Entrepreneurial, Renewal and Trust Capital of Italian Firms: Insights from an Empirical Study

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The aim of the work is to analyse the relationship between entrepreneurial capital (EC), renewal capital (RC) and trust capital (TC), considered as stand-alone components of intellectual capital (IC), and firms' performances. To this end, an empirical research based on a sample of Italian companies was carried out. The survey's results show that EC, RC and TC have a positive influence on Italian medium-sized and large companies' performance. Its findings contribute to understand how EC, RC and TC affect the creation of value in organisations and enable these organisations to improve their performance through a better management of knowledge-based resources.

Keywords: entrepreneurial capital, renewal capital, trust capital, intellectual capital, entrepreneurship, innovation, intangible assets, medium-sized and large firms

Introduction

In most studies, IC (Intellectual Capital) has been seen as consisting of three elements: human capital, structural capital and relational capital (Bontis, 2001; Guthrie, 2001). However, emerging studies (Kianto, 2007, 2008; Kianto, Hurmelinna-Laukkanen, & Ritala, 2013; Demartini & Paoloni, 2013; Inkinen, Kianto, Vanhala, & Ritala, 2014) suggest that three other elements could also be included in IC visualizing and mapping: entrepreneurial capital (EC), renewal capital (RC) and trust capital (TC). Firstly, RC reflects companies' propensity to engage in new ideas and in the development of innovative and creative initiatives. Secondly, TC synthesizes the trust embedded in companies' internal and external relationships with stakeholders. Finally, EC concerns the competence and commitment related to entrepreneurial activities in the organisation and is related to autonomy, risk taking, proac-

tiveness, and competitive aggressiveness of the company's personnel. We assume that these 'new' components recently identified in the literature represent important elements of the IC construct and act as key drivers to leverage firms' value and performances. Previous literature has not adequately nor explicitly explored the relationship among the distinctive IC components, specifically among the aforementioned new components and businesses' value creation and performance. Consequently, we decided to investigate EC, RC and TC in order to empirically verify the hypothesis of their influence on firms' performance.

Departing from these assumptions, the purpose of this paper is to show preliminary results from the Italian research unit of an international project on IC and value creation led by the Lappeenranta University of Technology – LUT (Finland). The main research question of the overall project is to understand how IC assets and their management practices interact to create value. Within the overall project, the Italian research unit focuses on EC, RC and TC in order to understand if and how do they affect firms' performance and their value creation (Cesaroni, Del Baldo, Demartini, & Paoloni, 2014). Therefore, our main research question is: Does a relationship among EC, RC and TC levels and a firm performance exist? Even if we are mainly interested in these 'new' IC elements, to answer this question we present an empirical research based on a comprehensive definition of IC that includes 'traditional' and 'new' components. We used three multi-item scales as key constructs (EC, RC and TC) adapted from Kianto et al. (2010), Garcia-Morales, Llorens-Montes, and Verdu-Jover (2006) and Hughes and Morgan (2007).

The survey results show that EC, RC and TC have a positive influence on Italian medium-sized and large companies' performance. The study underlines that, in the era of knowledge economy, EC and RC represent key resources of organisations, enabling high innovation performance and organisational growth, thus increasing their effectiveness in responding to future challenges and radical changes in the market.

The paper is structured as follows: in the second section, the main studies and theories on IC and its components that fit our research design are presented. In the third section, the research method is described. Then data analyses are presented and, finally, the main research findings are outlined, followed by conclusions.

Our research agenda will provide academics and managers with unique insights into the state of the art of corporate EC, RC and TC in Italian companies. It provides tools and guidance for the improvement of economic performance through a better management of knowledge-based resources. Furthermore, this research will set the agenda for improving EC and RC practices of Italian companies and will allow comparisons with firms from

other countries currently involved in the same project, identifying different pathways to success.

Theoretical Framework

Intellectual capital has been defined as the companies' total stock of capital or knowledge-based equity (Dzinkowski, 2000). IC is either the final product of a knowledge transformation process or the stock of organisational knowledge itself. IC incorporates three main components, i.e., IC stocks that together form value: human capital, organisational (structural) capital, and customer (or relational) capital (Bontis, 2001; Guthrie, 2001; Nahapiet & Ghoshal, 1998).

Human capital refers to know-how, education, work-related competencies, and psychometric assessments (McGregor, Tweed, & Pech, 2004; Teece, 2000). Structural capital includes assets such as corporate culture, management processes, databases, organisational structure, patents, trademarks, and financial relations. Engstrom, Westnes, and Westnes, (2003, p. 288) suggest that structural capital 'includes all non-human storehouses of knowledge in organisations.' Finally, relational or customer capital (internal and external relational capital) refers to organisations' customers, brands, customer loyalty, and distribution channels. Customer capital also refers to consumers as repositories of information and knowledge that is valuable to organisations (Bontis, 1998).

