Do Ownership Gender Diversity and Size Matter? A Focus on Intellectual Capital Performance

Maria Serena Chiucchi[1], Marco Giuliani[1] & Simone Poli[1]

[1] Department of Management, Università Politecnica delle Marche, Ancona, Italy

Correspondence: Simone Poli, Department of Management, Università Politecnica delle Marche, Piazzale R. Martelli 8, 60121, Ancona, Italy. Tel: 39-071-220-7258. E-mail: s.poli@univpm.it

Abstract

The study investigates whether ownership gender diversity and size impact on intellectual capital performance of Italian SMEs. The investigation is carried out through cross-sectional OLS analysis. The intellectual capital performance, the dependent variable, is measured through VAIC^{TM}. The ownership gender diversity and size, the independent variables, are measured through a gender diversity index and the number of owners, respectively. The findings show that both gender diversity and size negatively impact on intellectual capital performance. They also show that size tends to moderate the effect of gender diversity on intellectual capital performance.

Keywords: ownership, gender diversity, intellectual capital, VAIC^{TM}, SME, Italy

1. Introduction

Research has highlighted that Intellectual Capital (IC) can be considered one of the main levers to create value, i.e. by improving the IC performance, it is possible to improve the overall performance of a company (Dumay, 2012; Edvinsson & Malone, 1997; Sveiby, 1997). Following this assumption, studies on IC performance have flourished.

The extant studies tend to define IC as the system composed of the intangibles that gives a firm competitive edge (Meritum, 2002). According to this definition, IC performance can be considered as a specific dimension of the corporate one (Firer & Williams, 2003) and as the outcome of the interrelations between human capital, structural capital and relational capital (Giuliani, 2013, 2015; Marr, Schiuma, & Neely, 2004; Meritum, 2002; Murthy & Mouritsen, 2011). Over forty methodologies for measuring and reporting IC performance have been identified so far (Andriessen, 2004; Sveiby, 2010), and it is likely that more methodologies will arise. These methodologies can be classified in several ways (Andriessen, 2004; Sveiby, 2010). For examples, some scholars distinguish between financial and non-financial methodologies; others between measurement and valuation methodologies; others between direct, market, return-on-assets and scorecard methods. Among these methodologies, the ones that seem to have received more attention are the VAIC, the Meritum model, the Skandia Navigator, the Intangible Asset Monitor, the Danish guidelines, the EVA, the CIV, the market-to-book value, the Tobin's q, the KCE and some others.

In addition to the mentioned studies regarding how IC performance should be measured and reported, there are also investigations regarding whether and how the IC performance influences the financial performance of the organization (Chen, Cheng, & Hwang, 2005; Dumay, 2012; Maditinos, Chatzoudes, Tsairidis, & Theriou, 2011). These studies tend to achieve similar conclusions. First, there is a significant link between IC's performance and firm's value, firm's profitability and market ratios. IC seems to be more responsible for financial efficiency rather than physical capital. Third, the three IC components do not have the same role in influencing the IC performance: human capital performance tend to have a significant link with the financial performance.

Another main stream of research on IC performance has focused on its determinants (Chen et al., 2005; Eftekhare, Asgaryan, & Seyyedy, 2014; El-Bannany, 2008; Guthrie & Petty, 2000; Kujansivu & Lönnqvist, 2007; Meressa, 2016; Sefidgar, Maleki, & Minouei, 2015). However, previous studies have focused on large and listed companies, neglecting small- and medium-sized enterprises (SMEs), even though SMEs represent, numerically, the majority of the existing companies and play a relevant role in sustaining global and regional economic development and industrialisation processes (Ayyagari, Beck, & Demirguc-Kunt, 2007; Beck & Demirguc-Kunt,

2006; Lukács, 2005). Thus, investigating the determinants of the IC performance of SMEs, this study contributes to filling an important gap in the literature.

The focus is on ownership. This is due to the fact that, in SMEs, owners are generally strongly and directly involved in the management of the company, affecting its performance (Elizabeth & Baines, 1998; Fairlie & Robb, 2009; Johnsen & McMahon, 2005; Watson & Robinson, 2003). According to Daily and Dollinger (1992, pp. 117-118), "[i]t is in the smaller firm that linkages between ownership and performance may be more easily observed".

Two specific characteristics of the ownership are taken into account: the gender diversity (here intended as the extent to which the ownership is heterogeneous with respect to the gender of the owners) and the size (here intended as the number of owners).

The here tested development of the research hypotheses on the relationship between ownership gender diversity and size, on the one hand, and IC performance, on the other hand, are based on two preliminary assumptions. First, the IC performance can be considered as a specific type of performance of a company (Firer & Williams, 2003; Tayles, Pike, & Sofian, 2007). Second, the set of owners of a company can be intended as a particular type of group or even as a team, i.e. a "group of people who normally work together on an ongoing, day-to-day basis" (Irani, Sharp, & Kagioglou, 1997, p. 201). This perspective is also based on the fact that SMEs' owners tend to be related to the same family or the same managerial team (Daily & Dollinger, 1992).

Moving from these assumptions, the research hypotheses are developed on the basis of those theories that suggest that the characteristics (here, the gender diversity and size) of a group (here, the group of owners) can impact on the performance (here, the IC performance) of the group (Horwitz, 2005; Horwitz & Horwitz, 2007).

Thus, the aim of this study is to investigate whether ownership gender diversity and size impact on IC performance of Italian private (unlisted) SMEs. The focus on Italian companies is due to the fact that Italy is one of the European countries in which SMEs play the above highlighted important role.

