Intellectual capital, organisational climate, innovation culture, and SME performance

Evidence from Croatia

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Abstract

Purpose – The purpose of this paper is to analyse the relationship between the three components of intellectual capital (IC) (human, structural, and relational), and contextual factors relating to organisational climate (OC) and innovation culture, together with their influence on business performance (BP).
Design/methodology/approach – This empirical research is based on an online questionnaire, which collected data from a non-probability quota sample consisting of 253 Croatian SMEs. The scales for IC, OC, and innovation culture were constructed to test the relationship between these dimensions and assess the BP of the SMEs.
Findings – Based on a survey on 253 SMEs in Croatia, the analysis shows that the key dimensions of IC, innovation culture, and OC are vital to a company's success and are strongly inter-correlated. Higher BP is positively related to higher levels of both IC and innovation culture.
Research limitations/implications – The main limitation of the research is the subjective aspect of the study. The data used in the study were self-reported where respondents in a survey gave their assessment of firm performance. Although this was necessary because of the absence of other data, it is an issue that must be taken into account when interpreting the findings in the study.
Practical implications – Understanding the role of IC, OC, and innovation culture in relation to BP, particularly in former transition countries, can have important implications for managers and enterprise owners, as well as policy makers and the academic community.
Social implications – The findings emphasise the important role of tacit knowledge in the innovation process, of which IC and OC are good examples.
Originality/value – This empirical study brings evidence from the understudied country of Croatia. Croatia is a post-transitional country and the last accessed member of the EU, on the dividing line between a modest and a moderate innovator. This is the first empirical study conducted in Croatia that explores the association between three concepts that are typically investigated separately (IC, OC, and innovation culture).

Keywords Business performance, SMEs, Croatia, Innovation culture, Organizational culture, Intellectual capital, Organizational climate

Paper type Research paper

Introduction

Innovation has increasingly become recognised as a key influence on the competitiveness of businesses, regions, cities, and nation states (Asheim *et al.*, 2011), but it is also source of conflicting demands, multiple pathways, and ambidexterity (Bledow *et al.*, 2009). Together with entrepreneurship, innovation finds its meaning in the creation of value. Although innovation is widely considered a part of the route to competitiveness, our knowledge of the main influences

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on innovation capacity and performance is limited. In order to unpack the factors that have an impact on the innovation capacity and business performance (BP) of a company, this paper aims to increase our understanding of innovation processes at an enterprising level. In this context, our empirical study brings evidence from Croatia, an interesting and understudied country, in which major interest is twofold: first, Croatia is a country on the borderline between a modest and moderate innovator according to the latest European Innovation Scoreboard; and second, Croatia is a post-socialist economy and a relatively new member state of the UE.

Specifically, one of the main aims of this study is to explore the relationship between organisational climate (OC), innovation capacity, and intellectual capital (IC), as well as to examine whether or not these categories are linked to enterprise performance and, if so, how. From this perspective, the study argues that the recognition of IC, OC, and innovation culture jointly contribute to an enterprise's competitiveness and economic performance. Most of authors tend to focus on a single issue, either IC, OC (Gläser *et al.*, 2017), either only some offer dual associations IC and performance, OC, and innovation culture (Schneider *et al.*, 2017; Chatzoglou and Chatzoudes, 2018; Dávila *et al.*, 2018) or trial associations organisational culture, performance and innovation culture (Shanker *et al.*, 2017; Kraśnicka *et al.*, 2018), Our study, therefore, provides the results of the relationship between the components of IC and OC, and the influence of these factors on innovativeness (IN) and BP in the new EU member state of the Republic of Croatia. Croatia is used as an example of a post-transition country with an established (but still weak) sector of innovative SMEs. The paper is organised as follows: after the introduction, the theoretical framework, and conceptual model, along with hypotheses and key concepts relating to the research is presented. The third section describes the research methodology and data. In the final sections, we discuss the results, contributions, and limitations of the paper, as well as suggestions for future research.

Innovation as the source of companies' performance

Entrepreneurship is associated with the identification of an opportunity for products and services in society, and the realisation of that opportunity through the organisation of resources with which to make a product or service available. In this regard, entrepreneurship and innovation have a symbiotic connection, which together results in the creation of value (Van der Borgh *et al.*, 2012; Roos, 2017). Innovation is at the core of BP as it "drives growth and helps address social challenges" (Gault, 2018, p. 617). It is a complex phenomenon that can be defined in different ways, as an idea, process, product, practice, or service, with market potentials and commercial applications (Edison *et al.*, 2013). Innovation is also associated with great uncertainty and risk, and yet it is simultaneously linked to high growth prospects (Bessant *et al.*, 2005, p. 1366).

