CORPORATE GOVERNANCE MECHANISMS AND PERFORMANCE IN AIR MANAGEMENT COMPANIES: A fSQCA APPROACH

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This article examines the role of governance mechanisms and economic variables in financial performance of air management companies in Italy. The research draws on corporate governance theory, stakeholder theory, and performance analysis in the airport industry. Fuzzy-set qualitative comparative analysis (QCA) was used to analyze a sample of Italian air management companies. Data were extracted from AIDA database, public reports, and corporate governance documents. Results confirm that different combinations of governance mechanisms, number of passengers, and number of employees can yield similar financial performance. This research also identifies the most significant items that can impact the financial performance, and the relationships among governance mechanisms, and financial performance of those companies.

Key words: Air management companies; Low-cost transport; Corporate governance; Financial performance; Fuzzy-set qualitative comparative analysis (QCA)

Introduction

Over the past three decades, airline transport has grown in Europe thanks to low-cost airline companies, also playing an important role in the development of tourism (Dogru, Bulut, & Sirakaya-Turk, 2016; Dogru, Sirakaya-Turk, & Crouch, 2017; Ekinci, Sirakaya-Turk, & Baloglu, 2007; Giacosa & Giovando, 2018). Airports have therefore become pivotal centers for economic growth, culture, and business (Ashford, Mumayiz, & Wright, 2011), leading to the development of customer satisfaction and commitment (Zhong, Busser, & Baloglu, 2017). These aspects are directly linked to airport competitiveness (Thelle & la Cour Sonne, 2018) and can affect air traffic and potential economic benefits (Romero, Lafont, Tafur, & Eguren, 2016). The selection of airports from airlines, passengers’ choices, and the active response from other airports can influence the success of airports. Passengers have multiple options to choose from due to the existence of airports with overlapping areas of influence, thanks to an unprecedented access to more airlines and airport information.
Consequently, airports are responding and focusing on a wider variety of commercial activities and revenues not related to the aviation business (Romero et al., 2016).

This research fits into this framework and aims to improve past analysis on the performance of air management companies in Italy. The study follows and takes further a research project on the airport infrastructure by Ossola, Giovando, and Crovini (2015, 2018), expanding the sample of companies analyzed and considering additional relevant aspects. This analysis is also based on the assumptions and empirical evidence of Romero et al. (2016), who concentrated on the air transport in the UK.

To complement the existing literature, the authors have investigated the impact and causal relationship between number of passengers, type of revenues, and employment rate on the overall performance, measured by the return on assets (ROA). In addition, the study also considers the role of governance mechanisms in improving the financial performance of air management companies in Italy.

No previous research dealing with the effect of the attributes implied in this study exists.

Moreover, a novel methodological approach called fuzzy-set qualitative comparative analysis (fsQCA) was used to develop the research model and test the causal relationships among variables and outcome. The fsQCA approach is fundamental for theory testing, and for concept formation, elaboration, refinement, and theory development (Fiss, 2011).

Consequently, this article represents a multidisciplinary study as the interest towards the development of low-cost airlines has important consequences and enhances the relationship with the territory in which the air management company operates.

This article is organized as follows. Section 2 presents the theoretical background and the research model. Section 3 describes the fsQCA methodology, sample, and attributes. Section 4 shows results and Section 5 presents the discussion. Section 6 offers the conclusions, main implications, limitations, and future developments of the application of QCA in air management companies.

Theoretical Background and Research Model

The Airport Industry

In recent decades, airport services have been liberalized at various levels in all countries (Forsyth, 2002; Romero et al., 2016). This liberalization broke monopolies and created a more competitive system with an ever-increasing development (Gillen, 2011; Pulina & Cortés-Jiménez, 2010; Romero et al., 2016; Thelle & la Cour Sonne, 2018).

An important change in the sector was marked by deregulation, leading to the emergence and growth of new airlines, among which were low-cost airlines (Morrell, 2008; Morrison & Winston, 1995). This phenomenon consistently increased the air traffic transport, in terms of number of passengers, and led to the development of the sector in general.