The investigation is carried out through cross-sectional OLS analysis. The IC performance, the dependent variable, is measured through VAIC^{TM} and each of its three components (Pulic, 1998, 2000). The ownership gender diversity and size, the independent variables, are measured through a gender diversity index and the (logarithm of the) number of owners, respectively. A set of other variables is included to control for the influence of the factors that previous studies have found to affect the magnitude of VAIC^{TM} and its three components.

The paper is organised as follows. Sections 2 develops the research hypotheses. Section 3 describes the research design and the sample selection. Section 4 shows and discusses the empirical results. Section 5 concludes, highlighting the main contributions to the literature, the limitations of the study and highlights possible further research opportunities.

2. Development of the Research Hypotheses

In the literature, two competing theories suggest possible explanations of the relationship between (gender) diversity and performance of a group (Horwitz, 2005; Horwitz & Horwitz, 2007).

The first stream of studies is based on "the similarity-attraction paradigm" that argues that homogeneous groups perform better than their heterogeneous counterparts due to the fact that groups composed by homogeneous members tend to share the same language, approach, way of acting, etc., and consequently they are more productive. More in depth, some scholars suggest that members of homogeneous groups tend to communicate more frequently, as they are more likely to share the same opinions, to be more cooperative, less conflictive, to experience fewer emotional conflicts and to develop less time consuming and more effective decision-making processes (Andreoni & Vesterlund, 2001; Earley & Mosakowski, 2000; Lau & Murnighan, 1998; Tajfel & Turner, 2004; Williams & O'Reilly III, 1998).

The second stream of studies, instead, relays on "the cognitive resource diversity theory". In this case, it is argued that diversity has a positive impact on performance because heterogeneous members promote creativity, innovation, and problem-solving, hence generating more informed decisions (Robinson & Dechant, 1997). In other words, from this point of view, the quality of the outcomes of a group is determined by knowledge and information exchange within it and the way these knowledge and information are processed. Thus, high levels of group diversity lead to broader perspectives and a greater amount of information shared, consequently enhancing decision quality (Brockmann & Anthony, 2002; Gebert, 2004; Hinsz, Tindale, & Vollrath, 1997).

Empirical studies that analyse diversity's impact on group outcomes to date have supported both the predictions based on the similarity-attraction perspective and those based on the cognitive resource diversity theory (for

reviews see Milliken & Martins, 1996; O'Reilly III, Williams, & Barsade, 1998; Pelled, 1996).

With reference to the business context, the analysis of the linkage between gender diversity and performance has been mainly focused on boards and firms' financial performance or financial value. This stream of studies that has attracted the attention of several scholars has produced mixed results. For example, Campbell and Mínguez-Vera (2008) have investigated the relationship between board gender diversity and financial performance in a sample of Spanish companies. They have found that board gender diversity has a positive effect on companies' financial performance. Joecks, Pull, and Vetter (2013) have found that board gender diversity initially has a negative effect on firm performance; a positive effect can only be observed after a critical mass of about 30% of women has been reached. Smith, Smith, and Verner (2006) have argued that the proportion of women in top management jobs tends to have a positive effect on firm performance and that this positive effect strongly depends on the qualification of female top managers. Adams and Ferreira (2009), after examining the US context, have suggested that gender-diverse boards allocate more effort to monitoring and, consequently, the average effect of board gender diversity on firm performance is negative. Their results also suggest that mandating gender quotas for directors can reduce firm value for well-governed firms. Francoeur, Labelle, and Sinclair-Desgagné (2008) have pointed out, that firms with a high proportion of women in both their management and governance systems generate enough value to keep up with normal stock-market returns. Carter, Simkins, and Simpson (2003) have examined a sample of US firms and have found a positive relationship between board gender diversity and Tobin's Q. Rose (2007) has not found a significant link between board gender diversity and Tobin's Q for a sample of Danish firms. Farrell and Hersch (2005) have found no evidence that addition of a female person to the board affects return on assets or market returns to shareholders. Shrader, Blackburn, and Iles (1997) have found no significant relationship between the percentage of female directors on the board and profit margin, return on assets, or return on equity for a sample of US companies.

In all, both the mentioned theories suggest that (gender) diversity has an impact on performance, although the sign of this impact is negative in the first case and positive in the second case. Consequently, the research hypothesis being tested is the following:

H_1: IC performance is related to ownership gender diversity.

Also the impact of the size of a group on IC performance can be explained by two competing theories, supported by mixed results (Belbin, 2011; Finkelstein, 1992; Haleblian & Finkelstein, 1993; Stewart, 2006; Thomas & Fink, 1963).

The first theory suggests that large groups provide more capabilities and consequently they tend to perform better then smaller group. In other words, some argue that large groups can generate more outputs than small groups as additional members add resources and skills to groups.

The second theory, instead, demonstrates that larger groups are less efficient than smaller groups due to their higher internal complexity. In other words, some argue that additional members can also complicate the amount and nature of interaction and coordination, thereby decreasing satisfaction, integration and cohesion among members.

In summary, the abovementioned theories suggest that the size of a group has an impact on performance, although the sign of this impact is positive in the first case and negative in the second case. Consequently, the research hypothesis being tested is the following:

H_2: IC performance is related to ownership size.

