital and Economic Development: Towards a Theoretical Synthesis and Policy Framework, *Theory and Society*, 27, 151-208.

Table 1. Definition and descriptive statistics of the variables used in the DEA model

	Definition	Descriptive statistics			
		Average	St. Dev.	Min	Max
Dependent variable					
Output	Total annual value of sales, in euros.	377.631,58	601.389,26	10.000	4.500.000
Explanatory variables					
Capital	A firm's net current value in euros.	14.686,61	61.095,98	164	466.667
Labor	Full time equivalent employment.	7,28	7,64	1	40

Table 2. Definitions and descriptive statistics of the variables used in the Tobit models

Definition		Descriptive statistics	
		Average	St. Dev.
Dependent variables			
Technical efficiency	The firm's technical efficiency score.	0,430	0,291
Scale efficiency	The firm's scale efficiency score.	0,510	0,276
Explanatory variables			
Firm specific variables			
Type2	Dummy variable, 1 for tourist agencies, 0 otherwise.	0,200	
Type3	Dummy variable, 1 for restaurants, 0 otherwise.	0,642	
Fage	Dummy variable, 1 if the firm's age ranges between 6 and 10 years, 0 otherwise.	0,316	
Inpratio	Input ratio, the ratio of capital to labor	54,498	65,034
ICT Adoption	Dummy variable, 1 if the firm has adopted information and communication technologies, 0 otherwise.	0,400	
Advertising	The percentage of a firm's expenditures for advertisements and promotion paid to local advertising companies.	0,203	0,327
Family business	Dummy variable, 1 if the firm is a family owned and run business, 0 otherwise.	0,179	
Strategic orientation	Dummy variable, 1if the firm is oriented towards increasing market share, 0 otherwise.	0,189	

Table 2. *...continued*

Human capital variables			
Eage	Natural logarithm of the owner's/manager's age, in years.	42,316	10,673
Management experience	Dummy variable, 1 if the owner/manager has experience in management, 0 otherwise.	0,463	
Work experience	Dummy variable, 1 if the owner/manager has had work experience in a tourist business prior to running his/her business, 0 otherwise.	0,653	
Training	Dummy variable, 1 if the owner/manager has attended training courses relevant to tourism, 0 otherwise.	0,505	
Social networks			
Socio-cultural associations	Dummy variable, 1 if the owner/manager is a member of cultural and other clubs, 0 otherwise.	0,242	
Cooperation	Dummy variable, 1 if the firms cooperate with certain businesses (providers and customers) because they keep personal relationships with the owners/managers of these businesses, 0 otherwise.	0,337	
Residence	Dummy variable, 1 if the owner/manager permanently resides in the area, 0 otherwise.	0,968	
Networking for access to resources			
Formal finance	Dummy variable, 1 if the owner/manager realizes most financial dealings with banks that keeps stable relationships with, 0 otherwise.	0,895	
Informal finance	Dummy variable, 1 if the owner/manager borrows money from the businesses he/she associates with, 0 otherwise.	0,095	

Table 2. …continued

Development information	Dummy variable, 1 if the owner/manager seeks information regarding financial incentives for SMEs, 0 otherwise.	0,484	
Technical/financial advice and support	The percentage of a firm's expenditures for technical and financial advice and support directed to businesses outside the area.	0,017	0,099
Perceptions of place attractiveness			
Recreation	Dummy variable, 1 if the owner/manager considers the area to be endowed with good recreational opportunities, 0 otherwise.	0,389	
Infrastructure	Dummy variable, 1 if the owner/manager considers the area to have contemporary tourist infrastructure and good organization, 0 otherwise.	0,432	
Culture	Dummy variable, 1 if the owner/manger considers that the area has not taken advantage of the area's culture and civilization, 0 otherwise.	0,442	
Accessibility	Dummy variable, 1 if the owner/manager perceives the area as a remote and not easily accessible area, 0 otherwise.	0,295	
Travel cost	Dummy variable, 1 if the owner/manager perceives that the cost of traveling to the area is high, 0 otherwise.	0,137	

Table 3. Frequency distributions and descriptive statistics of Technical and Scale Efficiency

Efficiency range	Technical efficiency		Scale efficiency	
	No. of firms	Percentage	No. of firms	Percentage
0-<20%	18	18,95	15	15,79
20-<40%	41	43,16	17	17,89
40-<60%	15	15,79	21	22,11
60-<80%	5	5,26	29	30,53
80-100%	16	16,84	13	13,68
Total	95	100%	95	100%

	Technical efficiency	Scale efficiency
Average	0,430	0,510
St. Dev.	0,291	0,276
Min	0,065	0,013
Max	1	1
Scale economies		
DRS	57 (60%)	
CRS	11 (12%)	
IRS	27 (28%)	

Table 4. Technical and Scale efficiency determinants – Tobit models results

Variable		Technical efficiency		Scale efficiency	
		coefficient	t- stat	coefficient	t- stat
	Constant	0.008	0.110	-0.741	-2.177
Firm specific variables	Type2 firm	0.258	5.243***	--	--
	Type3 firm	--	--	0.132	2.308**
	FAge	0.147	3.359***	--	--
	Inpratio	0.002	8.041***	-0.001	-1.242
	Advertising	-0.035	-2.911***	--	--
	ICT Adoption	--	--	0.242	4.562***
	Family business	-0.129	-2.436**	--	--
	Strategic orientation	--	--	0.144	2.573**
Human capital variables	Training	0.128	3.162***	0.182	3.915***
	Management experience	--	--	-0.094	-2.059**
	Work experience	0.088	2.226**	--	--
	EAge	--	--	0.186	2.139**
Social networks	Cultural associations	-0.118	-2.635***	--	--
	Residence	--	--	0.059	2.793***
	Cooperation	0.114	2.702***	--	--
Networking for access to resources	Technical/financial support	0.815	4.049***	--	--
	Development information	--	--	0.114	2.542**
	Formal finance	--	--	0.211	2.947***
	Informal finance	--	--	-0.014	-1.898*
Perceptions of place attractiveness	Recreation	0.001	2.384**	0.131	2.767***
	Infrastructure	0.116	2.760***	0.079	1.575
	Culture	--	--	-0.162	-3.302***
	Remoteness	-0.038	-2.505**	--	--
	Travel cost	0.151	2.486**	0.055	0.866
$L(\theta)$		28.702		19.468	

One, two and three asterisks indicate significance at the 10%, 5% and 1% levels, respectively.