ENTREPRENEURIAL, RENEWAL CAPITALS AND FINANCIAL PERFORMANCE EVIDENCES FROM AN INTERNATIONAL RESEARCH PROJECT

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1. Introduction

The two key streams of research addressing knowledge in organizations are intellectual capital (IC) and knowledge management (KM). In particular, IC literature focuses on intangible resources that contribute to value creation (Edvinsson & Malone, 1997). KM consists of the initiatives, processes, strategies, and systems that enhance the storage, assessment, and creation of knowledge (Gold et al. 2001). However, very few earlier studies systematically combine IC and KM practices to examine the key knowledge-related factors impacting value creation in firms.

To bridge this gap, an international project on IC and value creation has been launched by Lappeenranta University of Technology – LUT (Finland). Then, the main research question of the overall project is to understand how IC assets and their KM practices interact to create value (Kianto et al., 2013).

In most studies IC has been seen to consist of three elements: human capital, structural capital and relational capital (Bontis, 2001; Guthrie, 2001). However, in our international project we suggest that three other elements could also be included in IC visualizing and mapping: renewal capital (RC), trust capital (TC), and entrepreneurial capital (EC) (Kianto 2007; Kianto 2008; Demartini & Paoloni, 2013; Inkinen et al., 2014).

Within the overall project, the Italian research unit focused on the new facets of IC, namely EC and RC, in order to verify what is the current level of EC and RC in medium- and large-sized Italian companies and how they affect firm performances (Demartini & Paoloni, 2013, 2014; Demartini et al. 2015; Cesaroni et al., 2014, 2015 a,b,c,).

The paper is structured as follows. In the second section main studies on i) IC and its components and on ii) IC and KM as a firm performance drivers are presented. In the third sections research method is described. In the fourth section data analysis is presented. Then main research findings are outlined in the fifth section, followed by discussion and conclusions (sixth and seventh sections).

Our research agenda will provide academics and managers with unique insights into the state of art of corporate EC and RC in Italian companies. It provides tools and guidance for the improvement of financial performance through a better management of knowledge-based resources.

2. The research framework

2.1 Intellectual Capital: static vs dynamic approach

Intellectual capital has been defined as 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 organizational knowledge itself. Early conceptualizations in the late 1990s divided IC in three main components: human capital, organizational (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 et al., 2004; Teece, 2000). Structural capital includes assets such as corporate culture, management processes, databases, organizational structure, patents, trademarks, and financial relations. Engstrom et al. (2003, p. 288) suggest that structural capital "includes all non-human storehouses of knowledge in organizations." Finally, relational or customer capital (internal and external relational capital) refers to organizations' customers, brands, customer loyalty, and distribution channels. Customer capital also refers to consumers as repositories of information and knowledge that is valuable to organizations (Bontis, 1998).

More recently, other studies (Kianto, 2007; Kianto, 2008; Demartini & Paoloni, 2013) include into IC three other elements: "renewal capital" (RC), in terms of innovative solutions, products and services available for the firms; "trust capital" (TC) conceived in term of trust embedded in its internal and external relationship and "entrepreneurial capital" (EC), concerning competence and commitment related to entrepreneurial activities in the organization (Erikson, 2002).

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

RC refers to the ability of an organization to continuously develop itself through learning, acquiring new skill and creatively changing its operations innovation (Kianto et al., 2010). It's intended in terms of innovative solutions, products and services available for the firm (Kianto, 2008).

TC refers to the concept of social capital (Putnam, 1995) and it empo-

wers and enables cooperation and decision-making, engenders the atmosphere of openness and transparency and it motivates people. It is here intended in terms of trust included in internal and external organisation relationship (Mayer et al., 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). This broader definition of IC helps us to gain more holistic understanding of this organizations' asset (Kianto et al., 2013, p. 1476; Inkinen et al., 2014, p. 2919).

While the static approach to IC concentrates on evaluating the stocks of knowledge-related resources, the dynamic approach to IC focuses on activities (Kianto et al., 2010) that allow knowledge to be created, shared, learnt, enhanced, organized and utilized. Knowledge management practices can be defined as the set of management activities conducted in a firm with the aim of improving the effectiveness and efficiency of organizational knowledge resources (Andreeva & Kianto 2012). In other words, the IC literature examines the kind of intangible resources owned by firms, while the KM literature addresses the mechanisms by which these resources can be controlled and managed (Gold et al 2001; Lee & Choi 2003).