As mentioned, the relationship between IC performance, ownership gender diversity and ownership size is unclear. In addition to the one-to-one analyses, it is possible to combine these three constructs. In particular, a critical issue to be addressed in this study is to identify and assess theoretically-based moderating variables that potentially influence the magnitude and direction of the relationship between IC performance and ownership gender diversity. In doing so, it is focused on a theoretical moderator represented by the ownership size. In fact, the extant literature consistently suggests that group size affects group processes. In other words, some argue that large groups can generate more outputs than small groups as additional members add resources and skills to groups. Other scholars, instead, supports the idea that additional members can also complicate the amount and nature of interaction and coordination, thereby decreasing satisfaction, integration and cohesion among members. In all, group size, i.e. the number of owners, appears to moderate (increase or decrease) the effects of gender diversity on IC performance as group size can lead to gains related to the combination of more competences and skills but also to losses related to intragroup conflicts (Gully, Devine, & Whitney, 1995; Horwitz, 2005; Horwitz & Horwitz, 2007; Wegge, Roth, Neubach, Schmidt, & Kanfer, 2008). Consequently, the research hypothesis

being tested is the following:

H₃: Ownership size moderates the relationship between ownership gender diversity and IC performance.

3. Research Design and Sample Selection

Research hypotheses are tested through cross-sectional OLS analysis.

3.1 Dependent Variables

The dependent variable is a measure of IC performance. It is the Value Added Intellectual Coefficient (VAIC^{TM}) developed by Pulic (1998, 2000).

The VAIC^{TM} has become widely accepted in the academic and professional community as a valuable indicator of IC performance (Bontis, Bart, Nazari, & Herremans, 2007; Chen et al., 2005; El-Bannany, 2008; Firer & Williams, 2003; Mavridis, 2005; Pew Tan, Plowman, & Hancock, 2007; Pulic, 2000; Ståhle et al., 2011; Zéghal & Maaloul, 2010). Some studies highlight limitations of the VAIC^{TM} (Iazzolino & Laise, 2013; Maditinos et al., 2011; Ståhle, Ståhle, & Aho, 2011) such as: 1) it is based on financial reports, indicators of past strategy; 2) it does not take into account the synergies among its various components and the holistic aspect of IC; 3) it does not consider relational capital while human capital and structural capital are only partially considered (e.g., it considers the annual salaries of the employees but not their knowledge, skills, motivation, experience, or training); 4) VAIC^{TM} treats IC and performance linearly. Recent literature highlights that most of the criticism levelled at the VAIC^{TM} derives from a misunderstanding and/or misuse of the model that aims to measure the contribution of IC to value creation and not the value or the stock of IC (Iazzolino & Laise, 2013).

The choice to use the VAIC^{TM} model for this analysis is due to the fact that it is widely used for statistical analyses and that it is based on publicly available financial statements: this allows basing the analysis on large samples and on comparable data. IC measurements and reports are not available for every company and they are not comparable (Chiucchi, Giuliani, & Marasca, 2016; Giuliani, 2014; Giuliani, Chiucchi, & Marasca, 2016).

Algebraically, VAIC^{TM} is expressed as follows:

$$VAIC^{TM} = HCE + SCE + CEE \qquad (1)$$

Where:

VAIC^{TM}: Value Added Intellectual Coefficient;

HCE: Human Capital Efficiency, calculated as the ratio between value added and total cost for employees;

SCE Structural Capital Efficiency, calculated as the ratio between structural capital (the difference between value added and total cost for employees) and value added;

CEE Capital Employed Efficiency, calculated as the ratio between value added and total assets, net of intangible assets.

Value added is calculated as follows:

$$VA = OP + EC + D\&A + P \qquad (2)$$

Where:

VA: value added;

OP: operating profit;

EC: total cost for employees;

D&A: depreciation and amortisation;

P: provisions (in the profit and loss statement prepared according to Italian legislation provisions are included in operating profit).

In order to make a more in-depth analysis, both VAIC^{TM} and each of its three components (HCE, SCE and CEE) are used as dependent variable.

3.2 Independent Variables

To test research hypothesis H1, the independent variable is a measure of diversity. It is used the Blau's diversity index (Blau, 1977), widely used to measure gender diversity in groups in the literature:

$$BLAU = 1 - \sum_{i=1}^{n} P_i^2 \qquad (3)$$

Where:

P: proportion of individuals in a category;

N: number of categories.

P can be intended and measured in two alternative perspectives (Chiucchi, Giuliani, & Poli, 2018). On the one hand, it can be the proportion of individuals in a gender category. On the other hand, it can be the proportion of equity held by individuals in a gender category. Although they are conceptually different and each of them, as well as together, deserves to be observed, they are highly correlated within the sample of companies used (the Spearman correlation index amounts to 0.8872, p-value < 5%) and, more in general, within Italian SMEs (Chiucchi et al., 2018). If both of them were included in the same regression equation, due to their high correlation, collinearity problems would emerge. Keeping them separate, instead, the results would be qualitatively the same. For this reason, the results shown below relate only to a way of considering p and precisely to the first of the two discussed above (BLAU).

BLAU can range between 0 and 0.5. It takes value 0 when the ownership gender diversity is minimal (absent). This occurs when all the owners are female or male. It takes value 0.5 when the gender diversity is maximal. This occurs when the proportions of female owners and male owners are the same and each of them amounts to 0.5.

To test research hypothesis H2, the independent variable is a measure of ownership size. It is used the natural logarithm of the number of owners (SH).

To test research hypothesis H3, the independent variable is the interaction term between BLAU and SH (BLAU*SH).

BLAU and SH are centred on the respective mean in order to avoid collinearity problems between them and the interaction terms.

3.3 Control Variables

A set of variables are included to control for the influence of the factors that previous studies have found to affect the magnitude of VAIC^{TM} and its three components (Chen et al., 2005; Firer & Williams, 2003; Ho & Williams, 2003; Pew Tan et al., 2007; Shahveisi, Khairollahi, & Alipour, 2016). Previous studies have found a well-documented statistically significant relationship between them and the size (SIZE), level of indebtedness (LEV) and economic sector (SECTOR) of companies. Control variables are measured as reported in Table 1.