For individual businesses, innovation offers a means of competition based on non-price related factors. This means that any competitive advantage that they can secure based on such factors is potentially more sustainable than that based solely on price (Makovec Brenčič, 2001). Of course, no business can ignore pricing because excessive pricing will, according to economic theory, ultimately attract new entrants; meaning that the excess profit or surplus will be quickly eliminated.

Figure 1 shows the ways in which an entrepreneurial SME sector can contribute to competiveness through its influence on productivity. At a more detailed level, the figure shows that this is a result of three main processes: first, the level of competition in the economy; second, what economists call "productive churn"; and third, innovation. These processes apply at local and regional levels as well as national levels; although at the sub-national level, there is likely to be considerably more leakage across boundaries than would be found at the national level.

One of the characteristics of innovation as a competitive strategy is that a firm's ability to be innovative only partly depends on decisions made by the firms' managers (Rowe, 2001;

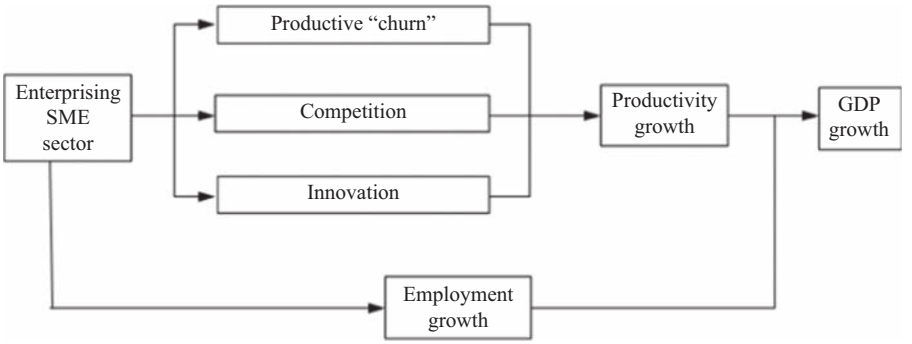


Figure 1.
Entrepreneurship and economic development

Ireland *et al.*, 2009). This particularly applies in the case of smaller businesses because of their need to take in external resources from time to time in order to enable them to manage particular issues including, in some cases, product development (Lechner and Dowling, 2003; Noronha Vaz and Nijkamp, 2009). These external systems are known as innovation systems, and they operate at both national and regional levels.

An innovation system contains a variety of organisations, including technical institutes, venture capitalists, specialist financial institutions, and patent offices, amongst others. Some of these organisations will be public sector owned; some will be private; although typically, in less developed regions and countries, there is an emphasis on public institutions (Freeman, 2002). Understanding these innovation systems, together with entrepreneurial behaviour, can help policy makers to develop approaches for enhancing innovative performance in the knowledge-based economies of today (Hyland and Beckett, 2005; Huggins and Williams, 2011; Vaz *et al.*, 2014). This knowledge can be codified or, alternatively, it can be tacit. This is essentially "know-how" information exchanged through informal channels. Although this particular paper focusses on the characteristics and behaviours of businesses at an individual firm level, there are nevertheless similarities with an innovation systems approach, insofar as a more interactive model of innovation is assumed.

The resource-based view draws attention to the nature of co-ordination within the firm, its organisational structure and effectiveness, as well as the role of management and the allocation of decision-making rights. Recent theoretical developments in the knowledge-based view or the IC-based view of the firm (Reed *et al.*, 2006) state that a firm's innovative capability depends on its intellectual assets and knowledge (Martín-de Castro, 2015; Subramaniam and Youndt, 2005; Ngah and Ibrahim, 2009; Secundo *et al.*, 2017), which is a proposition that is observable. The so-called knowledge-based view of the firm represents a specific theoretical frame, which is typically a broad multi-disciplinary one. One of the main concepts used in the paper is IC, which is a form of capital referring to intangible resources that create value for a firm (Ashton, 2005) by providing it with a competitive boundary (Edvinsson and Malone, 1997; Brown *et al.*, 2005).

As discussed, a knowledge-based theory often works closely with other views such as human resource management, which it has been suggested closely correlates with IC (Boudreau and Ramstad, 1997; Kianto *et al.*, 2017). As a result, knowledge-based theory argues that knowledge management has consequences for a number of issues (Obeidat *et al.*, 2017).

The knowledge-based view of the firm is essentially an extension of the resource-based view by Penrose (2013). In this view, knowledge represents the most important resource that a firm can have, due to its impact on the overall work organisation and performance of the business. Some authors consider IC to be more closely aligned with knowledge management

and social capital (Ramadan *et al.*, 2017). As such, IC resources and their intrinsic economic properties need to be recognised.