Separation between these two streams of literatures has led to some conceptual ambiguity. Therefore, in line with Kianto et al. (2013) we suggest to link the two concepts. Then, KM practices can be conceptualised as the set of management activities that enable the firm to deliver value from its intellectual capital (Inkinen & Kianto, 2014, p. 456).

*2.2 IC, KM and organizational performance: the overall research model*

According to the knowledge-based view of the firm, performance differences between organizations accrue due to their different stocks of knowledge and their differing capabilities in using and developing knowledge (Kogut & Zander 1992; Spender & Grant 1996; Grant 1996). These two interdependent value generating aspects can be conceptualized in terms of the firm' intellectual capital and knowledge management practices.

The relative impact of various IC stocks on company performance has been investigated in several studies and the results gained have not been unanimous because what really produces value for the firm is the interaction of different IC stocks (e.g. Johnson, 1999; Bontis 1999; Roos *et al*. 2001; Reed et al. 2006). On the other hand, the KM literature includes a multitude of studies examining the impact of the various KM practices on organizational performance (e.g. Gold *et al.* 2001; Chuang 2004; Darroch 2005; Andreeva & Kianto 2012). However, there is a lack of research on the impact that implementation of KM has on IC (Inkinen and Kianto, 2014). To bridge this gap, the main issue of the overall international project is to understand

how IC assets and their KM practices interact to increase organisational performance (see Fig. 1) (Kianto *et al.*, 2013).

Fig. 1 *IC, KM and organisational performance*

The overall research model
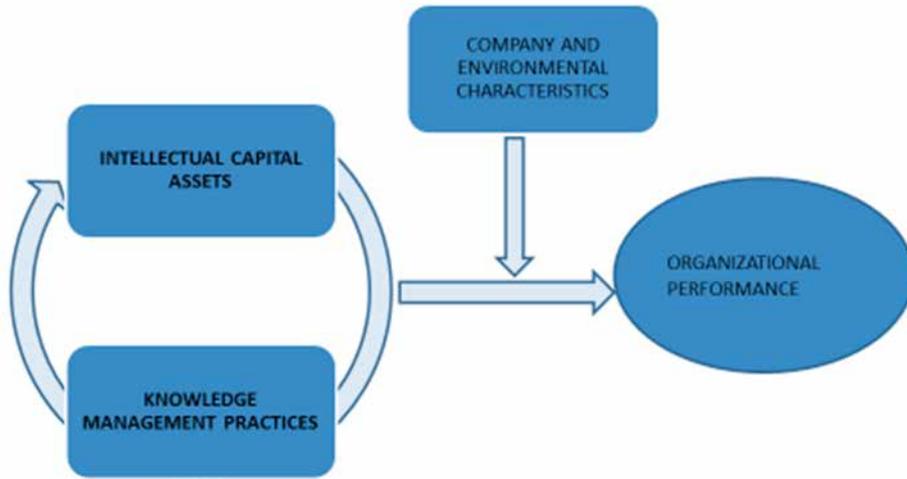
Source: Kianto (2015)

In order to depict the research model it is important to explain that organisational performance can be measured by different constructs or indicators (e.g.. market performance, innovation performance, customer value performance, financial performance, etc.).

Another important aspect to underline is that the launch of an international project is due to the aim of testing how contingent factors, related to company and environmental attributes, can impact on the relations between IC, KM and organizational performance.

Up-to-date, the single research units, while adopting the same overall model, have developed slightly different research design aiming to investigate specific relations/impacts within the above-mentioned framework (see table 1).

Table 1 - The international project research outcomes

Research Unit (Authors, year)	Relation/Impact
University of Lappeenranta, Finland (Inkinen et al., 2014)	IC ➜ Market performance IC ➜ Innovation Performance
University of Lappeenranta (Inkinen & Kianto, 2014)	KM ➜ Market performance
University of Deusto, Spain (Sàenz et al., 2014)	Human relation management (HRM) policies and practice ➜ KM ➜ IC HRM policies ➜ KM ➜ IC ➜ Innovation Performance
St.Petersburg University, Russia (Andreeva et al., 2014)	IC ➜ Customer Value KM ➜ Customer Value KM ➜ IC
Educons University, Serbia (Cabrilo et. al., 2015)	IC ➜ Innovation performance
Hong Kong Polytecnic University (Kianto et.al. 2015)	IC ➜ Organisational Performance (Market Performance, value creation, customer value, innovation and job satisfaction)

Within the overall project, the Italian research unit focuses on EC and RC, in order to verify what is the current level of EC and RC in medium- and large-sized Italian companies and if they affect firm's financial performance.