While the majority of studies consider the aforementioned elements of IC, more recently other scholars (Kianto, 2007, 2008; Demartini & Paoloni, 2013; Inkinen et al., 2014) include three further elements into IC: 'entrepreneurial capital' (EC), concerning competence and commitment related to entrepreneurial activities in the organisation (Erikson, 2002); 'renewal capital' (RC), in terms of innovative solutions, products and services available for the firms (Kianto et al., 2010); and 'trust capital' (TC) conceived in terms of trust embedded in its internal and external relationship (Mayer, Davis, & Schoorman, 1995). Consequently, EC, RC and TC should be considered as specific and important 'new' dimensions of IC, in addition to the traditional ones (Kianto et al., 2013), that have not been generally addressed. This broader definition of IC helps us to gain a more holistic understanding of this organisations' asset (Kianto et al., 2013, p. 1476; Inkinen et al., 2014, p. 2919). Moreover 'this broad 7-partite definition of IC – taking into consideration the split between internal and external relational capital – is based upon a wide understanding of knowledge, as not only the explicit outcomes of knowledge-intensive work such as patents, formulae and actualized products, but also as the tacit potential of organisational actors to, e.g., flexibly react to unexpected situations and rapidly changing customer demands' (Inkinen et al., 2014, p. 2920). Following Kianto et al.,

2013 and Inkinen et al., 2014, we therefore hypothesise that, in addition to the three traditionally considered IC stocks, also EC, RC and TC are likely to function as important assets that increase the performance of a firm.

EC refers to competence and commitment related to entrepreneurial activities in an organisation and is connected with the entrepreneurial orientation of organisational actors (managers and employees). Entrepreneurial orientation reflects the extent to which a firm engages in product innovation and risky ventures (Miller, 1983). In other words, it reflects the extent to which a firm is innovative or competitively aggressive (Lumpkin & Dess, 1996). Entrepreneurial orientation has been described by a set of three to five behaviours, including autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness. Entrepreneurial orientation can enhance the relationship between knowledge-based resources and firm performance (Zahra, 1991; Zahra & Covin, 1995; Wiklund & Shepherd, 2003; Wu, Chang, & Chen, 2008; Rauch, Wiklund, Lumpkin, & Frese, 2009). Entrepreneurship scholars have attempted to explain a firm's performance by investigating its entrepreneurial orientation without having previously deeply analysed EC as a specific IC component (as well as RC and TC).

EC refers to entrepreneurial behaviour exerted in an organisation (Erikson, 2002). It is defined as a stock of competences and personnel attributes related to proactive, risk oriented, and aggressive decision-making and behaviour (Lumpkin & Dess, 1996).

Proactiveness represents a forward-looking perspective where firms actively seek to anticipate opportunities to develop and introduce new or improved products, instigate changes to current strategies and tactics, and detect future trends in the market (Lumpkin & Dess, 1996; Slater & Narver, 1995). Proactive firms, through proprietary learning and experience effects gained over time, tend to be more attuned to changes and trends in the marketplace (Hamel & Prahalad, 1991).

Risk-taking reflects an acceptance of uncertainty and risk inherent in any original activity. It is typically characterised by a resource commitment to uncertain outcomes and activities (Lumpkin & Dess, 1996; Covin & Slevin, 1991). Such an approach seeks to take advantage of evolving situations by capitalising on the fact that markets rarely stabilise for any length of time.

Aggressive decision-making is the intensity with which a firm chooses to compete and to make efforts to surpass competitors reflecting a bias towards outdoing rivals. It also includes the authority and independence given to an individual or team within the firm to develop business concepts and vision, and to carry them through to completion (Davidson, 1987). Aggressiveness can improve performance because the emphasis on out-doing and out-manoeuvring competitors strengthens the firm's competitiveness at the expense of rivals (Lumpkin & Dess, 1996).

Independence concerns employees' ability and will to be self-directed in

the pursuit of opportunities and to exercise their creativity without being limited by organisational constraints (Hurley & Hult, 1998). Autonomy is an essential resource for the creation of new businesses (Lumpkin & Dess, 1996) and is, therefore, an important driver of firms' flexibility, as it allows them to be able to respond promptly to environmental change and market signals by quickly reconfiguring their actions and activities (Hughes & Morgan, 2007).