Firm performance and competitive advantage lies in intangible and invisible factors such as knowledge, competence, skills, organisational culture, and other aspects that confront precise measurement but are nevertheless crucial for fostering innovation (Morgan, 1997; Gonzalez-Loureiro *et al.*, 2017). Although innovation activities are a key contributor to a higher level of productivity, which in turn provides the basis for future competitiveness, at the same time there is a relatively little research which has focussed on seeking to explain variations in innovation culture between European enterprises. In this context, this paper aims to contribute to the theoretical base focussing on the relationship between the concepts of IC, OC, innovation culture, and firm performance.

The importance of intellectual capital, organisational climate, and innovation culture for successful SMEs

During the industrial era, the critical factors in creating a firm's value were physical assets such as land, capital, and labour. In contrast, BP today focusses much more on the ability of a business to develop intangible capital, which involves hidden or tacit assets or knowledge resources (Edvinsson and Malone, 1997; Sveiby, 1997; Subramaniam and Youndt, 2005; González-Loureiro and Pita Castelo, 2012).

Seeing as IC is essentially a product of the human mind, firm employees can have a significant influence on innovation and the subsequent performance capability of companies. Previous research has shown that IC is positively and significantly related to organisational performance (Ashkanasy *et al.*, 2011; Khalique *et al.*, 2018; Agostini and Nosella, 2017).

Intellectual capital

The term "IC" was first proposed by JK Galbraith (1969), and was defined as a set of capabilities that could potentially influence an organisation's future action. Since Stewart's pioneering definition of "IC" as the sum of "everything people know which can give competitive advantage to a firm", the concept of IC has been extensively developed and modified (Stewart, 1991, 1997). This development has involved moving from a one-dimensional concept of IC, mostly based on the concept of human capital, into a multi-dimensional concept of human, structural, and relational capital, that together make up IC (Edvinsson and Malone, 1997; Kujansivu, 2005; Montequín *et al.*, 2006; Santos-Rodrigues *et al.*, 2011).

Within these three components, human capital (both the individual and group knowledge of a company's employees) is an especially important determinant of the innovation capacity of companies (Mariz Perez *et al.*, 2012; Dakhli and De Clercq, 2004). In contrast, structural capital comprises knowledge assets that are the property of the firm. This includes intellectual property (patents, copyrights, and trademarks) as well as processes, methodologies, documents, and other knowledge artefacts, which nowadays may include software and administrative systems. Due to its diverse components, structural capital can be further broken down into organisation, process, and innovation capital.

Considering that IC is essentially the knowledge that employees should convert to commercial value in the market, their relationship with customers is of particular importance (Tseng, 2009). This represents a unique form of IC known as "customer capital" or "relational capital", which includes elements such as supplier relationships and connections with customers, licences, and franchises. All organisations possess IC in all three manifestations, but with varying degrees.

Organisational culture

Over the last 50 years, research into organisational culture and climate has advanced our understanding of how the collective interactions and perceptions of people, in relation to their work environment, can influence teamwork and organisational outcomes (Schneider *et al.*, 2017).

Organisational culture is considered to be embedded deep in the structure of an organisation, rooted in the values, beliefs, and assumptions held by organisational members (Denison, 1996). As it refers to deeper and more enduring values and norms (Hofstede and Hofstede, 2005), it is not easily observable within organisations (Ahmed, 1998). As well as being difficult to capture or measure (Dobni, 2008), organisational culture is also difficult to change. Not only because it is hidden, but also because of socialisation: some social groups provide the culture with greater stability and resistance to change. In this context, the key question is the extent to which employees are encouraged to be creative and innovative and whether they are rewarded for their efforts (Martins and Terblanche, 2003). The effective application of intangible assets, combined with tacit knowledge, has become the most crucial issue and source of competitive advantage for the performance of companies. Moreover, despite the abundant scientific literature on the importance of organisational culture for innovation (Naranjo-Valencia, 2011), empirical research on the relationships between these factors remains limited. This is especially prominent in economies in transition with weak entrepreneurial and innovation capacities (González-Pernía *et al.*, 2015).

Organisational climate

The second key concept is OC, which research expanded in 1980s. This often seems to be used interchangeably with OC (Schneider *et al.*, 2017). Denison (1996), for example, argues that both concepts are essentially the same phenomena, distinguished only in interpretation and epistemological traditions. At the same time, there is a growing recognition of the need to distinguish the terms so that the innovation and performance capabilities of companies can be analysed in more detail. "OC" is defined as the manifestation of culture; in other words, a conglomerate of attitudes, feelings, and behaviours that characterise life in an organisation. OC is a feature of an organisation that exists independently of the perceptions and understandings of the organisation's members, meaning that it is more directly observable and measurable (McLean, 2005). It influences organisational processes such as decision-making, co-ordination, communication, and control (Ekvall, 1996; Isaksen *et al.*, 1999). It also influences psychological processes of learning, motivation, and commitment (Avey *et al.*, 2011). OC can also affect employees' behaviour, in some cases influencing their acceptance of innovation as an essential factor of an organisation's performance.