2.3 Entrepreneurial capital, renewal capital and firm performance

The majority of the empirical literature seems to agree that the IC stocks are interlinked by nature and influence firm performance the most when combined. Thus, it is seen that the firms which possess high overall IC gain also better results in terms of financial performance (Youndt et al., 2004), knowledge productivity (Huang and Wu, 2010), amount of intellectual property and related firm performance (Namvar, 2010), process flexibility (Menor et al., 2007), and innovation (Wu et al., 2008).

Considering the single component of IC stand-alone variables and their impact on organisational performance, the results gained have not been unanimous. Inkinen et al. (2014) findings for Finnish firms, in contrast with the majority of the existing literature, demonstrated that most of the single IC stock is not related to firms' market and innovation performance.

In Serbia, Cabrilo et al. (2014) founded that EC is the most significant and influential type of IC for innovation of products and services and for innovation of management practices, while RC has the most significant positive impact on innovation of production methods and processes.

In the Russian data analysis it was found that two IC components positively influence customer value creation: namely relational capital and human capital (Andreeva et al. 2014). Finally, for Chinese companies, it results that only human capital exerts a direct impact on firm performance (Kianto et al., 2015).

However, in periods of turbulence and economic crisis, we deem that among the different types of IC stocks, both EC and RC represent critical intangible assets that can positively contribute to firms' financial performances. Accordingly, here following we present some argumentation to underpin our thinking.

As far as EC is concerned, initiative-taking and proactiveness in an organization are likely to increase innovation performance by allowing more self-directed development activities in the firm (Gategory et al., 2010). Risk-taking, recognizing new business opportunities and ability to make bold decisions will also help the organization to produce and to prototype innovative ideas. An organization with high EC will be more competitive through having employees that are willing and empowered to make fast decisions and to show initiative in solving problems (Inkinen et al., 2014, p. 2922).

RC as an intangible resource can be characterized as firms' actualized learning capability. Firms' ability to learn and acquire new knowledge is strongly related with several aspects of firm performance (Nonaka & Takeuchi, 1995; Andreeva & Kianto, 2011, 2012) and competitiveness (Teece et al., 1997; Eisenhardt & Martin, 2000; Edvinsson, 2002; Wiklund & Shepherd, 2003; Wu, Lin & Hsu, 2007; Wu et al., 2008; Wang & Chen, 2013).

An organization with high RC, sometimes also called innovation capital (Chen et al., 2004), is able to build on previous knowledge and to generate new knowledge (Maditinos et al., 2010), as well as to develop new products, services and innovative ideas on a continuous basis (Tseng & Goo, 2005; Kianto 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, Çavusgil & Zhao (2002) establish that firms' innovativeness has a positive impact on performance and contributes to competitive advantage 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).

Based on the above argumentations we hypothesize that:

H1: EC and RC have a positive and significant influence on Italian firms' financial performance.

3. Research method: from operationalisation variables to target respondent/informant

In order to verify the existence of a relationship between the level of EC and RC and firms' performances, an empirical research has been carried out, involving a sample of Italian firms.

Target population was made up of Italian limited liabilities companies. Our objective was to select a sample of companies with more than 100 employees, which can well represent the Italian business context. In our research the stratification was done according to the following classes: size (number of employees: 100-500; 501-1000;> 1000); macro-economic sector (primary, secondary, tertiary); Italian geographical areas (Northen, Center, Southern). All the selected organisations are unlisted companies. From AIDA database 2000 companies were randomly extracted in order to respect sector, size and geographical stratification existing in the all population of the dataset. Up to April 2014, 105 questionnaires were received and the response rate were therefore 5,25%. After deleting unobtainable or unavailable firms and questionnaires with missing data, the final dataset included 100 feasible responses (see annex 1 for further details on the sample structure).

In each firm a key informant was involved in the survey, mostly the CEO, CFO and HR/KM Director. Data was collected using an internet-administered survey questionnaire. Data have been collected from October 2013 to March 2014. Additional financial ratios have been obtained from AIDA database, which contains financial information for Italian firms. Descriptive analysis techniques have been applied and differences according to industry and size have been explored. The following corporate performance measures were collected: Return on Assets (ROA); Return on Equity (ROE); Growth in Revenue; Growth in Turnover/Sales.

Questionnaire submitted to sample firms was divided into different sections aiming at grasping data on: Basic company information; Intellectual capital; and Knowledge management. Variable were identified according to our research design in Fig. 1.

101 questions are included in the questionnaire. Answers were measured using a Likert 5 point scale. We utilized two multi-item scales as key constructs: EC and RC.