Concerning EC, the courage, initiative-taking and proactiveness in an organisation are likely to increase innovation performance by allowing more self-directed development activities in the firm (Hughes & Morgan, 2007; Gategory, Dess, Lumpkin, & Covin, 2010). Risk-taking, recognizing new business opportunities and the ability to make bold decisions will also help the organisation to produce and to prototype innovative ideas. An organisation with high EC will be more competitive by having employees who are willing and empowered to make fast decisions and who show initiative in solving problems (Inkinen et al., 2014, p. 2922).

Even if innovativeness is commonly considered as one of the main entrepreneurial postures, in the following pages we introduce the concept of RC as a specific construct that refers to the ability of an organisation to continuously develop itself through learning and innovation.

RC refers to the ability of an organisation to continuously develop itself through learning and innovation (Kianto et al., 2010). It is intended in terms of innovative solutions, products and services available for the firm (Kianto, 2008). An organisation with high RC, sometimes also called innovation capital (Chen, Zhu, & Xie, 2004), is able to build on previous knowledge and to generate new knowledge (Maditinos, Šević, & Tsairidis, 2010), as well as to develop new products, services and innovative ideas on a continuous basis (Tseng & Goo, 2005; Inkinen et al., 2014, p. 2922). Innovativeness means that firms not only generate new ideas, but also actively implement new ideas, products or processes (Hurley & Hult, 1998; Subramaniam & Youndt, 2005). Calantone, Çavuşgil, and Zhao (2002) establish that firms' innovativeness has a positive impact on performance and contributes to develop competitive advantages by facilitating creative thinking within a firm's learning activities. Innovativeness also improves the application of market intelligence acquired through market orientation activities, which can benefit performance (Han, Kim, & Srivastava, 1998; Hurley & Hult, 1998). RC as an intangible resource can be characterised as the firms' actualised learning capability. The ability of a firm to learn and acquire new knowledge is strongly related with several aspects of firm performance (Nonaka & Takeuchi, 1995; Andreeva & Kianto, 2011, 2012) and competitiveness (Edvinsson, 2002; Wiklund & Shepherd, 2003; Wu, Lin & Hsu, 2007; Wu et al., 2008; Wang & Chen, 2013). The ability of a firm to update and modify its knowledge and capabilities is important for sustaining competitiveness,

especially in conditions of turbulent and hyper-competitive market environments (Teece, Pisano, & Schuen, 1997; Eisenhardt & Martin, 2000). Renewal capital has become the most important facet of IC for companies' survival in turbulent environments and their capacity to face turbulently and unexpectedly changing environments (Edvinsson, 2002).

Finally, TC is represented by trust embedded in the firm's internal and external relationships. Among literature, different contributions underline that TC has powerful explanatory power over organisational performance. Trust contributes to organisational cooperation and collaboration (Mayer et al., 1995). A high level of trust among colleagues generates an environment that supports calculated risk-taking and entrepreneurial orientation (Costigan, Ilter, & Berman, 1998). Furthermore, Zeffane and Connell (2003) stated that organisational efficiency is possible only when the actors work together in a climate of positive trust. Trust increases the efficiency and effectiveness of communication and knowledge-creation processes (Blomqvist, 2002). Trust adds to the efficiency, effectiveness and innovation performance of organisations, which rely heavily on their interpersonal and intra-organisational collaboration (Ellonen, Blomqvist, & Puumalainen, 2008). Moreover, trust improves resource exchange and production innovation (Chen & Hung 2010; Inkinen, 2014, p. 2923).

Kianto et al., 2013 assume that the trust capital's effects on performance will be stronger when knowledge management-related human resources practices are used, because, when personnel recruitment and selection are utilised properly, also TC will be leveraged more effectively due to the right kind of personnel (Kianto et al., 2013, p. 1478). In addition, they assumed that these practices will affect organisational performance through improved TC or that the effect of strategic knowledge management practices on performance is mediated by human capital (Kianto et al., 2013, p. 1479).

In the light of this brief literature review, we hypothesise that EC, RC and TC represent critical intangible assets that can contribute to the firm's process of value creation, especially in periods of turbulence and economic crisis. To verify this hypothesis, and after having conceptualized EC, RC and TC in the following sections, we first operationalise EC, RC and TC constructs and we then examine empirically their influence on the performance of Italian companies.

Research Method

Sample

In order to verify the existence of a relationship between EC, RC, TC and a firm performance, an empirical research has been carried out, by means of a structured questionnaire, using key-informant technique.

The target population comprised a cross-industry sample of Italian companies that included all firms with at least 100 employees. To select the sample, the AIDA database was used. This database covers 1 million Italian companies and it contains comprehensive information about them, including financial statements, business description (registered office, legal form, size, industry, ownership and management) and financial ratios.