OC can become a key influence on an organisation's ability to change, particularly if this change is a radical one, including the introduction of a new concept. A good example of this would be the shift from a neoclassical concept of innovation towards a more complex social phenomenon (OECD, 2002). This involves the concept of innovation and national innovative capacities evolving into the processes embedded within a broader institutional context. In this context, innovation develops into a hybrid process.

The most popular model for measuring OC is the Situational Outlook Questionnaire (SOQ), which is based on over 50 years of research and development. It started with Göran Ekvall's study of the climate in Swedish organisations during 1980, which was specifically concerned with the organisational conditions that stimulate or hamper creativity and innovation (Isaksen *et al.*, 1999). The SOQ is one of the few climate assessments that has been extensively researched, and therefore provides ample evidence of reliability, validity, and utility (Isaksen *et al.*, 1999, 2001; Isaksen and Ekvall, 2007). It usually consists of ten dimensions that provide

the conceptual basis for measuring climate for innovation based on a questionnaire. The ten dimensions are: challenge and involvement; dynamism; freedom; trust/openness; idea time; playfulness/humour; conflict; idea support; debate; and risk-taking.

Innovation culture

Innovation culture refers to the shared common values, beliefs, and assumptions of organisational members that could facilitate the innovation process (Hofstede, 1980). Innovativeness is typically used to describe the propensity of a firm to introduce new processes, products, or ideas (Hult *et al.*, 2004). It is an aspect of organisational culture, affecting the propensity of a firm to innovate (Kyrgidou and Spyropoulou, 2013). Recent research on the role of innovation-oriented corporate culture in raising a firm's innovativeness shows the ways in which culture can positively affect BP (Lewin and Kim, 2004; Acar and Acar, 2012; Kraus *et al.*, 2012; Stock *et al.*, 2013).

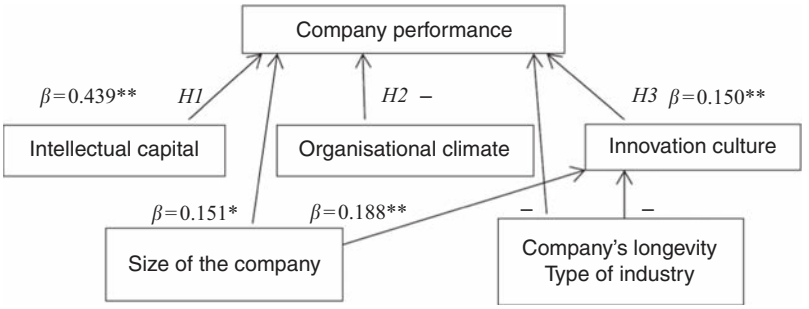
This orientation towards an "innovation culture" is much more pronounced in Western countries than in former socialist economies. As mentioned previously, research and development during the socialist period was typically detached from the industrial sectors. In addition to this, the prevailing model of innovation under communism was typically a linear one. Clearly, major reorientation is a major task, not least because the role of government has fundamentally changed from that of the "entrepreneur" to that of a facilitator and regulator of private enterprise. The path-dependent processes described above hinder the achievement of the change that is required. Other factors include a lack of business demand for innovation, deficiencies in intellectual property right protection, and a weak system of university research and knowledge transfer.

A specific microenvironment at a firm level can either restrain or facilitate the development of IC, innovation, and consequently firm performance. These social and cultural determinants of innovation dynamics have been supported by radical change in the concept of innovation within the new innovation paradigm (Mytelka and Smith, 2002) in the 1990s, which shifted the concept of innovation from its neoclassical technical and technological nature towards a complex social phenomenon. The concept of innovation and national innovation capacities (Furman *et al.*, 2002) evolved into processes embedded in a broader institutional context, involving socio-cultural and political factors through which innovation becomes contextual, path dependent, locally specific, and institutionally shaped. Innovation then develops into a hybrid process, not only restrained at a macro level including the wider socio-economic environment, but also going on to be understood as a specific type of mind-set, requiring a specific microenvironment at a firm level that fosters creativity and innovativeness. This has become a prominent topic of study as the scientific exploration of innovation, through the analyses of non-economic socio-cultural aspects, has increasingly been related to organisational culture and climate.