Even if innovativeness is commonly considered one of the main entrepreneurial postures, in this analysis we considered innovativeness as a stand-alone construct. In fact RC refers to organizations' ability to continuously develop itself through learning and innovation. The scale for RC includes four items related to learning and inventiveness of the organization. EC includes six items related to risk-taking, proactiveness and aggressive decision-making among the firm's personnel. The items were adapted

from Kianto et al. (2010), Garcia-Morales et al. (2006) and Hughes & Morgan (2007) (see annex 2 for further details on operationalisation variables). Data collected were analysed through principal component analysis and multiple linear regression (see annex 3 for detailed descriptive statistics).

4. The matrix of principal component analysis

In order to verify the existence of statistically significant relationships between the elements of the IC and firms performance a model of multiple linear regression has been developed. Multiple linear regression was preceded by a principal component analysis (PCA), carried out in order to reduce the variables corresponding to the different elements of the IC and turn them into a smaller set of artificial variables.

The starting matrix used for the analysis was derived from the analysis of the assessments provided by the companies' replies on the various elements of IC. To reduce the dimensionality the percentage of explained variance has been used. Each first component - for each IC element - explains at least 60% of the variance; accordingly, the first component for each category of IC has been considered (Table 2).

Table 2 – Principal component analysis – Results

Principal components for each IC element:	Percentage of variance explained by the first component
Human Capital	60,4%
Structural Capital	72,6%
Internal Relational Capital	70,5%
External Relational Capital	69,9%
Renewal Capital	70,8%
Entrepreneurial Capital	79,7%
Trust Capital	75,9%

We subsequently developed a multiple linear regression model, in which:
- dependent variables are represented by performance indicators: EBITDA, ROI, ROA, referred to 2011, 2012 and 2013;
- three variables - the percentage of personnel dedicated to R&D, sales and tangibility (which represents the perception of respondents on the degree of tangible vs intangible assets of the company)- are used as control variables;
- dummy variables are: employees, location, and industrial sector.

5. Findings

On the basis of the listed variables three different multiple regression models have been developed, one for each performance indicator that has been used as dependent variable.

First Model: EBITDA
This model is represented by the following equation:

$$EBITDA_{i=} = \beta_0 + \beta_1 humancapital_i + \beta_2 structuralcapital_i$$
$$+ \beta_3 intrelationalcapital + \beta_4 extrelationalcapital$$
$$+ \beta_5 entrepreneurialcapital + \beta_6 trustcapital$$
$$+ \beta_7 renewalcapital + \beta_8 R\&Dshare + \beta_9 sales$$
$$+ \beta_9 highedu + \beta_{10} dummysector$$
$$+ \beta_{11} dummylocation + \beta_{12} dummyemployees + \beta_i$$

Table 3 - *Regression Analysis: EBITDA MEDIA*

Predictor	Coef	SE Coef	T	P
Constant	16.358	7.937	2.06	0.042
R&DSHARE	-0.06804	0.06990	-0.97	0.333
PRODVSER	-0.3103	0.2958	-1.05	0.297
HIGHEDU	-0.00010	0.03824	-0.00	0.998
Human Cap	-0.781	1.261	-0.62	0.538
Int Rel Cap	-1.742	1.119	-1.56	0.677
Renewal Cap	0.166	1.027	0.16	0.872
Ext Rel Cap	0.432	1.036	0.42	0.123
Struct Cap	-1.042	1.214	-0.86	0.393
Trust Cap	1.221	1.237	0.99	0.327
Entrepr Cap EC	1.2943	0.7390	1.75	0.044
dummy1	-19.692	3.876	-5.08	0.033
dummylocat	-33305	50027	-0.67	0.507
dummy employ	60149	50753	1.19	0.239

S = 10.2082   R-Sq = 31.6%   R-Sq(adj) = 17.6%

This model (Table 3) has an R2 = 31.6% and an Adjusted R2 = 17.6%. The low value of the Adjusted R2 is due to the large number of explanatory variables used in the model. The analysis of the p-value highlights that there is 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). It reveals the existence of a statistically significant positive relationship also between EBITDA and external relational capital.