With particular reference to airport management companies, strategic behavior was examined after deregulation (Bruni, 2004; Kleymann & Seristo, 2004), as well as the business model of such enterprises (Kasarda, 2006; Ossola, Giovando, & Crovini, 2016). In addition, scholars concentrated on the impact of privatization on airport ownership structure and related performance (Gillen, 2011; Oliveira Cruz & Sarmento, 2017; Usami & Akai, 2012; Vogel, 2006).

Ahn and Lee (2011) focused on service quality in the airline industry from the customer’s perspective, exploring how perceived service quality affects customer satisfaction and loyalty-related behavior and whether factors affecting service quality, customer satisfaction, and loyalty differ between full-service and low-cost airlines.

The increasing importance of market orientation and airport marketing in airport management led to the inclusion of these aspects in the analysis of the alternative revenue sources of airports (Graham, 2008). Larger airports are normally in a better position to provide a greater range of commercial facilities for passengers and other consumers, and therefore tend to benefit from nonaeronautical revenues. Current business models should consider the potential effect of nonaeronautical aspects and other commercial activities (Kasarda, 2006). Advertising and park lots are the most common processes of diversification. Many airports get a large part of their income from these sources and, in some cases, that income is still greater than that which comes from aviation
Corporate governance studies typically consider agency theory to describe the relationship between shareholders and managers (Finegold, Benson, & Hecht, 2007; Renders & Gaeremynck, 2012). Due to the wide range of company sizes within the sample set, this study bases the conceptualization on stakeholder theory (Freeman, 1984).

Previous research analyzed the role of governance mechanisms and performance of airline companies (Wang et al., 2011). Board size is beneficial as it makes expertise and resources more readily accessible to firms (Dalton, Daily, Johnson, & Ellstrand, 1999; Felício et al., 2016). Nonetheless, other authors argue that large boards impair firm performance (Hermalin & Weisbach, 2003) as it is more difficult to effectively monitor the management. Larger boards offer greater opportunities for shirking and delay decision making (Jensen, 1993).

**Proposition 3:** Large boards increase the financial performance of air management companies.

As regards the topic of affiliated directors, Van Essen, Engelen, and Carney (2013) reported the importance of directors’ independence, claiming that clear separation between directors and insiders or major shareholders ensures that former can independently assess the management. This independence is also linked to the committees within the board of directors. Affiliated directors may be under the influence of the top executives and the overall management can suffer from potential conflicts of interests (Felício et al., 2016).

**Proposition 4:** The absence of affiliated directors enhances the financial performance of air management companies.

In the airport sector, many scholars focused on the government participation in airport management companies in several countries (Graham, 2008; Oum et al., 2008; Romero et al., 2016; Usami & Akai, 2012). In the airport sector, many scholars focused on the government participation in airport management companies in several countries (Graham, 2008; Oum et al., 2008; Romero et al., 2016; Usami & Akai, 2012). In addition, over the past few years the topic of gender diversity has been extensively studied by considering cross-country analysis and the development of regulations (Iannotta, Gatti, & Huse, 2015; Sanan, 2016; Seierstad, Warner-Søderholm,
Proposition 6: The employment rate, in terms of number of employees, creates value for air management companies, by enhancing the financial performance.

In this study, the authors aim to analyze with a configurational approach the causal relationship between several attributes and the financial performance. Figure 1 summarizes all the propositions tested in this empirical analysis.

The Research Model

By considering the theoretical background, the authors elaborated different propositions and a research model (Fig. 2) to explore how different combinations of governance factors, financial and economic variables can affect financial performance of the air management companies in Italy. As mentioned above, the governance variables implied in this research are those studied in previous research (Felicio et al., 2016; Grove, Patelli, Victoravich, & Xu, 2011; Larcker et al., 2007; Seierstad et al., 2017; Usami & Akai, 2012; Wang et al., 2011) and were adapted to air management companies.

The other attributes chosen for this research were based on factors discussed in previous studies conducted on the topic by Romero et al. (2016), Ossola et al. (2015, 2018), and Oum et al. (2003). The research model has seven attributes and one.
better summarizes all details about the attributes and outcome.