Conceptual research model

The conceptual framework used in this study incorporated four main influences on the innovative capacity and performance of Croatian SMEs. Our conceptual model (Figure 2) begins with the assumption that all four concepts under investigation (IC, OC, innovation culture, and BP) are positively related. Strong BP is linked to a higher level of IC, high levels of innovation culture, and a positive OC.

Companies' performance and competitiveness in the globalised knowledge economy are determined by their intangible assets dominated by IC, and their propensity towards creation and exploitation of innovation. Employees' expert knowledge and competencies (human capital), the firm's internal organisation (structural capital), and its customer service (relational capital) are all decisive factors for the firm's innovation and BP (Davenport and Prusak, 1998).



Notes: *$p<0.005$; **$p<0.000$

Figure 2.
Research model results

As the objective of this study is to explore the relationship between OC, innovation culture, and IC and examine to what extent these categories are related to the enterprise's performance, we propose the following hypotheses:

H1. Higher BP is positively related to higher levels of IC.

H2. Companies with a more enabling OC have stronger BP.

H3. Higher BP is positively related to higher levels of innovation culture.

Methodology and data sources

Data sources

The main source of data was a survey undertaken within the framework of the European Commission funded Tempus Joint Project. A non-probability quota sample was randomly selected, choosing around 1 per cent of companies in each type of industry. A sample of 894 Croatian SMEs was drawn from the population of 89,807 SMEs in the Register of Exporting Companies of the Croatian Chamber of Economy. There were two sampling criteria declared export performance and investment in R&D. The questionnaire was tested in October, 2014 on a sample of 30 SMEs and data were collected between November 2014 and February 2015 through an online survey completed by company owners (54.9 per cent) and managers (45.1 per cent). The first reminder was in December 2014 and the second was at the end of January 2015. A total of 253 SMEs completed the online survey, representing a 28 per cent response rate. The comparative distribution of all types of industries in the sampling frame and our sample can be seen on Table I. A summary of methodological details is given in following list.

Methodological summary:

(1) Sample: non-probability quota sample; 1 per cent of companies from each type of industry out of 89,807 SMEs listed on the Register of Exporting Companies of the Croatian Chamber of Economy.

(2) Sampling criteria: declared export performance and investment in R&D.

(3) Time of surveying: November 2014–February 2015.

(4) Survey type: online survey.

(5) Type of respondent: owner or manager of firm.

(6) Remainders: December 2014 and January 2015.

	Number of respondents	Percentage of number of respondents	Export SMEs in Croatia 2012[a] (in %)
Type of respondents			
Owner	139	54.9	
Manager	114	45.1	
Company longevity			
Up to 1 year	17	8.5	
2–5 years	42	21.1	
6–10 years	34	17.1	
11 years or more	106	53.3	
Undisclosed	54	0	
Type of industry			
Natural resources	16	6.3	2.12
Construction	27	10.7	11.7
Manufacturing	26	10.3	9.5
Transportation, communication, utilities	35	13.8	12.54
Wholesale trade and retail	33	13.0	27.59
Finance, insurance, real estate	29	11.5	5.56
Personal services	40	15.8	9.59
Business services	27	10.7	19.32
Healthcare and education	20	7.9	2.09
Size of company			
Micro-companies	120	47.5	
Small companies	78	30.8	
Medium companies	55	21.7	

Table I. Sample description

Source: [a]Croatian Chamber of Economy

The survey was structured in four main parts. The central part of the questionnaire concerned the identification of three types of capital – human, structural, and relational. The second part identified the innovativeness of the firm. The third part assessed the innovation climate according to the modified SOQ. The fourth part concerned the socio-demographic characteristics of the respondents, the current state of the enterprise (including firm performance), and characteristics of the companies within industrial sectors.

Almost half of the sample (47.5 per cent) consisted of micro-companies employing up to eight members of staff. Another 30.8 per cent employed between 8 and 99 persons, while only 21.7 per cent were midsized companies with 100 or more employees. The majority of respondents, around 60 per cent, were younger managers under the age of 40, and the remaining 40 per cent were over the age of 40. The sample consisted of companies from diverse economic activities, corresponding to the population of exporting SMEs in Croatia (Table I). The majority of companies offered personal services (15.8 per cent); followed by transportation, communication, and utilities (13.8 per cent); wholesale and retail trade (13.0 per cent); then finance, insurance, and real estate (11.5 per cent). Construction, manufacturing, and business services participate with about 10 per cent each. The fewest number of companies come from healthcare, education, and natural resources (including agriculture, mining, and forestry).

Methodology

In order to measure the main components of our model (IC, innovation culture, OC, and firm performance), we first developed scales for each component. The components of IC (human, structural, and relational) were considered as multi-dimensional concepts and, in order to

measure the dimension of IC, three scales were constructed – one for each dimension (see Table AI). Scales were constructed as a series of items for which respondents could express their answer on a seven-point Likert scale (from "strongly disagree" to "strongly agree").