Table 4 – Regression Analysis: EBITDA

Predictor	Coef	SE Coef	T	P
Constant	13.927	5.777	2.41	0.018
R&DSHARE	-1585	1224	-1.30	0.199
PRODVSER	-0.3699	0.2767	-1.34	0.185
Ext Rel Cap	1.7896	0.9475	1.89	0.052
Trust Cap	1.441	1.242	1.16	0.249
Struct Cap	-1.534	1.224	-1.25	0.114
Entr Cap	1.1148	0.5743	1.94	0.042
Dummyindsect	-19.554	3.715	-5.26	0.023
dummy employ	5.475	2.242	2.44	0.017

S = 9.93720   R-Sq = 29.7%   R-Sq(adj) = 26.6%

Second Model: ROI

This model is represented by the following equation:

$$ROI_i = a_0 + a_1 humancapital_i + a_2 structuralcapital_i$$
$$+ a_3 intrelationalcapital + a_4 extrelationalcapital$$
$$+ a_5 entrepreneurialcapital + a_6 trustcapital + a_7 renewalcapital$$
$$+ a_8 R\&Dshare + a_9 sales + a_9 highedu + a_{10} dummysector +$$
$$a_{11} dummylocation + a_{12} dummyemployees + a_i$$

This model shows a R2 = 33.3% and an adjusted R2 = 20.8%. Also in this case we decided to simplify the model by eliminating the variables that had a p-value too high. The new model (Table 5) has an R2 = 32.7% and an adjusted R2 = 26.4%.

Table 5 – Regression Analysis: ROI

Predictor	Coef	SE Coef	T	P
Constant	11.950	4.772	2.50	0.015
R&DSHARE	-0.04343	0.04966	-0.87	0.285
PRODVSER	-0.4196	0.2090	-2.01	0.048
Renew Cap RC	-2.0172	0.7115	-2.84	0.006
Ext Rel Cap	-0.7998	0.7134	-1.12	0.266
Trust Cap	1.0819	0.6437	1.68	0.097
Entr Cap	1.1896	0.5172	2.30	0.024
Dummyloc	1.751	1.564	1.12	0.166
dummy employ	-3.672	1.531	-2.40	0.019
dummy1	-11.172	2.743	-4.07	0.032

S = 6.74916   R-Sq = 32.7%   R-Sq(adj) = 26.4%

Analyzing the p-value, it was possible to identify the existence of statistically significant positive relationships between ROI and RC and between ROI and EC. In addition, there was a statistically significant positive relationship between ROI and the trust capital.

Third Model: ROA

This model is represented by the following equation:

$$\text{ROA}_i = \lambda_0 + \lambda_1 \text{humancapital}_i + \lambda_2 \text{structuralcapital}_i$$
$$+ \lambda_3 \text{intrelationalcapital} + \lambda_4 \text{extrelationalcapital}$$
$$+ \lambda_5 \text{entrepreneurialcapital} + \lambda_6 \text{trustcapital} + \lambda_7 \text{renewalcapital}$$
$$+ \lambda_8 \text{R\&Dshare} + \lambda_9 \text{sales} + \lambda_9 \text{highedu}$$
$$+ \lambda_{10} \text{dummysector} + \lambda_{11} \text{dummylocation} + \lambda_{12} \text{dummyemployees} + \lambda_i$$

Also in this case all the explanatory variables selected were initially included in the regression model. The model shows, in this case, an R2 = 26.6% and an adjusted R2 = 16.6%. Building a new model with only the explanatory variables with the lower p-value lower, we obtained a model with R2 = 28.6% and an adjusted R2 = 26.1%. Observations of p-values were obtained using the values in the following Table 6.

Table 6 – Regression Analysis: ROA

Predictor	Coef	SE Coef	T	P
Constant	0.658	5.807	0.11	0.610
Human Cap	2.903	1.031	2.82	0.006
Renewal Cap	-2.0836	0.7477	-2.79	0.007
Int Rel Cap	-1.0969	0.7595	-1.44	0.152
Struct Cap	-1.3376	0.9459	-1.41	0.161
Trust Cap	1.0978	0.9177	1.20	0.135
dummy indsect	-6.686	2.979	-2.24	0.027
R&S share	0.10895	0.05930	1.84	0.070
Sales	-0.2840	0.2383	-1.19	0.237
dummy employ	-3.144	1.497	-2.10	0.039

S = 8.23428   R-Sq = 28.6%   R-Sq(adj) = 26.1%

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

6. Discussion

The significant positive relationship between EBITDA and EC stresses the importance of EC, which constitutes a key intangible resource to enhance corporate value. In a changing environment it is crucial to develop the EC, both at the structural level (corporate culture), and in terms of skills and entrepreneurial behavior. Risk appetite and speed in the strategic choices affect profitability because they bring the company to embrace uncertainty and to take advantage new business opportunities. Aggressiveness in decision-making, considered in terms of aggressive price competition, entry into new markets and run-of rivals, improves business perfor-

mance as it helps to undermine the ability of competitors to anticipate and / or react to strategies implemented by the company (Lumpkin & Dess, 1996). Moreover, other attributes that have a positive influences on performance are independence and autonomy, intended as employees ability and willingness to support the company in responding quickly to market changes and perceiving the new market needs (Hughes & Morgan, 2007).