Methodology

A Qualitative Comparative Approach

Authors used fuzzy-set QCA (details in Section 4) to identify the causal conditions that lead to good financial performance in air management companies in Italy. This method is particularly helpful to analyze small and medium samples and avoid considering only dichotomized variables.

Over the past few years, scholars have witnessed an increasing curiosity for a method, called QCA, introduced for the first time by the American social scientist Charles Ragin in 1987. Developments of this methodology by Ragin (2000, 2006) and Rihoux and Ragin (2008) have contributed to a better applicability of QCA to empirical social scientific research questions leading to its prominence within the discipline. QCA was first introduced as a method for analyzing data sets consisting of binary variables (Ragin, 1987). The basic concept was to constitute

outcome (see Fig. 1). The attributes are the number of passengers, aviation revenues, nonaviation revenues, number of employees, board size, affiliated directors, and number of women in boards. The outcome is the financial performance. Table 1

<table>
<thead>
<tr>
<th>Outcome and Attributes</th>
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<tbody>
<tr>
<td><strong>Outcome</strong></td>
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<tr>
<td><strong>Attributes</strong></td>
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</table>

Source: Elaborated by the authors.
such data by Boolean functions. Ragin (2000, 2008) expanded the method to allow constructions of fuzzy set relations, by dealing with variables having more than two values, attempting to integrate qualitative and quantitative research methods (Rohwer, 2011).

In addition, fsQCA is suited to addressing equifinality, causal asymmetry, and possible interdependence of input variables (B. Cooper & Glaesser, 2015; Greckhamer, Misangyi, Elms, & Lacey, 2007; Pajunen, 2008; Ragin, 2000, 2008; Woodside, 2010). Each case represents as a combination of causal and outcome conditions (Poveda & Martinez, 2013). Cases characterize formal logical statements in which the independent variables (conditions) for each case, in combination, logically imply the score on the dependent variable (outcome) for that case. These combinations can be compared with each other and subsequently simplified through a bottom–up process of paired comparison (Poveda & Martinez, 2013; Ragin, 1987).

The first stage in QCA is to specify the causal conditions for the outcome variable, the financial performance of air management companies.

The next step is to build a truth table with data for selected cases regarding the causal conditions and the outcome variable. Truth tables list the possible combinations of conditions and the outcome associated with each combination (Poveda & Martinez, 2013). A truth table also elaborates and formalizes the process of examining cases.

The second step consists of the analysis of causal sufficiency of different combinations of factors that meet the specified criteria of sufficiency for the outcome to occur. In particular, the membership score on the outcome is consistently higher than the membership score of the causal combination. This means that the percentage that measures the relevance of each factor explaining the causal relationship on the outcome is generally higher than the overall relevance of the combination of all factors.

Consequently, it emerges that the fsQCA approach is fundamental for theory testing, and for concept formation, elaboration, refinement, and theory development (Fiss, 2011).

Sample, Data Collection, and Calibration

The research focuses on a sample of Italian airports that entrust their transport services mainly to low-cost airlines. Some of them are considered “secondary” airports, as they are located far away from the city.

This is a systematic or reasoned sample because extraction and identification of elements does not happen randomly (Gambel, 2005; Spiegel, 1994). The sample selection criteria are the following:

- market share greater than 30%;
- number of low-cost passengers over 1 million units per annum.

The sample set was selected based on data provided by ENAC (Ente Nazionale per l’Aviazione Civile), referring to the air traffic in 2016. Authors considered the airports and the related air management companies in Table 2 from this sample set. This sample is representative as it covers the 90% of low-cost passengers in Italy.

This research also considers the information about the corporate governance and the financial statements of the last accounting year available (2016) of the related air management companies.

Data were extracted from the AIDA database and details regarding revenues and composition of the governance boards were gathered manually from annual reports and documents publicly available on company websites.

Some companies used the Italian accounting principles (OIC) and others instead the IAS-IFRS principles.

The large disparity in company size within the sample set serves the purpose to better test the research model.

fsQCA allows for gradual set membership, thus preserving information though a calibration process (Ricciardi, Zardini, & Rossignoli, 2018). Calibration involves transforming original data into a continuous value interval from 0 to 1 (Ragin & Fiss, 2008; Woodside, 2010).