A total of 2.000 companies were selected from this database, in order to respect industry, size and geographical stratification existing in the Italian population. This means that companies were randomly chosen within a fixed percentage based on a geographical area (North, Centre and South Italy), industry (primary sector, secondary sector and services) and size (100–499 employees; 500–999 employees; 1000 and more employees).

Out of the 2.000 companies, 105 completed our questionnaires, representing a response rate of 5,25 per cent. After deleting unobtainable or unavailable firms and questionnaires with missing data, the final dataset included 100 feasible questionnaires.

Survey Data Collection

Questionnaires were submitted to a key informant of each firm included in the sample. First of all, the CEO was involved. When the CEO could not be realistically reached, other high-level directors/managers were contacted (in order of preference): Chief Operating Officer, General director, HR / KM Director; other director or manager.

The data have been collected from October 2013 until March 2014. A hybrid approach to gather data was followed. First of all, the research team carried out an Internet-survey using an Internet-administered survey questionnaire (Google questionnaire). In this phase, a link to the questionnaire was sent to each respondent. This also allowed for follow-ups and reminders. To increase the number of completed questionnaires, key-informants of the remaining firms were contacted via telephone and each question was asked and filled in by the research team. Finally, face-to-face interviews were carried out.

In order to make respondents comfortable and willing to fill in the questionnaire, information about the survey's purpose and the use of data was provided, as well as instructions to answer the questions (how to answer, deadline). Furthermore, confidentiality in analysing data was emphasised and a summary of the results was promised to the respondents.

Measures

Questionnaire submitted to sample firms was divided into different sections aiming at grasping data on: basic company information; IC stocks; companies' performance.

Intellectual capital stocks. In order to analyse the relationship between the firms' performance and EC, RC and TC, we had to operationalise these concepts. In social sciences, operationalising variables involves defining a concept in order to measure it. In this research, EC, RC and TC were measured by scales developed mostly by the international research group (Inkinen et al., 2014) (see Table 1).

It must be noted that, even if innovativeness is commonly considered as one of the main entrepreneurial postures, in this analysis we considered innovativeness as a stand-alone construct. In fact, RC refers to the ability of organisations to continuously develop itself through learning and innovation (Kianto, 2008; Kianto et al., 2010). The scale for RC includes four items related to learning and inventiveness of the organisation (Inkinen et al., 2014). EC refers to human resources competences and abilities concerning proactivity, risk-orientation, and aggressiveness in decision-making and in behaviours. The scale for EC includes six items related to risk-taking, proactiveness and aggressive decision-making among firms' personnel (Hughes & Morgan, 2007; Inkinen et al., 2014). TC refers to trust embedded in intra- and inter-organisational relationships. Statements in the questionnaire are oriented to understand if the company's image, reputation and competences inspire confidence in its external stakeholders, if the company respects its commitment towards stakeholders and if the company has a climate of trust. The scale for TC includes five items related to the trust embedded in firms' internal and external relationships (Mayer et al., 1995; Inkinen et al., 2014).

Even if this paper focuses the relationship between EC, RC and TC and firm performance, in our analysis, we used a comprehensive model that enshrines all the components of IC, including the 'traditional' ones: human capital, structural capital and relational capital. Following Inkinen et al. (2014), relational capital is split into 'internal' and 'external' categories, because they refer to relationships with different stakeholders. In this way, we can separate relationships with external parties and intra-organisational relationships.

Scales and statements included in the questionnaire and used to measure these IC components are shown in Table 1. All of the measures were based on a five-point Likert scale. So we assigned a value of '1' if respondents completely disagree with the statement, up to a '5' if they completely agree with the statement.

Questionnaire statements were originally written in English. Each international partner took care in translating it into his own language, with the help of professional language experts. Additionally, the Italian research team finally checked the questions, to ensure that respondents could answer them correctly. The core message of each item should remain the same to en-

Table 1 Questionnaire statements: IC stocks

To what extent do the following statements on the entrepreneurial orientation apply to your company?	
ENTCAP1	Risk-taking is regarded as a positive personal quality in our company.
ENTCAP2	Our employees take deliberate risks related to new ideas.
ENTCAP3	Our employees are excellent at identifying new business opportunities.
ENTCAP4	Our employees show initiative.
ENTCAP5	The operations of our company are defined by independence and freedom in performing duties.
ENTCAP6	Our employees have the courage to make bold and difficult decisions.
To what extent do the following statements on renewal apply to your company?	
RENCAP1	Our company has acquired a great deal of new and important knowledge
RENCAP2	Our employees have acquired a great deal of important skills and abilities
RENCAP3	Our company can be described as a learning organisation.
RENCAP4	The operations of our company can be described as creative and inventive.
To what extent do the following statements on trust apply to your company?	
TRUSCAP1	The way our company operates is characterized by an atmosphere of trust.
TRUSCAP2	We keep our promises and agreements.
TRUSCAP3	Our company seeks to take the interests of its stakeholders into account in its operations.
TRUSCAP4	The expertise of our company inspires trust in stakeholders.
TRUSCAP5	The image and reputation of our company inspire trust in stakeholders.

sure standardisation and applicability of the measures across countries. The survey was conducted in exactly the same format in all countries. This means using all of the items in the survey, in the same order and with the same scales.