Statistical data concerning ROI values, representing firms' profitability in terms of return on investment, confirm the existence of a positive influence of RC and EC levels in terms of economic efficiency of operations. One can therefore conclude that organizations with a high level of RC and EC are able to achieve superior performance in terms of profitability of assets and invested (Inkinen et al., 2014).

Finally, the statistically significant positive relationship between Return on Assets (ROA) and RC confirms the hypothesis, according to which RC is "the new bottom line" IC (Edvinsson, 2002; Andreeva & Kianto, 2011 & 2012). In fact, the increasingly changing environment requires companies to continuously develop and renew their knowledge and capability for sustaining competitiveness, especially in conditions of turbulent market environments (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. In fact it allows companies to respond to new customer needs and therefore to increase the competitive advantage (Calantone et al., 2002; Rauch et al., 2009).

7. Conclusions

This paper examines the impact of EC and RC – considered as stand-alone components of IC – on Italian medium and large companies' performances. RC is about firms' ability to learn and acquire new knowledge and skills. EC is related with the entrepreneurial behavior exerted by organizational actors. In order to verify the existence of statistically significant relationships between these IC elements and firms performances, a model of multiple linear regression has been developed. Multiple linear regression analysis was preceded by a principal component analysis (PCA). Statistical analysis revealed a significant positive relationship between EBITDA and EC. Moreover, statistical data also confirm the existence of a positive influence of RC and EC levels on ROI and a positive relationship between ROA and RC. Findings show that in the era of knowledge economy EC and RC represent organizations' key resources, enabling high innovation performance and organizational growth and increasing the effectiveness in responding to future challenges and radical changes in the market. The main limit of this research is related to the use of questionnaire in order to

gather data, which, as a consequence, are affective by the subjective perceptions of respondents. Results from this study represent a first research step and focuses on Italian companies. In the future, the analysis will be extended to a larger number of companies. Moreover, further analysis will be carried out, in order to compare Italian results with those from the other units of the international research project. Up-to-date the results are not fully comparable because each unit has investigated the impact of IC and or KM on different firm's performance (i.e. innovation performance, market performance, value creation performance, financial performance).

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Entrepreneurial, renewal capitals and financial performance evidences from an international research project
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Riassunto

La letteratura sostiene che il capitale intellettuale (IC) si compone di tre elementi: capitale umano, strutturale e relazionale. Tuttavia, studi recenti suggeriscono altre dimensioni che dovrebbero essere incluse come parti dell'IC, ovvero il capitale di rinnovamento, in termini di soluzioni innovative, prodotti e servizi disponibili per l'azienda, il capitale di fiducia, cioè la fiducia incorporata nelle relazioni interne ed esterne, e il capitale imprenditoriale, ossia la competenza e l'impegno relativo alle attività imprenditoriali nell'organizzazione. L'obiettivo del lavoro, che è parte di un progetto di ricerca internazionale focalizzato sul capitale intellettuale e la creazione di valore, è quello di analizzare il rapporto tra capitale imprenditoriale e di rinnovamento e performance aziendali (ROI, ROA e EBIDTA). A tal fine, abbiamo utilizzato due scale multi-item come costrutti fondamentali per misurare l'intensità del capitale imprenditoriale e del capitale di rinnovamento nelle imprese analizzate. I risultati dello studio empirico realizzato su un campione di medie e grandi imprese italiane evidenziano che il capitale imprenditoriale e il capitale di rinnovamento hanno un influsso positivo sulle performance finanziarie.

Abstract

In most studies IC (Intellectual Capital) has been seen to consist of three elements: human capital, structural capital and relational capital. However, emerging studies suggest that that three other elements could also be included in IC visualizing and mapping: renewal capital (RC), trust capital (TC), and entrepreneurial capital (EC). The purpose of this paper is to show preliminary results from the Italian research unit of an international project on IC and value creation. We focused on EC and RC, in order to verify if they affect firm performances. Descriptive analysis techniques were applied. We utilized multi-item scales as the key constructs to operationalise entrepreneurial capital and renewal capital. Statistical analysis revealed a significant positive relationship between EBITDA and EC. Moreover, statistical data also confirm the existence of a positive influence of RC and EC levels on ROI and a positive relationship between ROA and RC.