3.4 Testing Methodology

The cross-sectional OLS models used to test research hypotheses can be specified as follows:

$$Y_i = \alpha + \beta_1 BLAU_i + \beta_2 SH_i + \beta_3 BLAU*SH_i + \beta_4 SIZE_i + \beta_5 LEV_i + \beta_6 SECTOR_i + \varepsilon_i \qquad (4)$$

Where:

Y: the dependent variable (alternatively represented by VAIC^{TM}, HCE, SCE, CEE);

A: the constant term;

E: the error term;

i: the cross-sectional dimension (the reference to the company).

All the variables are measured as reported in Table 1.

Table 1. Measurement of variables

Variable	Measurement
VAIC^{TM}	Sum of HCE, SCE and CEE.
HCE	The ratio between total cost for employees and value added.
SCE	The ratio between structural capital (the difference between value added and total cost for employees) and value added.
CEE	The ratio between values added and total assets, net of intangible assets.
BLAU	Blau's diversity index, computed as $$1 - \sum_{i=1}^{n} P_i^2$$ where: P is the proportion of individuals in the gender category i; n is the number of the gender categories.

	The variable is assumed in the centred form.
SH	The natural logarithm of number of owners.
	The variable is assumed in the centred form.
BLAU*SH	The interaction term between BLAU and SH.
SIZE	The natural logarithm of total assets at the end of fiscal year.
LEV	The ratio between total liabilities and total assets at the end of fiscal year.
SECTOR	Set of seventy-three dummy variables based on the first two-digit ATECO 2007 codes (the base case is the economic sector that has the greater number of company observations). ATECO 2007 is the Italian classification of economic sectors.

3.5 Sample Selection and Data

The sample of companies was extracted from the AIDA database supplied by Bureau van Dijk, that provides financial statement data for a vast set of Italian private companies operating in sectors other than the financial one, on the basis of the selection criteria that follow (all referring to 31st December 2015): limited liability company; active company; private company; financial reporting prepared according to Italian legislation and generally accepted accounting standards; small- and medium-size according to the quantitative size limits established by the European Union; positive total shareholder equity; turnover of at least € 1,000; positive value added; total cost for employees higher than zero; ownership composed of only individuals.

The number of companies that meet the above selection criteria amounts to 68,528. To them, a set of observations (3,588) is subtracted for the reasons analytically reported in Table 2. The final sample of companies amounts to 64,940.

Table 2. Sample companies

	Observations
Initial observations (according to the selection criteria)	68,528
Observations with incomplete or invalid data	-1,139
Observations with outliers values of dependent variables	-2,421
Observation related to under-represented economic sector (<10 observations)	-28
Final observations	64,940

Note. Observations with outlier values of dependent variables are those that have values of HCE, SCE or CEE below the respective first percentile and above the respective ninety-ninth percentile.

4. Results and Discussion

4.1. Descriptive Statistics and Correlation Analysis

Table 3 shows the main descriptive statistics referring to the companies of the sample.

Table 3. Descriptive statistics

Variable	Number	Mean	Standard deviation	First quartile	Median	Third quartile	Min	Max
VAIC^{TM}	64,940	2.3037	0.9460	1.7834	2.0712	2.5256	0.3988	10.5656
HCE	64,940	1.6014	0.8044	1.1915	1.3599	1.6831	0.7211	8.8410
SCE	64,940	0.2945	0.1925	0.1607	0.2646	0.4059	-0.3867	0.8869
CEE	64,940	0.4077	0.2855	0.2042	0.3361	0.5253	0.0392	1.7592
BLAU*	64,940	0.2394	0.2333	0	0.3200	0.5000	0	0.5000
BLAU	64,940	0	0.2333	-0.2394	0.0806	0.2606	-0.2394	0.2606
SH*	64,940	2.7704	1.8163	2.0000	2.0000	3.0000	1.0000	157.0000
SH	64,940	0	0.5120	-0.1877	-0.1877	0.2178	-0.8808	4.1754
SIZE	64,940	14.7721	0.9561	14.0992	14.7238	15.3628	11.7249	18.9352
LEV	64,940	0.7371	0.2077	0.6104	0.7936	0.9061	0.0090	0.9999

Note. * indicates the non-centred form of the respective variable. Variables are measured as reported in Table 1.

Table 3 shows that, in terms of mean values, HCE, SCE and CEE contribute to the mean value of VAIC^{TM} for 70%, 13% and 17%, respectively. This result is essentially consistent with the ones of previous studies (Laing, Dunn, & Hughes-Lucas, 2010; Ståhle et al., 2011; Wei Kiong Ting & Hooi Lean, 2009).

The degree of ownership gender diversity appears to be restricted. A BLAU* median of 0.32 means that the owners of a gender category are a maximum of 20% of all owners in 50% of the companies of the sample. The companies in which female owners and male owners are present in the same proportion amounts to 27%.

Table 3 shows three features that characterise Italian SMEs: their average size is very small, their average degree of indebtedness is very high, and their number of owners is very low.

Table 4 shows the correlation matrix.

Table 4. Correlation matrix

	VAIC^{TM}	HCE	SCE	CEE	BLAU	SH	BLAU*SH	SIZE
HCE	0.8177*							
SCE	0.8177*	1.0000*						
CEE	0.1463*	-0.3283*	-0.3283*					
BLAU	-0.0020	0.0238*	0.0238*	-0.0478*				
SH	-0.0237*	0.0250*	0.0250*	-0.0706*	0.2585*			
BLAU*SH	0.0027	-0.0007	-0.0007	-0.0019	-0.2492*	-0.1829*		
SIZE	0.0539*	0.3733*	0.3733*	-0.6372*	0.0719*	0.1587*	0.0108*	
LEV	-0.2788*	-0.3410*	-0.3410*	0.0730*	-0.0856*	-0.1440*	-0.0077*	-0.2315*

Note. Spearman correlation indexes are shown because variables are not normally distributed. * indicates significance at 5%. Variables are measured as reported in Table 1.