The authors calibrated the original variables and factors by taking the average as the point of maximum ambiguity (cross-over point) and the percentiles 0.05 and 0.95 as the thresholds for full nonmembership and full membership, respectively. After calibration (Crilly, Zollo, & Hansen, 2012), authors replaced the 0.5 value of maximum ambiguity with 0.499. Aviation and nonaviation revenues, as well as board size and number
Results

Different combinations of attributes led to strong financial performance. Based on the attributes, the maximum number of combinations was 128, although some of these combinations may not have been covered by empirical cases in this sample. The latter represent the logical remainders, excluded from the analysis (Fiss, 2011; Ragin, 2008). The

Table 2
Sample of Analysis

<table>
<thead>
<tr>
<th>Air Management Companies</th>
<th>Cities/Airports</th>
</tr>
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<tbody>
<tr>
<td>SACBO Spa</td>
<td>Bergamo</td>
</tr>
<tr>
<td>SEA Spa</td>
<td>Milano (Malpensa and Linate)</td>
</tr>
<tr>
<td>Toscana Aeroporti Spa</td>
<td>Pisa</td>
</tr>
<tr>
<td>Aeroporti di Roma Spa</td>
<td>Roma (Fiumicino and Ciampino)</td>
</tr>
<tr>
<td>Aeroporto Guglielmo Marconi di Bologna Spa</td>
<td>Bologna</td>
</tr>
<tr>
<td>Aeroporti di Puglia Spa</td>
<td>Bari, Brindisi and Foggia</td>
</tr>
<tr>
<td>SOGAER Spa</td>
<td>Cagliari</td>
</tr>
<tr>
<td>SAC Spa</td>
<td>Catania</td>
</tr>
<tr>
<td>SACAL Spa</td>
<td>Lamezia Terme</td>
</tr>
<tr>
<td>GEASAR Spa</td>
<td>Olbia</td>
</tr>
<tr>
<td>GESAP Spa</td>
<td>Palermo</td>
</tr>
<tr>
<td>GESAC Spa</td>
<td>Napoli</td>
</tr>
<tr>
<td>SAGAT Spa</td>
<td>Torino</td>
</tr>
<tr>
<td>Aeroporto Valerio Catullo di Verona Villafranca Spa</td>
<td>Verona</td>
</tr>
<tr>
<td>SAVE Spa</td>
<td>Venezia and Treviso</td>
</tr>
</tbody>
</table>

Source: Elaborated by the authors on data provided by ENAC (www.enac.it).

Table 3
Dataset for fsQCA Analysis

<table>
<thead>
<tr>
<th>Companies</th>
<th>Affiliated Directors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fs_roa (Dummy)</td>
</tr>
<tr>
<td>SACBO</td>
<td>0.44</td>
</tr>
<tr>
<td>SEA</td>
<td>0.31</td>
</tr>
<tr>
<td>Toscana</td>
<td>0.74</td>
</tr>
<tr>
<td>AdR</td>
<td>0.16</td>
</tr>
<tr>
<td>Bologna</td>
<td>0.65</td>
</tr>
<tr>
<td>AdP</td>
<td>0.91</td>
</tr>
<tr>
<td>GESAC</td>
<td>0.03</td>
</tr>
<tr>
<td>GESAP</td>
<td>0.95</td>
</tr>
<tr>
<td>SAC</td>
<td>0.28</td>
</tr>
<tr>
<td>SAVE</td>
<td>0.31</td>
</tr>
<tr>
<td>SOGAER</td>
<td>0.48</td>
</tr>
<tr>
<td>SACAL</td>
<td>0.97</td>
</tr>
<tr>
<td>GEASAR</td>
<td>0.05</td>
</tr>
<tr>
<td>Aeroporto Valerio Catullo di Verona Villafranca</td>
<td>0.41</td>
</tr>
<tr>
<td>Aeroporto Valerio Catullo di Verona Villafranca</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Elaborated by the authors through fsQCA software 2.5.
results also confirm the presence (or absence) of core and peripheral conditions in the combinations that led to the outcomes.