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Annex 1 - Sample description

Sector Geolocation	PRIMARY	SECONDARY	TERTIARY	Total
CENTRE		14	26	40
NORTHEN ITALY	4	16	25	45
SOUTHERN ITALY		7	8	15
Total	4	37	59	100

Employees Sector	100-500	501-1000	> 1000	Total
Primary	3	1		4
Secondary	25	5	7	37
Tertiary	34	7	16	59
Total	64	14	22	100

Annex 2 - Operationalisation variables for Renewal Capital (RC) and Entrepreneurial Capital (EC)

To what extent do the following statements on renewal apply to your company? (1 = completely disagree, 5 = completely agree)

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 the entrepreneurial orientation apply to your company? (1 = completely disagree, 5 = completely agree)

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. |

Annex 3 - Statistics

Descriptive Statistics: HUMAN CAPITAL

Variable	N	Mean	StDev
HumCap1	100	3,7216	0,7464
HumCap2	100	3,4433	0,9010
HumCap3	100	3,7320	0,8230

Covariances	HumCap1	HumCap1	HumCap1
HumCap1	0,557131		
HumCap2	0,301761	0,811856	
HumCap3	0,299613	0,245060	0,677405

Descriptive Statistics: RENEWAL CAPITAL

Variable	N	Mean	StDev
RenCap1	100	3,340	1,060
RenCap2	100	3,4124	0,8386
RenCap3	100	3,299	0,8844
RenCap4	100	3,299	1,052

Covariances	RenCap1	RenCap2	RenCap3
RenCap1	1,122637		
RenCap2	0,649914	0,703179	
RenCap3	0,568192	0,528995	
RenCap4	0,574313	0,510846	1,107603

Descriptive Statistics: TRUST CAPITAL

Variable	N	Mean	StDev
TrustCap1	100	3,7010	0,9700
TrustCap2	100	3,9897	0,8720
TrustCap3	100	3,9175	0,7862
TrustCap4	100	4,0722	0,8068
TrustCap5	100	4,1340	0,9086

Covariances	TrustCap1	TrustCap2	TrustCap3	TrustCap4	TrustCap5
TrustCap1	0940936				
TrustCap2	0,559386	0,760309			
TrustCap3	0,339669	0,384558	0,618127		
TrustCap4	0,500966	0,511168	0,381014	0,650988	
TrustCap5	0,602985	0,480563	0,354918	0,552728	0,825601

Descriptive Statistics: STRUCTURAL CAPITAL

Variable	N	Mean	StDev
TrustCap1	100	3,680	0,985
TrustCap2	100	3,9072	0,8789
TrustCap3	100	3,8351	0,8251
TrustCap4	100	3,9588	0,0854

Covariances	TrustCapt1	TrustCapt2	TrustCapt3
TrustCapt1	0,969716		
TrustCapt2	0,595039	0,772552	
TrustCapt3	0,384235	0,432453	
TrustCapt4	0,517934	0,510846	1,107603

Descriptive Statistics: ENTREPRENEURIAL CAPITAL

Variable	N	Mean	StDev
EntrCap1	100	3,608	1,046
EntrCap2	100	3,072	1,013
EntrCap3	100	2,9381	0,9770
EntrCap4	100	3,3505	0,9687
EntrCap5	100	3,289	1,020
EntrCap6	100	3,052	1,035

Covariances	EntrCap1	EntrCap2	EntrCap3	EntrCap4	EntrCap5	EntrCap6
EntrCap1	1,094931					
EntrCap2	0,716065	1,025988				
EntrCap3	0,485932	0,754510	0,954467			
EntrCap4	0,555412	0,755692	0,803157	0,938359		
EntrCap5	0,676761	0,635202	0,601375	0,668600	1,040808	
EntrCap6	0,499570	0,652491	0,649055	0,731744	0,682882	0,765321

Descriptive Statistics: EXTERNAL RELATIONAL CAPITAL

Variable	N	Mean	StDev
ExtrelCap 1	100	3,350	0,8544
ExtrelCap 2	100	3,4672	0,8547
ExtrelCap 3	100	3,4948	0,8675

Covariances	ExtrelCap1	ExtrelCap2	ExtrelCap3
ExtrelCap1	0,730026		
ExtrelCap2	0,429446	0,730455	
ExtrelCap3	0,522659	0,580541	0,752577