Companies performance. The following corporate performance measures were obtained from AIDA database: Return on Assets (ROA); Return on Investments (ROE); EBITDA (Earnings before Interests, Taxes, Depreciation and Amortization).

Data collected were analysed through principal component analysis and multiple linear regression.

Data Analysis

To verify that EC, RC and TC can positively and significantly affect a firm performance, a model of multiple linear regression was developed. Findings from this analysis are useful to understand if IC stocks are able to affect organisations' value creation. Moreover, this information can help in identifying effective management practices enhancing value creation processes in different business environments.

Linear regression was preceded by a principal component analysis (PCA),

Table 1   *Continued from the previous page*

To what extent do the following statements on employee competence apply to your company?

HUMCAP1   Our employees are highly skilled at their jobs.

HUMCAP2   Our employees are highly motivated in their work.

HUMCAP3   Our employees have a high level of expertise.

To what extent do the following statements on internal structures apply to your company?

STRUCAP1   Our company has efficient and relevant information systems to support business operations.

STRUCAP2   Our company has tools and facilities to support cooperation between employees.

STRUCAP3   Our company has a great deal of useful knowledge in documents and databases.

STRUCAP4   Existing documents and solutions are easily accessible.

To what extent do the following statements on internal cooperation apply to your company?

INTREL1   Different units and functions within our company – such as R&D, marketing and production – understand each other well.

INTREL2   Our employees frequently collaborate to solve problems.

INTREL3   Internal cooperation in our company runs smoothly.

To what extent do the following statements on external cooperation apply to your company?

EXTREL1   Our company and its external stakeholders – such as customers, suppliers and partners – understand each other well.

EXTREL2   Our company and its external stakeholders frequently collaborate to solve problems.

EXTREL3   Cooperation between our company and its external stakeholders runs smoothly.

Notes   1 – completely disagree, 5 – completely agree.

carried out in order to reduce the variables corresponding to the different components of IC and to turn them into a smaller set of artificial variables.

PCA is a multivariate statistical method. It helps reducing a variables set in a less numerous set. In particular, given an *X* matrix with n statistical units and k quantitative variables, PCA synthetises data in order to reduce *X* matrix' columns, by defining a number $q < k$ of artificial variables. The latter are a linear combination of observed variables and have the following characteristics: (i) they are mutually correlated; (ii) each has a maximum variance in order to disperse the least amount of information. From a geometrical perspective, an *X* matrix can be represented by n points in space R^k. This means projecting the n points in a subspace R^q so that the cloud of n points in R^k is deformed as little as possible. The starting matrix used for this analysis was an $M \times N$ matrix, with $M = 100$ and $N = 28$. It was derived from assessments provided by 100 companies' replies to questionnaire statements about 28 items correspondents to IC stocks. So PCA was aimed to reduce *X* matrix columns, defining a number $q < 28$ of artificial vari-

Table 2 Principal Component Analysis

Principal components for each IC component	(1)
Human Capital	60.40%
Structural Capital	72.60%
Internal Relational Capital	70.50%
External Relational Capital	69.90%
Renewal Capital	70.80%
Entrepreneurial Capital	79.70%
Trust Capital	75.90%

Notes (1) Percentage of variance explained by the first component in each IC component.

ables able to produce a maximum of information. For each IC stocks an ACP was carried out in the variance-covariance matrix. To reduce the dimensionality of percentage of explained variance was used. Each first component – for each IC element – explains at least 60% of the variance; accordingly, the first component for each category of IC was considered (Table 2).

In the second phase of the analysis, we developed a multiple linear regression model, in which:

- *independent variables:* IC components, reduced using PCA;
- *dependent variables:* EBITDA, ROI, ROA, referred to 2011, 2012 and 2013;
- *control variables:* personnel involved in R&D, sales; percentage of employees with high degree education;
- *dummy variables:* employees, location and industry.