Table 4 reports the solutions. As suggested by Ragin (1987), authors decided not to represent the same results by using quantitative methods to avoid confusion. Results show the equifinality of first-order (or across-type) and second-order (or within-type) solutions. The overall solution coverage was 1 and the solution consistency was 0.76. These data are related to the small sample of cases implied in the analysis and demonstrate the perfect adaptability of the theoretical model and related considerations to the air management companies analyzed. However, coverage results also indicate that there could be other possible solutions impacting the financial performance of those companies.

In all solutions, the core causal condition represented by aviation revenues is present and impacts directly on the financial performance. Interestingly, nonaviation revenues are only determinant in solution B. Consequently, core activities represent one of the most influential factors impacting the performance of air management companies, while revenues deriving from other business areas are not particularly relevant financially and economically.

As regards governance attributes, board size is relevant and directly impacts on the outcome in solution B and C. This means that larger boards have a huge impact on the financial performance of these companies. The gender of board members instead does not influence the performance in solution A. Moreover, the presence of affiliated directors is a peripheral condition that only affects solution A.

In addition, the solutions confirm the fact that the more employees the air management companies have, the more they impact on the outcome. But, interestingly, in solution C the number of passengers is not influential. This represents a particular combination considering that in solution C the aviation revenues have a huge impact on the financial performance. Therefore, we expected that this factor was influential in all solutions.

**Discussion**

The results highlight the importance of the diversification of the revenues into aviation and nonaviation activities. Both are relevant in determining a strong financial performance in solution B, confirming the results of previous studies conducted on this topic (Gitto & Macuso, 2012; Ossola, 2015, 2018). The other two solutions instead show minor influence of nonaeronautical activities on the return on assets of the Italian air management companies. Both cases suggest the partial validity of Proposition 1.

Corporate governance attributes instead are fundamental to achieve and ensuring financial performance. However, findings underline that effects vary according to the context and complementarities between attributes. In fact, some air management companies (the nonlisted ones) do not present internal committees in the board of directors; therefore, in solutions B and C the condition of affiliated directors is not present. Affiliated directors should be aligned with managers, and their existence may increase agency problems. Financial performance should therefore benefit from the absence of affiliated directors (Felico et al., 2016). Consequently, Proposition 4 can be partially confirmed by solutions B and C.

The same goes for the gender diversity: the nonlisted air management companies are not obliged to have women on the boards. Solution A discounts entirely the attribute female presence in the board as an indicator for strong financial performance. Within the parameters of the study, the presence of women in boards does not appear to affect the

### Table 4

<table>
<thead>
<tr>
<th>Configurations Leading to Strong Financial Performance in Air Management Companies in Italy</th>
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<tbody>
<tr>
<td><strong>Solutions</strong></td>
</tr>
<tr>
<td>Aviation Revenues</td>
</tr>
<tr>
<td>Nonaviation revenues</td>
</tr>
<tr>
<td>No. passengers</td>
</tr>
<tr>
<td>No. employees</td>
</tr>
<tr>
<td>Board size</td>
</tr>
<tr>
<td>Affiliated directors</td>
</tr>
<tr>
<td>Female in boards</td>
</tr>
<tr>
<td>Consistency</td>
</tr>
<tr>
<td>Raw coverage</td>
</tr>
<tr>
<td>Unique coverage</td>
</tr>
<tr>
<td>Overall solution coverage</td>
</tr>
<tr>
<td>Overall solution consistency</td>
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</tbody>
</table>

*Note.* ● core causal condition present; • peripheral causal condition present; ○ core causal condition absent; ◦ peripheral causal condition absent.
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financial performance (Alazzani et al., 2017), partially refuting Proposition 5.

As regards board size, Proposition 3 can be partially confirmed. This research shows that air management companies achieve strong performance when large boards and committees are present, thereby opposing the idea that it is more difficult to coordinate large boards and committees (Proposition 3 is confirmed in solutions B and C). Larger boards and board committees have a broader skill-set, which can aid decision making.