The human capital scale consisted of 17 attributes that comprised the following dimensions: motivation, satisfaction, employees' knowledge, skills and creativity, and employees' social skills. The structural capital scale included 19 items with the following dimensions: organisational structure, organisational learning, organisational culture, and strategic culture. The relational capital scale consisted of 22 items covering the following dimensions: relations with customers and suppliers; relations with competitors and allies; relations with society; environmental protection, media, and corporate reputation; relations with the public sector; and relations with investors and other stakeholders.

In order to study the IC, we constructed scales of human capital based on the questionnaire and tested their reliability. Cronbach's α revealed high reliability for all three scales of human, structural, and relational capital. The values of Cronbach's α are 0.935 for structural capital, 0.954 for human capital, and 0.912 for relational capital. The analysis shows that all three dimensions are highly correlated, justifying the construction of the single scale of IC as a single variable (Table II). For the purpose of further statistical analysis, we transformed the original IC scale into a three-point scale assessing the level of IC (low, medium, and high). Cronbach's α on a single IC scale also proved its reliability (0.864).

Organisational innovation culture is composed of organisational capacity and the ability to innovate, whereby the necessary skills, knowledge, and capabilities are readily available (Lynch *et al.*, 2010; Ferraresi *et al.*, 2012). In our research, innovation culture is measured on a scale built up of 12 items covering a wide range of innovativeness from product and process innovation, intellectual property rights/patents, technological equipment, and R&D budget (Table V).

From our questionnaire, which was originally intended for the exploration of IC, we have selected those questions from SOQ (Isaksen *et al.*, 1999; Isaksen and Ekvall, 2007) which best reflect the dimensions of the OC. The following eight categories were identified: challenge and involvement, dynamism, freedom, trust/openness, idea time, playfulness/humour, idea support, and risk-taking (Table IV).

Firm performance is measured on a scale composed of the three firm characteristics: firm is fast growing ("gazelle"); firm has a stable turnover; and turnover is growing moderately (Tables III–V).

	HC	SC	RC	*n*	Mean	SD
Intellectual capital dimensions' correlation matrix						
Human capital	1.000	0.672	0.606	253	5.0684	0.93616
Structural capital	0.672	1.000	0.762	253	4.9218	1.02269
Relational capital	0.606	0.762	1.000	253	4.9533	0.98112

Table II. Intellectual capital

	Mean	SD	*n*
Company performance scale			
Sales are constantly growing	4.7036	1.43201	253
Enterprise has stable turnover	4.8103	1.40703	253
Enterprise is a "gazelle" (fast growing)	3.7826	1.71945	253
Scale	4.432	1.31816	253

Note: Cronbach's α: 0.837

Table III. Company performance scale

After the descriptive analysis of the main dimensions measured by the survey, the hypotheses were tested first by an ANOVA and *post hoc* test.

Finally, in order to test our conceptual model of the impact of IC, OC, and innovation culture on company performance, we performed a hierarchical regression analysis with the type of industry, the size of the firm, and the age of the firm all serving as control variables.

Testing the hypotheses and discussion

According to the results shown in Table VI, there are strong correlations between all four dimensions: IC, OC, innovation culture, and firm performance. The higher correlation coefficient of IC with other companies' characteristics is demonstrative of the key role of IC in OCs.

In order to test the influence of IC and favourable OCs on higher levels of innovation culture and better firm performance, ANOVA and *post hoc* tests were used on those variables (see Table VII). There is a statistically significant difference, determined by one-way ANOVA, for all three measured dimensions ($Foc(2.249) = 61.35$, $p = 0.000$;

Organisational climate scale	*n*	Mean	SD
The employees of the enterprise have a high sense of belonging and commitment	253	5.26	1.37838
Employees are self-dependent in implementing their everyday duties	253	5.00	1.41702
Within the creative working processes, an alternative means of communication such as story boards, comics, or modelling could ostensibly be of great benefit to the company	253	4.61	1.61348
Employees have high-risk capabilities for developing and using new products and processes	253	4.57	1.47182
Employees take risks to develop and utilise new products	253	4.10	1.75179

Note: Cronbach's α: 0.770

Table IV. Organisational climate scale

Innovation culture scale	*n*	Mean	SD
The enterprise's technological equipment is updated	253	5.1383	1.44771
The enterprise is constantly looking for information concerning the potential integration of new technologies	253	4.9170	1.63452
The enterprise is constantly developing new products or new processes	253	4.8340	1.76499
The enterprise is orientated towards investing in new technologies	253	4.7510	1.72437
There is a budget for the development of R&D&I activities	253	4.3715	1.78738
The enterprise has been successful in process innovation	253	4.3636	1.90503
The enterprise has been successful in product innovation	253	4.2530	1.94346
The enterprise owns patents or utility models	253	3.8340	2.16669