Findings

On the basis of the listed variables, three different multiple regression models were developed, one for each performance indicator as a dependent variable (EBITDA, ROI, ROA). Each regression model is presented as follows:

First Model: EBITDA

This model is represented by the following equation:

$$
\begin{aligned}
\text{EBITDA}_i = {} & \beta_0 + \beta_1 \text{humancapital}_i + \beta_2 \text{structuralcapital}_i \\
& + \beta_3 \text{intrelationalcapital} + \beta_4 \text{extrelationalcapital} \\
& + \beta_5 \text{entrepreneurialcapital} + \beta_6 \text{trustcapital} \\
& + \beta_7 \text{renewalcapital} + \beta_8 \text{R\&Dshare} + \beta_9 \text{sales} \\
& + \beta_9 \text{highedu} + \beta_{10} \text{dummysector} \\
& + \beta_{11} \text{dummylocation} + \beta_{12} \text{dummyemployees} + \beta_i \qquad (1)
\end{aligned}
$$

Table 3   Regression Analysis: EBITDA

Predictor	Coef.	SE Coef.	T	P
Constant	16358.000	7937.000	2.060	0.042
R&DShare	–0.068	0.069	–0.990	0.335
Sales	–0.310	0.296	–1.050	0.297
HighEdu	–0.000	0.0382	–0.020	0.100
HumCap	–0.781	1261.000	–0.620	0.538
IntRelCap	–1742.000	1119.000	–1.560	0.677
RenCap	0.166	1027.000	0.160	0.872
ExtRelCap	0.432	1036.000	0.420	0.123
StruCap	–1042.000	1214.000	–0.860	0.393
TrusCap	1221.000	1237.000	0.990	0.327
EntrCap	12943.000	0.739	1.750	0.044
DummySec	–19692.000	3876.000	–5.090	0.034
DummyLoc	–33305.000	50027.000	–0.670	0.507
DummyEmpl	60149.000	50753.000	1.190	0.239

Notes $S = 10.2082$, $R^2 = 31.6\%$, R^2 (adj.) = 17.6%.

Table 4   Regression Analysis: EBITDA (Selected Variables)

Predictor	Coef.	SE Coef.	T	P
Constant	13.927	5.777	2.410	0.018
R&DShare	–1.585	1.224	–1.300	0.199
Sales	–0.370	0.277	–1.340	0.185
ExtRelCap	17.896	0.947	1.890	0.052
TrusCap	1.441	1.242	1.160	0.249
StruCap	–1.534	1.224	–1.250	0.114
EntrCap	11.148	0.574	1.940	0.042
DummySect	–19.554	3.715	–5.270	0.024
DummyEmpl	5.475	2.242	2.440	0.017

Notes $S = 9.93720$, $R^2 = 29.7\%$, R^2 (adj.) = 26.6%.

This model (Table 3) has an $R^2 = 31.6\%$ and an Adjusted $R^2 = 17.6\%$. The low value of the Adjusted R^2 is due to the large number of explanatory variables used in the model. The analysis of the p-value highlights a statistically significant relationship between EBITDA and EC.

In order to obtain a best model in terms of adaptability, only the explanatory variables that, in the previous model, had the lowest levels in the p-value have been subsequently considered. In this way a new model was obtained (Table 4).

This model reveals that both EC and external relational capital have a statistically significant positive relationship with EBITDA.

The positive relation between EBITDA and EC shows that, in this turbulent

Table 5 Regression Analysis: ROI

Predictor	Coef.	SE Coef.	T	P
Constant	2.150	6.132	0.350	0.727
HumCap	2.948	1.060	2.780	0.007
RenCap	19.360	0.836	2.320	0.023
ExtRelCap	−0.066	0.842	−0.080	0.938
IntRelCap	−0.879	0.928	−0.950	0.346
StruCap	−10.960	0.989	−1.110	0.271
TruCap	12.328	0.987	1.250	0.215
EntrCap	−0.006	0.621	−0.010	0.992
R&DShare	0.104	0.063	1.630	0.106
Sales	−0.292	0.243	−1.200	0.234
HighEdu	0.010	0.025	0.380	0.702
DummyLoc	0.453	1.422	0.330	0.752
DummyEmpl	−3.082	1.458	−2.110	0.039
DummySect	−6.026	3.096	−195.000	0.056

Notes $S = 8.33251$, $R^2 = 26.6\%$, R^2 (adj.) $= 16.6\%$.

and unpredictable context, businesses have to be prone to risk, proactive, innovative and aggressive in decision-making and behaviour to be competitive and survive. The same model also states that EBITDA is positively conditioned by external relational capital, that is, by the business' ability to promote and manage good relationships with its stakeholders. In particular, the presence of good relationships with customers would increase efficacy and efficiency in sales management. Moreover, the ability to collaborate with suppliers would have a positive impact on supplies management, with positive consequences for the business' profitability.