Correlation indexes between explanatory (independent and control) variables may suggest the existence of collinearity problems that would lead to misleading results of OLS models. This happens when correlation indexes exceed certain thresholds (e.g., Tabachnick & Fidell, 1996). Table 4 shows that this does not occur (the Variance Inflation Factors, that are not reported, confirm that collinearity problems do not exist).

4.2 Multivariate Analysis

Table 5 reports the results of the OLS analysis, showing that ownership gender diversity and size impact on IC performance of Italian SMEs.

The coefficients of BLAU are always statistically significant, regardless of the IC performance measure. Thus, research hypothesis H1 is confirmed: IC performance is related to ownership gender diversity. The coefficients are always negative. Thus, ownership gender diversity negatively impacts on IC performance. This supports the idea of the validity of the similarity-attraction paradigm within the IC field (Horwitz, 2005; Horwitz & Horwitz, 2007). A possible explanation of this result is that IC creation and development requires a long-term shared organisational vision, a tight cooperation among several actors and the need to develop a common language and sense making process within the organisation (Chiucchi, 2013; Giuliani, 2016; Giuliani et al., 2016). This tends to be more present in homogeneous groups rather than in heterogeneous ones (Horwitz, 2005; Horwitz & Horwitz, 2007).

The coefficient of SH is continuously statistically significant, regardless of the IC performance measure, too. Thus, also research hypothesis H2 is confirmed: IC performance is related to ownership size. The coefficient is negative when the dependent variable is VAIC^{TM}, HCE and SCE, and it is positive when the dependent variable is CEE. Thus, ownership size negatively impacts on VAIC^{TM}, HCE and SCE, and it positively impacts on CEE. These results reflect the idea that larger groups are less effective than smaller groups, probably due to their higher internal complexity (Belbin, 2011; Finkelstein, 1992; Haleblian & Finkelstein, 1993; Stewart, 2006; Thomas & Fink, 1963). More in depth, interpreting these results, we can argue that in larger groups it is difficult to keep a strong and stable long-term leadership and, thus, a long lasting strategic vision that is fundamental for the creation and development of IC which requires constant and time-consuming investments.

The coefficients of the interaction terms (BLAU*SH) are always statistically significant, regardless of the IC performance measure, too. Thus, also research hypothesis H3 is confirmed: ownership size moderates the relationship between ownership gender diversity and IC performance. The coefficients are negative when the dependent variable is VAIC^{TM}, HCE and SCE. In these cases, the negative relationship is stronger for large

ownership structures than small ownership structures. This effect can be related to the fact that the complexities related to a large group tend to enhance the problems emerging from the heterogeneity (gender diversity) of a group. The coefficient is positive when the dependent variable is CEE. In this case, the negative relationship is stronger for small ownership structures than large ownership structures. Since CEE measures the capital employed efficiency, a different result could be related to different and sometimes opposing ways of managing such capital. Nevertheless, this aspect deserves more attention in future research.

With reference to control variables, the respective coefficients are always statistically significant consistent with previous studies (Chen et al., 2005; Firer & Williams, 2003; Ho & Williams, 2003; Pew Tan et al., 2007; Shahveisi et al., 2016).

Table 5. Results of the OLS models

| Variables | Coefficients | | | |
| | (Heteroscedasticity-robust standard errors – variant HC1) | | | |
	VAIC^{TM}	HCE	SCE	CEE
CONSTANT	2.239***	-0.166***	-0.261***	2.666***
	(0.070)	(0.057)	(0.013)	(0.018)
BLAU	-0.059***	-0.040***	-0.011***	-0.008**
	(0.016)	(0.013)	(0.003)	(0.004)
SH	-0.135***	-0.118***	-0.029***	0.012***
	(0.008)	(0.006)	(0.001)	(0.002)
BLAU*SH	-0.157***	-0.145***	-0.048***	0.036***
	(0.035)	(0.029)	(0.007)	(0.008)
SIZE	0.083***	0.186***	0.055***	-0.159***
	(0.004)	(0.004)	(0.001)	(0.001)
LEV	-1.176***	-0.881***	-0.244***	-0.052***
	(0.023)	(0.019)	(0.004)	(0.004)
SECTOR	INCLUDED	INCLUDED	INCLUDED	INCLUDED
Observations	64,940	64,940	64,940	64,940
Adjusted R^2	0.1240	0.1798	0.2423	0.4504
F-statistic	72.69***	108.12***	255.47***	506.09***

Note. *** and ** indicate significance at 1% and 5%, respectively. Variables are measured as reported in Table 1.

5. Conclusions

This study has found that ownership gender diversity and size impact on IC performance of Italian SMEs. The impact of ownership gender diversity on IC performance is negative, regardless of the IC performance measure. The impact of ownership size on IC performance is negative when IC performance is measured through VAIC^{TM} and two of its three components (HCE and SCE) and positive when IC performance is measured through the third component of VAIC^{TM} (CEE). In addition, ownership size moderates the relationship between ownership gender diversity and IC performance. The moderating effect is negative when IC performance is measured through VAIC^{TM} and two of its three components (HCE and SCE) and positive when IC performance is measured through the third component of VAIC^{TM} (CEE).

This study contributes to the literature by investigating the determinants of IC performance in SMEs and by analysing whether ownership gender diversity and size can be considered as determinants of IC performance.