Note: Cronbach's α: 0.923

Table V. Innovation culture scale

	Company performance	Organisational climate	Innovation culture	Intellectual capital
Company performance	1	0.511**	0.521**	0.672**
Organisational climate	0.511**	1	0.535**	0.785**
Innovation culture	0.521**	0.535**	1	0.732**
Intellectual capital	0.672**	0.785**	0.732**	1

Notes: Intellectual capital. **$p < 0.01$

Table VI. Correlation matrix

	Sum of squares	df	Mean square	*F*	*p*
ANOVA of organisational climate, innovation culture, and company performance by intellectual capital					
Organisational climate					
Between groups	76.296	2	38.148	61.35	0.000
Within groups	154.826	249	0.622		
Total	231.122	251			
Innovation culture					
Between groups	152.805	2	76.403	51.38	0.000
Within groups	370.234	249	1.487		
Total	523.039	251			
Company performance					
Between groups	120.315	2	60.157	48.07	0.000
Within groups	311.609	249	1.251		
Total	431.924	251			
ANOVA for innovation culture and company performance by organisational climate					
Innovation culture					
Between groups	69.715	2	34.858	19.146	0.000
Within groups	453.324	249	1.821		
Total	523.039	251			
Company performance					
Between groups	51.240	2	25.620	16.758	0.000
Within groups	380.684	249	1.529		
Total	431.924	251			
ANOVA for company performance by innovation culture					
Innovation culture					
Between groups	87.310	2	43.655	31.54	0.000
Within groups	344.615	249	1.384		
Total	431.924	251			

Table VII.
ANOVA of main concepts of the model

Finn(2.249) = 51.38, $p = 0.000$; Fcp(2.249) = 48.07, $p = 0.000$). A Tukey *post hoc* test revealed that better climate, higher level of innovation culture, and better firm performance were all associated with higher levels of IC (Table AII).

Intellectual capital

The low mean values for each type of capital (human, structural, and relational) revealed that the level of all three types of capital were estimated to be relatively low (from 4.92 to 5.06 on a seven-point scale) (Table II). There were only minor differences between the three components of IC, especially between the structural and relational capital (ranging from 4.92 to 4.95).

The relatively low levels of IC are probably conditioned by the firm sizes included in the sample. Almost half of the enterprises (47.5 per cent) were micro-companies employing up to eight employees. Such small companies rely primarily on the skills and experience of the owner or chief manager (human capital), while the internal firm relationships, working procedures, and other elements that build structural capital are not highly relevant. More detailed analyses of the firm size and the IC current characteristics show that structural and relational capital are significantly lower in micro enterprises. Both types of capitals grow rapidly with the number of employees, but the structural capital is the highest in companies with 8 to 19 employees, while relational capital rises at the same level, regardless of employment growth. ANOVA reveals that there are statistically significant differences in the level of these two types of capital when considering the size of the firm (Table VIII).

The companies in our sample display a modest innovation-oriented OC, meaning that companies provide a relatively good working environment and, while employees have a

	ANOVA				
	Sum of squares	df	Mean square	*F*	Sig.
Human capital scale					
Between groups	5.616	5	1.123	1.289	0.269
Within groups	215.236	247	0.871		
Total	220.852	252			
Structural capital scale					
Between groups	15.771	5	3.154	3.144	0.009*
Within groups	247.797	247	1.003		
Total	263.568	252			
Relational capital scale					
Between groups	14.864	5	2.973	3.225	0.008*
Within groups	227.710	247	0.922		
Total	242.574	252			

Note: *$p < 0.05$

Table VIII. Size of the company and intellectual capital dimensions

great degree of commitment to the firm, they are relatively independent in their everyday duties. However, the employees are not prone to high-risk-taking and alternative means of communication, while the opportunities for flexible and creative time are also not omnipresent. Given the sample characteristics (e.g. that 54 per cent of respondents are owners), we should consider the possibility of a slightly biased climate assessment.

The innovation culture of companies and technology development tends to concern the procurement of new technological equipment, which suggests that innovation activities, for the most part, are replaced by the act of updating and upgrading technological tools.

Organisational climate and innovation culture

In order to examine the association between a favourable OC and a higher level of innovation culture and better firm performance, we also ran one-way ANOVA and *post hoc* tests, as shown in Table VII. There is a statistically significant relationship, as demonstrated by one-way ANOVA, for both measured dimensions (Finn(2.249) = 19.146, $p = 0.000$; Fcp (2.249) = 16.758, $p = 0.000$). A Tukey *post hoc* test revealed that a more favourable climate is associated with higher levels of innovation culture and better firm performance.