Second Model: ROA

This model is represented by the following equation:

$$ROA_i = \lambda_0 + \lambda_1 humancapital_i + \lambda_2 structuralcapital_i$$
$$+ \lambda_3 intrelationalcapital + \lambda_4 extrelationalcapital$$
$$+ \lambda_5 entrepreneurialcapital + \lambda_6 trustcapital$$
$$+ \lambda_7 renewalcapital + \lambda_8 R\&Dshare + \lambda_9 sales$$
$$+ \lambda_9 highedu + \lambda_{10} dummysector$$
$$+ \lambda_{11} dummylocation + \lambda_{12} dummyemployees + \lambda_i \qquad (2)$$

Also in this case all the explanatory variables selected were initially included in the regression model (Table 5).

The model shows, in this case, an $R^2 = 26.6\%$ and an adjusted $R^2 = 16.6\%$. By building a new model including only the explanatory variables with

Table 6 Regression Analysis: ROA (Selected Variables)

Predictor	Coef.	SE Coef.	T	P
Constant	0.658	5.807	0.110	0.610
HumCap	2.903	1.031	2.820	0.006
RenCap	−2.084	0.748	−2.790	0.007
IntRelCap	−1.097	0.759	−1.440	0.152
StruCap	−1.338	0.946	−1.410	0.161
TrusCap	1.098	0.918	1.200	0.135
R&Dshare	0.109	0.059	1.840	0.070
Sales	−0.284	0.238	−1.190	0.237
DummyEmpl	−3.144	1.497	−2.100	0.039
DummySect	−6.686	2.979	−2.240	0.027

Notes $S = 8.23428$, $R^2 = 28.6\%$, R^2 (adj.) $= 26.1\%$.

the lower p-value, we obtained a model with $R^2 = 28.6\%$ and an adjusted $R^2 = 26.1\%$ (Table 6).

This model allows identifying a statistically significant positive relationship between ROA and human capital and between the ROA and RC.

The first relation shows that firms with qualified, experienced and motivated employees are more competitive and obtain better performances. In fact, they would be more effective in managing business processes, with positive consequences in terms of profitability.

The same model also shows a statistically significant positive relationship between ROA and RC. This relationship confirms the hypothesis that RC is 'the new bottom line' (Kianto et al., 2010) of IC. Today organisations face a very turbulent context and have to continuously develop and renovate their competences to keep up with the market and not to be overtaken by competitors. Organisations have to be innovative and able to continuously learn, in order to propose new products and services and to innovate their processes.

Third Model: ROI

This model is represented by the following equation:

$$ROA_i = \alpha_0 + \alpha_1 humancapital_i + \alpha_2 structuralcapital_i$$
$$+ \alpha_3 intrelationalcapital + \alpha_4 extrelationalcapital$$
$$+ \alpha_5 entrepreneurialcapital + \alpha_6 trustcapital$$
$$+ \alpha_7 renewalcapital + \alpha_8 R\&Dshare + \alpha_9 sales$$
$$+ \alpha_9 highedu + \alpha_{10} dummysector$$
$$+ \alpha_{11} dummylocation + \alpha_{12} dummyemployees + \alpha_i \qquad (3)$$

This model (Table 7) shows a $R^2 = 33.3\%$ and an adjusted $R^2 = 20.8\%$.

Table 7 Regression Analysis: ROI

Predictor	Coef.	SE Coef.	T	P
Constant	9.744	6.109	1.600	0.115
HumCap	0.137	1.063	0.130	0.898
IntRelCap	0.447	0.897	0.500	0.620
RenCap	2.241	0.835	2.680	0.009
ExtRelCap	−0.904	0.761	−1.190	0.239
StruCap	0.428	1.181	0.360	0.718
TruCap	0.735	1.027	0.720	0.477
EntrCap	1.160	0.541	2.150	0.035
R&Dshare	−0.046	0.054	−0.850	0.398
Sales	−0.457	0.221	−2.070	0.042
Highedu	0.015	0.030	0.500	0.621
Dummyloc	1.803	1.616	1.120	0.268
Dummyempl	−3.511	1.718	−2.040	0.045
Dummysect	−11.668	2.888	−4.040	0.028

Notes $S = 6.90828$, $R^2 = 33.3\%$, R^2 (adj.) = 20.8%.

Table 8 Regression Analysis: ROI (Selected Variables)

Predictor	Coef.	SE Coef.	T	P
Constant	11.950	4.772	2.500	0.015
R&DShare	−0.043	0.050	−0.880	0.285
Sales	−0.419	0.209	−2.010	0.048
RenCap	−2.017	0.712	−2.850	0.006
ExtRelCap	−0.800	0.714	−1.130	0.266
TrusCap	1.082	0.644	1.680	0.097
EntrCap	1.190	0.517	2.300	0.024
DummyLoc	1.751	1.564	1.120	0.166
DummyEmpl	−3.672	1.531	−2.400	0.019
DummySect	−1.117	2.743	−4.080	0.033

Notes $S = 6.74916$, $R^2 = 32.7\%$, R^2 (adj.) = 26.4%.