However, results partially support the concept that different combinations of governance factors lead to strong financial performance because in solution A the attribute board size is not present. Therefore, solution A confirms what Hermalin and Weisbach (2003) stated: a large board may impair firm performance.

According to previous steps of analysis (Ossola et al., 2015, 2018), the number of low-cost passengers should have a direct correlation with the EBITDA and should therefore benefit the financial performance. This study instead partially confirms Proposition 2. In solution C the attribute is not relevant, thus confirming previous quantitative analysis (Oum et al., 2003). This is due to the particular importance that nonaviation activities have on some air management companies where air transport is represented by both traditional and low-cost vectors.

Regarding the causal effect of employment rate on performance, this study confirms Proposition 6, the higher the number of employees, the higher the financial performance (Ossola et al., 2018; Oum et al., 2003).

Consequently, the research model emphasizes the importance of the profitability per each employee and the fact that the employment level in the local territory in which the airport operates is fundamental for the survival of air management companies. Indirectly, this result underlines that a high level of employment also impacts the value creation of the company and of the local territory by producing positive externalities.

Conclusion, Limitations, and Future Developments of the Study

This research represents the second step of a larger research project on the topic of low-cost air transport. This article represents a multidisciplinary study as the interest towards the development of low-cost airlines has important consequences and enhances the relationship with the territory in which air management companies operate.

The other original aspect of this research lies in the methodological approach, with no previous work considering the effects of the attributes considered in this study.

The authors’ goal was to complement existing literature by clarifying the impact and causal relationship between number of passengers, number of employees, type of revenues, and governance mechanisms on the overall financial performance (ROA).

The core causal condition, aviation revenues, directly influences financial performance in all solutions. Interestingly, nonaviation revenues were a determinant factor only in solution B. Related to this aspect, solution C is the only one where the number of passengers is uninfluential, thus showing contradicting results if we consider that aviation activities are relevant in this combination.

Board size and gender are relevant and directly impact financial performance in solution B and C. The presence of affiliated directors instead is a peripheral condition that only affects solution A.

All solutions confirm the relationship between the numbers of employees the air management companies have and their financial performance. Consequently, this result shows that a high level of employment also impacts on the value creation of the company and of the local territory with positive externalities.

These results encourage the use of fsQCA for corporate governance and performance-related research offering novel insights. In this study, authors used governance factors adopted by other researchers (Felício et al., 2016) to test the same approach to the specific context of air management companies in Italy.

Given the exploratory nature of this research, one of the limits is represented by the comparison of financial statements prepared according with different accounting principles. In addition, results show that there can be other combinations explaining the outcome. Therefore, it could be interesting to find some other variables impacting on the financial performance of air management companies.
provide additional value to the results, the analysis should extend to other accounting periods.

Further research opportunities remain. These include enlarging the sample size and applying fsQCA to other financial and governance variables. Furthermore, a comparison of air management companies across multiple countries would provide additional insights.

Within the context of the existing literature, this research also has practical implications for managers of air management companies and professionals. They can better identify and analyze the items that directly or indirectly impact on the financial performance of their companies, thus enhancing the value creation of such entities and leading to positive externalities to the local territory in which the company operates. These also have implications for investors and financial institutions during their due diligence processes.

Notes

1Equifinality is in sharp contrast to the unifinal perspective of many statistical techniques, among them the usually applied additive and linear regression models. Equifinality indicates that the same result can be obtained through multiple paths (there is not a unique cause). The concept of asymmetric causality is also important when evaluating the potential of QCA for social science research. Many social science phenomena are the result of asymmetric causal processes and conditions. This means that the explanation of the presence of a phenomenon does not imply that this explanation automatically also accounts for the absence of the same phenomenon. QCA is ready for such a thinking. Different to most statistical procedures, which are based on correlation measures and which assume a symmetric relation between the correlated variables, QCA links conditions and the outcome through set-theoretical and asymmetric relations.

2The solution coverage indicates how much is covered by the solution term; raw coverage shows which share of the outcome is explained also by a certain alternative path; and unique coverage indicates which share of the outcome is exclusively explained by a certain alternative path (Ragin, 2006). The consistency instead assesses the degree of perfection of a relationship among sets.

References