Our findings have theoretical and practical implications. First of all from a theoretical perspective, as the authors are not acquainted of the existence of similar studies, this study can enrich both the IC discourse, pointing out a determinant of its performance, and the studies on gender by offering a new stream of research. Furthermore from a practical perspective, this study may be interesting for those companies that are deciding to invest on IC by showing that a higher IC performance is related to homogeneous and small-sized ownership groups and by identifying the possible reasons behind this (the underpinnings of the similarity-attraction paradigm): more frequent communication among group members, tendency to share the same opinions, to be more cooperative, less conflictual, and to experience fewer emotional conflicts. All these elements can lead to develop less time consuming and more effective decision-making processes.

This study has two main limitations. Firstly, only one IC performance measure has been used to test research

hypotheses. Consequently, findings should be taken and interpreted with caution. Secondly, only Italian SMEs have been considered. Subsequently, findings should not be generalised to SMEs.

Future research avenues can be represented by the extension of the analysis to the SMEs of other countries and by the analysis of the linkages among gender diversity, IC performance and financial performance.

References

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*(2), 291-309. https://doi.org/10.1016/j.jfineco.2008.10.007

Andreoni, J., & Vesterlund, L. (2001). Which is the fair sex? Gender differences in altruism. *The Quarterly Journal of Economics, 116*(1), 293-312. https://doi.org/10.1162/003355301556419

Andriessen, D. G. (2004). *Making sense of intellectual capital*. Burlington, MA: Butterworth-Heinemann.

Ayyagari, M., Beck, T., & Demirguc-Kunt, A. (2007). Small and medium enterprises across the globe. *Small Business Economics, 29*(4), 415-434. https://doi.org/10.1007/s11187-006-9002-5

Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance, 30*(11), 2931-2943. https://doi.org/10.1016/j.jbankfin.2006.05.009

Belbin, R. M. (2011). Management teams: Why they succeed or fail. *Human Resource Management International Digest, 19*(3). https://doi.org/10.1108/hrmid.2011.04419cae.002

Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure*, New York, NY: Free Press.

Bontis, N., Bart, C. K., Nazari, J. A., & Herremans, I. M. (2007). Extended VAIC model: measuring intellectual capital components. *Journal of Intellectual Capital, 8*(4), 595-609. https://doi.org/10.1108/14691930710830774

Brockmann, E. N., & Anthony, W. P. (2002). Tacit knowledge and strategic decision making. *Group & Organization Management, 27*(4), 436-455. https://doi.org/10.1177/1059601102238356

Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics, 83*(3), 435-451. https://doi.org/10.1007/s10551-007-9630-y

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review, 38*(1), 33-53. https://doi.org/10.1111/1540-6288.00034

Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital, 6*(2), 159-176. https://doi.org/10.1108/14691930510592771

Chiucchi, M. S. (2013). Intellectual capital accounting in action: Enhancing learning through interventionist research. *Journal of Intellectual Capital, 14*(1), 48-68. https://doi.org/10.1108/14691931311289011

Chiucchi, M. S., Giuliani, M., & Marasca, S. (2016). The use of Intellectual Capital reports: The case of Italy. *Electronic Journal of Knowledge Management, 14*(4), 245-255.

Chiucchi, M. S., Giuliani, M., & Poli, S. (2018). The relationship between intellectual capital performance and ownership gender diversity in small-sized Italian companies. In P. Paoloni & R. Lombardi (Eds.), *Gender Issues in Business and Economics* (pp. 67-79). Cham: Springer. https://doi.org/10.1007/978-3-319-65193-4_5

Daily, C. M., & Dollinger, M. J. (1992). An empirical examination of ownership structure in family and professionally managed firms. *Family Business Review, 5*(2), 117-136. https://doi.org/10.1111/j.1741-6248.1992.00117.x

Dumay, J. (2012). Grand theories as barriers to using IC concepts. *Journal of Intellectual Capital, 13*(1), 4-15. https://doi.org/10.1108/14691931211196187

Earley, C. P., & Mosakowski, E. (2000). Creating hybrid team cultures: An empirical test of transnational team functioning. *Academy of Management Journal, 43*(1), 26-49. https://doi.org/10.2307/1556384

Edvinsson, L., & Malone, M. S. (Eds.). (1997). *Intellectual Capital*. New York, NY: Harper Business.

Eftekhare, H., Asgaryan, N., & Seyyedy, S. A. (2014). Studying the effective factors in performance of intellectual capital in banks accepted in Tehran stock exchange. *Applied Mathematics in Engineering,*

Management and Technology, 2(3), 145-150.

El-Bannany, M. (2008). A study of determinants of intellectual capital performance in banks: the UK case. *Journal of Intellectual Capital, 9*(3), 487-498. https://doi.org/10.1108/14691930810892045

Elizabeth, C., & Baines, S. (1998). Does gender affect business 'performance'? A study of microbusinesses in business services in the UK. *Entrepreneurship & Regional Development, 10*(2), 117-135. https://doi.org/10.1080/08985629800000007

Fairlie, R. W., & Robb, A. M. (2009). Gender differences in business performance: evidence from the Characteristics of Business Owners survey. *Small Business Economics, 33*(4), 375-395. https://doi.org/10.1007/s11187-009-9207-5

Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: the effect of gender. *Journal of Corporate Finance, 11*(1), 85-106. https://doi.org/10.1016/j.jcorpfin.2003.12.001

Finkelstein, S. (1992). Power in top management teams: Dimensions, measurement, and validation. *Academy of Management Journal, 35*(3), 505-538. https://doi.org/10.2307/256485

Firer, S., & Williams, S. M. (2003). Intellectual capital and traditional measures of corporate performance. *Journal of Intellectual Capital, 4*(3), 348-360. https://doi.org/10.1108/14691930310487806

Francoeur, C., Labelle, R., & Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of Business Ethics, 81*(1), 83-95. https://doi.org/10.1007/s10551-007-9482-5

Gebert, D. (2004). Durch diversity zu mehr Team-innovativität? *Die Betriebswirtschaft Stuttgart, 64*(4), 412-430.