Descriptive Statistics: INTERNAL RELATIONAL CAPITAL

Variable	N	Mean	StDev
IntrelCap1	100	3,2474	0,8784
IntrelCap2	100	3,6598	0,7758
IntrelCap3	100	3,6598	0,8022

Covariances	IntrelCap1	IntrelCap2	IntrelCap3
IntrelCap1	0,771478		
IntrelCap2	0,407968	0,601804	
IntrelCap3	0,460052	0,435137	0,643471

Principal Component Analysis: HUMAN CAPITAL

```
Eigenanalysis of the Covariance Matrix


Eigenvalue  1,2315  0,5175  0,2895

Proportion   0,604   0,254   0,142

Cumulative   0,604   0,858   1,000


Variable    PC1      PC2      PC3

HumCap1  0,527  -0,146   0,837

HumCap2  0,642   0,714  -0,280

HumCap3  0,557  -0,685  -0,470
```

Principal Component Analysis: Renewal Capital

```
Eigenanalysis of the Covariance Matrix


Eigenvalue  2,6435  0,5737  0,2517  0,1706

Proportion   0,726   0,158   0,069   0,047

Cumulative   0,726   0,884   0,953   1,000
```

Variable	PC1	PC2	PC3	PC4
RenCap1	0,544	−0,659	−0,469	0,223
RenCap2	0,437	−0,247	0,530	−0,684
RenCap3	0,473	0,219	0,551	0,651
RenCap4	0,537	0,676	−0,442	−0,243

Principal Component Analysis: Trust Capital

```
Eigenanalysis of the Covariance Matrix
```

Eigenvalue	2,6976	0,4197	0,3118	0,2522	0,1424
Proportion	0,705	0,110	0,082	0,066	0,037
Cumulative	0,705	0,815	0,897	0,963	1,000

Variable	PC1	PC2	PC3	PC4	PC5
capitfiducia1	0,498	0,598	0,356	−0,484	0,181
capitale fiducia2	0,452	−0,135	0,558	0,565	−0,383
capitale fiducia3	0,342	−0,739	0,046	−0,569	−0,109
capitfid4	0,451	−0,186	−0,236	0,347	0,765
capfid5	0,477	0,208	−0,710	0,050	−0,472

Principal Component Analysis: Entrepreneurial Capital

```
Eigenanalysis of the Covariance Matrix
```

Eigenvalue	4,2007	0,6754	0,4846	0,3155	0,1841	0,1489
Proportion	0,699	0,112	0,081	0,053	0,031	0,025
Cumulative	0,699	0,811	0,892	0,945	0,975	1,000

Variable	PC1	PC2	PC3	PC4	PC5	PC6
cpimrendit1	0,378	−0,781	0,104	0,270	−0,390	−0,107
cpimprend2	0,429	−0,055	0,465	0,180	0,738	0,135

```
cpimprend3   0,399   0,370   0,402  -0,287  -0,274  -0,620

cpimpren4    0,425   0,258   0,109  -0,164  -0,394   0,748

cpimprend5   0,409  -0,217  -0,571  -0,618   0,269  -0,069

capinprend6  0,406   0,370  -0,523   0,635  -0,007  -0,147
```

Principal Component Analysis: Structural Capital

```
Eigenanalysis of the Covariance Matrix


Eigenvalue  2,1852  0,4255  0,2638  0,2125

Proportion  0,708   0,138   0,085   0,069

Cumulative  0,708   0,846   0,931   1,000
```

Variable	PC1	PC2	PC3	PC4
TrustCapt1	0,565	0,672	-0,400	0,262
TrustCapt2	0,525	0,068	0,848	-0,011
TrustCapt3	0,419	-0,687	-0,197	0,560
TrustCap4	0,479	-0,267	-0,285	-0,786

Principal Component Analysis: External Relational Capital

```
Eigenanalysis of the Covariance Matrix


Eigenvalue  1,7631  0,3024  0,1466

Proportion  0,797   0,137   0,066

Cumulative  0,797   0,934   1,000
```

Variable	PC1	PC2	PC3
cprelestr1	0,540	-0,799	-0,263
cprelestrn2	0,577	0,579	-0,576
cprelzestern3	0,613	0,159	0,774

Principal Component Analysis: Internal Relational Capital

```
Eigenanalysis of the Covariance Matrix


Eigenvalue  1,5219  0,2994  0,1842

Proportion   0,759   0,149   0,092

Cumulative   0,759   0,908   1,000
```

Variable	PC1	PC2	PC3
cprelinterno1	0,611	−0,786	−0,093
cprelainterno2	0,534	0,496	−0,685
cprelaziinerno3	0,585	0,369	0,722