### Bordeaux 2016 Abstract Submission

**Title**

Performance evaluation of the French wine sector: Application of the Data Envelopment Analysis

**I want to submit an abstract for:**

Conference Presentation

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**Keywords**

DATA ENVELOPMENT ANALYSIS
DIANE
PERFORMANCE

**Research Question**

Is the bigger chateaux more efficient than the smaller ones?

**Methods**

Data Envelopment Analysis

**Results**

Our results show that only few French wine companies are efficient in the long term. Therefore the use of an appellation or the property of a large brand name appears scant to guarantee long term efficiency. This should strongly encourage domains and Châteaux to go beyond their traditional competitive advantage to innovate.

**Abstract**

In the French wine industry, the use of an appellation or the property of a large brand name have long been considered as two competitive advantages that lead to sustainably outperforming the other companies of the same sector. Thus, competitive advantages holders can produce the greatest value of wine from the lowest amount of inputs. Therefore, financial efficiency in the French wine industry would be linked to these factors that kept it from any innovation effort. However the globalization of wine industry associated with the new entrants arrival deeply question this scheme. In this contest we have constituted a sample of 118 French domains and Châteaux. Thank to Diane (BvD) we have gathered financial and accounting information of these companies on
the 2006-2013 period. Then, we ran a Data Envelopment Analysis method to test whether competitive advantages holders present sustainable efficiency.

To measure efficiency, there are two contemporary approaches, the econometric or parametric approach and the nonparametric approach. Data Envelopment Analysis (DEA) is a nonparametric method widely used to measure the relative efficiency using decision-making units (DMU) in the estimation of the best production frontiers. DEA is particularly adopted in cases in which we investigate the efficiency of converting multiple inputs into multiple outputs and has a small number of observations.

Following Farrell (1957), Charnes et al. (1978) have been the first to introduce the term DEA to describe the mathematical programming approach used in measurement of efficiency and the construction of frontiers. Their work proposed a model in which input is oriented and assumed constant returns-to-scale (CRS). In the literature this model is known as the CCR (Charnes, Cooper and Rhodes) model. Then, Banker et al. (1984) first introduced the assumption of variable return-to-scale (VRS), the model most known in the literature as BBC (Banker, Charnes and Cooper) model. Actually, even if they are less used in the literature, there are five other basic DEA models: the additive model (Charnes et al., 1985); the multiplicative model (Charnes et al., 1982); the assurance region DEA model (Thompson et al., 1986, 1990); the cone-ratio DEA model (Charnes et al., 1990); and the super-efficiency model (Andersen and Petersen, 1993).

With more than 4,000 articles published in the academic literature (Emrouznejad et al., 2008), DEA is a linear programming technique widely used in many fields (e.g. agriculture, airline industry, banks, financial services, hospitals, pharmaceutical firms, port, public sector resources, public universities, regional development, sports, and telecom branches). In wine sector, this method has not been used intensively. For example, Day et al. (1995) identify both strategic leaders, the ‘best practice’ players in the industry, and strategic groups to examine which are the source of the most sustained heterogeneity in the performance of U.S. brewers. Bouzdine-Chameeva (2005) applies the DEA method to analyze the performance of 132 well-known chateaux of the top range.

In this paper, we present an application of the DEA to measuring the performance of French famous chateaux. Therefore, the present research is innovative in this context. The following fundamental question is discussed: is the bigger chateaux more efficient than the smaller ones? We retain operating subsidy, debt ratio, and acid-test ratio as inputs, annual turnover, exports, value added, operating cash-flow, and net profit as outputs. The results of the DEA method permits us to provide estimates of the relative efficiencies.

Our results show that only few French wine companies are efficient in the long term. Therefore the use of an appellation or the property of a large brand name appears scant to guarantee long term efficiency. This should strongly encourage domains and Châteaux to go beyond their traditional competitive advantage to innovate.

REFERENCES