Giuliani, M. (2013). Not all sunshine and roses: discovering intellectual liabilities "in action". *Journal of Intellectual Capital, 14*(1), 127-144. https://doi.org/10.1108/14691931311289057

Giuliani, M. (2014). Accounting for intellectual capital: Investigating reliability. *International Journal of Finance and Accounting, 3*(6), 341-348.

Giuliani, M. (2015). Intellectual capital dynamics: seeing them "in practice" through a temporal lens. *Vine, 45*(1), 46-66. https://doi.org/10.1108/VINE-09-2013-0050

Giuliani, M. (2016). Sensemaking, sensegiving and sensebreaking: The case of intellectual capital measurements. *Journal of Intellectual Capital, 17*(2), 218-237. https://doi.org/10.1108/JIC-04-2015-0039

Giuliani, M., Chiucchi, M. S., & Marasca, S. (2016). A history of intellectual capital measurements: From production to consumption. *Journal of Intellectual Capital, 17*(3), 590-606. https://doi.org/10.1108/JIC-08-2015-0071

Gully, S. M., Devine, D. J., & Whitney, D. J. (1995). A meta-analysis of cohesion and performance effects of level of analysis and task interdependence. *Small Group Research, 26*(4), 497-520. https://doi.org/10.1177/1046496495264003

Guthrie, J., & Petty, R. (2000). Intellectual capital: Australian annual reporting practices. *Journal of Intellectual Capital, 1*(3), 241-251. https://doi.org/10.1108/14691930010350800

Haleblian, J., & Finkelstein, S. (1993). Top management team size, CEO dominance, and firm performance: The moderating roles of environmental turbulence and discretion. *Academy of Management Journal, 36*(4), 844-863. https://doi.org/10.2307/256761

Hinsz, V. B., Tindale, R. S., & Vollrath, D. A. (1997). The emerging conceptualization of groups as information processors. *Psychological Bulletin, 121*(1), 43. https://doi.org/10.1037/0033-2909.121.1.43

Ho, C. A., & Williams, S. M. (2003). International comparative analysis of the association between board structure and the efficiency of value added by a firm from its physical capital and intellectual capital resources. *The International Journal of Accounting, 38*(4), 465-491. https://doi.org/10.1016/j.intacc.2003.09.001

Horwitz, S. K. (2005). The compositional impact of team diversity on performance: Theoretical considerations. *Human Resource Development Review, 4*(2), 219-245. https://doi.org/10.1177/1534484305275847

Horwitz, S. K., & Horwitz, I. B. (2007). The effects of team diversity on team outcomes: A meta-analytic review of team demography. *Journal of Management, 33*(6), 987-1015. https://doi.org/10.1177/0149206307308587

Iazzolino, G., & Laise, D. (2013). Value added intellectual coefficient (VAIC): A methodological and critical

review. *Journal of Intellectual Capital, 14*(4), 547-563. https://doi.org/10.1108/JIC-12-2012-0107

Irani, Z., Sharp, J., & Kagioglou, M. (1997). Communicating through self-directed work teams (SDWTs) within an SME learning organization. *Journal of Workplace Learning, 9*(6), 199-205. https://doi.org/10.1108/13665629710180447

Joecks, J., Pull, K., & Vetter, K. (2013). Gender diversity in the boardroom and firm performance: What exactly constitutes a "critical mass"? *Journal of Business Ethics, 118*(1), 61-72. https://doi.org/10.1007/s10551-012-1553-6

Johnsen, G. J., & McMahon, R. G. (2005). Owner-manager gender, financial performance and business growth amongst SMEs from Australia's business longitudinal survey. *International Small Business Journal, 23*(2), 115-142. https://doi.org/10.1177/0266242605050509

Kujansivu, P., & Lönnqvist, A. (2007). Investigating the value and efficiency of intellectual capital. *Journal of Intellectual Capital, 8*(2), 272-287. https://doi.org/10.1108/14691930710742844

Laing, G., Dunn, J., & Hughes-Lucas, S. (2010). Applying the VAIC™ model to Australian hotels. *Journal of Intellectual Capital, 11*(3), 269-283. https://doi.org/10.1108/14691931011064545

Lau, D. C., & Murnighan, J. K. (1998). Demographic diversity and faultlines: The compositional dynamics of organizational groups. *Academy of Management Review, 23*(2), 325-340. https://doi.org/10.5465/AMR.1998.533229

Lukács, E. (2005). The economic role of SMEs in world economy, especially in Europe. *European Integration Studies, 4*(1), 3-12.

Maditinos, D., Chatzoudes, D., Tsairidis, C., & Theriou, G. (2011). The impact of intellectual capital on firms' market value and financial performance. *Journal of Intellectual Capital, 12*(1), 132-151. https://doi.org/10.1108/14691931111097944

Marr, B., Schiuma, G., & Neely, A. (2004). The dynamics of value creation: Mapping your intellectual performance drivers. *Journal of Intellectual Capital, 5*(2), 224-229. https://doi.org/10.1108/14691930410533722

Mavridis, D. G. (2005). Intellectual capital performance determinants and globalization status of Greek listed firms. *Journal of Intellectual Capital, 6*(1), 127-140. https://doi.org/10.1108/14691930510574708

Meressa, H. A. (2016). Determinants of intellectual capital performance: Empirical evidence from Ethiopian banks. *Research Journal of Finance and Accounting, 7*(13), 10-19.