Also in this case a simplified model was developed, by eliminating variables with a too high *p*-value. The new model (Table 8) has an $R^2 = 32.7\%$ and an adjusted $R^2 = 26.4\%$.

Analysing the *p*-value, statistically significant positive relationships between ROI and RC and between ROI and EC can be identified.

These results confirm that EC can affect business performance, also when they are expressed in terms of return on investments. The impact of RC on business profitability is also confirmed.

In addition, a significant positive relationship can be observed between ROI and TC. This means that TC, embedded in internal and external rela-

tionships, can act as a key factor for business success in a context where firms are involved in wide networks with a variety of stakeholders. When a business is considered reliable by their customers, its reputation and reliability grow, customers are more prone to buy its products or services and to suggest them to other people, access to financing is simpler, relationships with private and public institutions are easier, and business face less difficulties in dealing with downturn and recession.

Discussion

This analysis confirms the hypothesis that EC, RC and, to a minor extent, TC can affect the performance of a firm and its value creation.

The significant positive relationship between EC and ROI and EBITDA stresses the importance of EC, which constitutes a key intangible resource to enhance corporate value (Inkinen et al., 2014).

In a changing environment it is crucial to develop EC, both at the structural level (corporate culture) and in terms of skills and entrepreneurial behaviour. Risk appetite and speed in strategic choices affect profitability because they encourage companies to embrace uncertainty and seize new business opportunities. Aggressiveness in decision-making, considered in terms of aggressive price competition, entry into new markets and run-of rivals, improves business performance, as it helps undermine competitors' ability to anticipate or react to the company's strategies (Lumpkin & Dess, 1996). Moreover, business performance is affected by independence and autonomy, understood as the employees' ability and willingness to support the company in responding quickly to market changes and in perceiving new market needs (Hughes & Morgan, 2007).

The analysis also shows the existence of a statistically significant positive relationship between RC and firm performance in terms of ROA and ROI. These results confirm the hypothesis that RC is 'the new bottom line' of IC (Edvinsson, 2002; Andreeva & Kianto, 2011, 2012). In fact, increasing competition requires companies to continuously develop and renew their knowledge and capability for sustaining competitiveness, especially in conditions of turbulent market environment (Teece et al., 1997; Eisenhardt & Martin, 2000; Inkinen et al., 2014). Innovativeness is positively related to performance and value creation, and positively impacts on companies' profitability, as it allows companies to quickly and effectively respond to new customer needs and, therefore, increase their competitive advantages (Calantone et al., 2002; Rauch et al., 2009).

Finally, data from our analysis confirm that TC is a business' important asset, which is rare and not easily imitable by its competitors. TC is important as it helps business in establishing strong and lasting cooperative relationships with stakeholders, it increases customers' loyalty and, as a

result, it is a relevant source of competitive advantage that enhances business profitability. Moreover, firms encouraging the creation of a trust climate inside their organisations obtain greater involvement and commitment from their employees, and this helps in creating a better relationship with business' customers and in offering better products/services at higher prices, resulting in a higher profitability.

Conclusion

This paper addressed an important issue, which has been relatively overlooked in the literature on IC so far. It focuses on intangible assets and confirms their ability to contribute in creating value and increasing performance. Findings show that in the era of knowledge economy EC, RC and TC represent key resources for an organisations, enabling high innovation performance and organisational growth, and increasing their effectiveness in responding to future challenges and radical market changes.

This study contributes to the theoretical discussion in this field by demonstrating that IC stocks, and especially EC, RC and TC, can contribute to enhance firm performance. So it shows new possibilities for gaining a better overall perspective on the intangible aspects of organisations. Furthermore, by adding three additional intellectual capital stocks – EC, RC and TC – to the 'traditional' IC composition – human, structural and relational capital – it proposes a much more fine-grained perspective of IC.

We are not aware of any previous studies explicitly referring neither to these 'new' IC components nor to their influence on firm performance. This paper therefore contributes to the literature on knowledge-based issues in organisations at large, and potentially offers a theoretical grounding for many empirical and theoretical future studies.

From a practical perspective, the paper underlined that, in order to improve their overall performance, firms should invest in intangible resources, and in particular EC, RC and TC.

The key limitation of the paper is its focus on Italian firms. Results from this study in fact represent a first research step. The key future research path arising from these findings is the need to involve a larger number of companies located in other countries. Moreover, an international comparative analysis will be carried out, in order to understand if environmental variables affect the relationship between IC and corporate performance.

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