Meritum. (2002). *Proyecto Meritum. Guidelines for managing and reporting intangibles.* Madrid.

Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review, 21*(2), 402-433. https://doi.org/10.5465/AMR.1996.9605060217

Murthy, V., & Mouritsen, J. (2011). The performance of intellectual capital: Mobilising relationships between intellectual and financial capital in a bank. *Accounting, Auditing & Accountability Journal, 24*(5), 622-646. https://doi.org/ 10.1108/09513571111139120

O'Reilly III, C. A., Williams, K. Y., & Barsade, S. (1998). Group demography and innovation: Does diversity help? In D. H. Gruenfeld (Ed.), *Research on managing groups and teams, Vol. 1. Composition* (pp. 183-207). London: Elsevier Science/JAI Press.

Pelled, L. H. (1996). Demographic diversity, conflict, and work group outcomes: An intervening process theory. *Organization Science, 7*(6), 615-631. https://doi.org/10.1287/orsc.7.6.615

Pew Tan, H., Plowman, D., & Hancock, P. (2007). Intellectual capital and financial returns of companies. *Journal of Intellectual Capital, 8*(1), 76-95. https://doi.org/10.1108/14691930710715079

Pulic, A. (1998). *Measuring the performance of intellectual potential in knowledge economy.* Paper presented at the 2nd McMaster Word Congress on Measuring and Managing Intellectual Capital by the Austrian Team for Intellectual Potential.

Pulic, A. (2000). VAIC™ – an accounting tool for IC management. *International Journal of Technology Management, 20*(5-8), 702-714. https://doi.org/10.1504/IJTM.2000.002891

Robinson, G., & Dechant, K. (1997). Building a business case for diversity. *The Academy of Management Executive, 11*(3), 21-31. https://doi.org/10.5465/AME.1997.9709231661

Rose, C. (2007). Does female board representation influence firm performance? The Danish evidence. *Corporate Governance: An International Review, 15*(2), 404-413. https://doi.org/10.1111/j.1467-8683.2007.00570.x

Sefidgar, M., Maleki, S., & Minouei, M. (2015). Studying factors that affect intellectual capital performance in listed banks in Tehran stock exchange. *Indian Journal of Fundamental and Applied Life Sciences, 5*(S1), 769-776.

Shahveisi, F., Khairollahi, F., & Alipour, M. (2016). Does ownership structure matter for corporate intellectual capital performance? An empirical test in the Iranian context. *Eurasian Business Review, 7*(1), 67-91. https://doi.org/10.1007/s40821-016-0050-8

Shrader, C. B., Blackburn, V. B., & Iles, P. (1997). Women in management and firm financial performance: An exploratory study. *Journal of Managerial Issues*, *9*(3), 355-372.

Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2,500 Danish firms. *International Journal of Productivity and Performance Management, 55*(7), 569-593. https://doi.org/10.1108/17410400610702160

Ståhle, P., Ståhle, S., & Aho, S. (2011). Value added intellectual coefficient (VAIC): A critical analysis. *Journal of Intellectual Capital, 12*(4), 531-551. https://doi.org/10.1108/14691931111181715

Stewart, G. L. (2006). A meta-analytic review of relationships between team design features and team performance. *Journal of Management, 32*(1), 29-55. https://doi.org/10.1177/0149206305277792

Sveiby, K. E. (1997). The Intangible Assets Monitor. *Journal of Human Resource Costing & Accounting, 2*(1), 73-97. https://doi.org/10.1108/eb029036

Sveiby, K. E. (2010). Methods for measuring intangible assets. Retrieved from http://www.sveiby.com /portals/0/articles/IntangibleMethods.htm

Tabachnick, B. G., & Fidell, L. S. (1996). *Using Multivariate Statistics*, New York, NY: HarperCollins College Publishers.

Tajfel, H., & Turner, J. C. (2004). The social identity theory of intergroup behaviour. In J. T. Jost & J. Sidanius (Eds.), *Key readings in social psychology. Political psychology: Key readings* (pp. 276-293). New York, NY: Psychology Press.

Tayles, M., Pike, R. H., & Sofian, S. (2007). Intellectual capital, management accounting practices and corporate performance. *Accounting, Auditing & Accountability Journal, 20*(4), 522-548. https://doi.org/10.1108 /09513570710762575

Thomas, E. J., & Fink, C. F. (1963). Effects of group size. *Psychological Bulletin, 60*(4), 371. https://doi.org/10.1037/h0047169

Watson, J., & Robinson, S. (2003). Adjusting for risk in comparing the performances of male-and female-controlled SMEs. *Journal of Business Venturing, 18*(6), 773-788. https://doi.org/10.1016/S0883-9026(02)00128-3

Wegge, J., Roth, C., Neubach, B., Schmidt, K.-H., & Kanfer, R. (2008). Age and gender diversity as determinants of performance and health in a public organization: The role of task complexity and group size. *Journal of Applied Psychology, 93*(6), 1301. https://doi.org/10.1037/a0012680

Wei Kiong Ting, I., & Hooi Lean, H. (2009). Intellectual capital performance of financial institutions in Malaysia. *Journal of Intellectual Capital, 10*(4), 588-599. https://doi.org/10.1108/14691930910996661

Williams, K. Y., & O'Reilly III, C. A. (1998). Demography and diversity in organizations: A review of 40 years of research. *Research in Organizational Behavior, 20*, 77-140.

Zéghal, D., & Maaloul, A. (2010). Analysing value added as an indicator of intellectual capital and its consequences on company performance. *Journal of Intellectual Capital, 11*(1), 39-60. https://doi.org/10.1108/14691931011013325