Company performance

Overall, the companies in our sample show moderate performance in terms of turnover, constant growth, and fast growing companies. Two-thirds of the companies reported that their performance ranged from little to moderate, while about one-third recorded above average sales growth and a stable turnover. Only 16 per cent of companies might be described as "gazelles". In accordance with our conceptual model, we explored the impact of intangible factors and knowledge resources on company performance.

Multiple hierarchical linear regressions were conducted to test hypotheses and examine the relationship between company performance, IC, innovation culture, and OC; with firm size, type of industry, and firm longevity as control variables.

The regression results shown in Table IX reveal that the set of independent variables of longevity, size, and type of industry explain only 1 per cent of the variance in the first model, in which company performance is a dependent variable. When controlling all of the above predictors in this model, only the size of the company (number of employees) is shown to be significantly positively correlated with company performance. In the second regression model, a set of predictors explains that there is considerably more variance in company

performance – 34 per cent to be precise. The company's size remained significant in the second regression. The second model verified that the significant predictors of company performance, after controlling for the independent variables, are IC and innovation culture, while OC has not proved to be the relevant factor for SME's performance.

The regression analysis has confirmed *H1* and *H3*, that higher BP is positively related to a higher level of IC and higher levels of innovation culture. *H2* was not confirmed, suggesting that OC is not particularly crucial for successful business.

Conclusion

This paper sets out to identify the factors influencing innovation culture and BP at an enterprise level, focussing on the application of resource-based and knowledge-based theories on the firm. The purpose of the research reported in this paper was to analyse the relationship between the three components of IC (human, structural, and relational) and OC and innovation culture, together with their influence on innovativeness and BP. Based on a survey of 253 SMEs in Croatia, the analysis shows that the two key dimensions of IC and innovation culture are important for companies' success. Two proposed hypotheses, based on our model, have been confirmed. More specifically, higher BP has been shown to be positively related to higher levels of IC (*H1*), and higher levels of innovation culture (*H3*). The regression analysis revealed that larger companies have better innovation culture and BP, while the age and type of industry do not influence firm performance significantly.

This contributes to the still scarce amount of studies that seek to open up avenues of research on the impact of tacit factors on innovation and business success in countries with a socialist economic legacy.

Exploration of the roles of IC and OC within innovation culture and company performance is important. Countries such as Croatia, who are lacking in innovation, must be allowed to catch up with innovation leading countries in order to reduce regional disparities, and cannot be considered in isolation from the organisational context in which innovation is undertaken. European regional policies should take into account the fact that tacit resources, such as IC and OC, are less a consequence than a cause of the unbalanced regional development, and deserve special treatment in community regional policies for smaller and less innovative countries.

One of the most striking findings of the analysis is the similarity of results when compared with similar studies undertaken in more stable and market-oriented business environments. Of course, as the study focussed on a single country, relative levels of innovation cannot be extrapolated. However, what we can say is that the nature of the influences on innovative performance are broadly similar in emerging market economies

	Model 1			Model 2		
Variables	β	t	Sig.	β	t	Sig.
Longevity of company	−0.040	−0.562	0.575	−0.013	−0.220	0.826
Number of employees	0.169	2.381	0.018*	0.151	2.505	0.013*
Type of industry	0.022	0.310	0.757	−0.036	−0.606	0.545
Intellectual capital				0.439	5.741	0.000**
Organisational climate				0.083	1.241	0.216
Innovation culture				0.150	2.106	0.036*
Adjusted R^2		0.014			0.341	
F change		1.962			33.036	
Sig. of F change		0.121			0.000**	
R^2 change		0.029			0.332	

Notes: Durbin–Watson: 2.126. *$p < 0.05$; **$p < 0.01$

Table IX. Summary of hierarchical multiple regression for predictors of company performance

within Central and Eastern Europe than those found in more established EU member states, such as the UK. This is striking because the context for innovation in new member states and the former transition economies of Central and Eastern Europe is very specific, particularly with regards to innovation. Under socialism, most research and development aimed at generating innovative businesses was found in state-owned research laboratories, rather than in individual firms who had invested in this type of equipment because that was where the future lay.

Our research was grounded on a resource-based theory (Penrose, 2013) and knowledge-based theory (Kianto *et al.*, 2017) that postulated that a firm's success is largely driven by intellectual- and knowledge-driven intangible assets. The findings of our research confirm that the intangible and knowledge resources emphasised by these theories are of equal importance to the strategic development of companies in less innovative countries that have exchanged socialistic planned economy for market economy. Intangible resources, including primarily IC assets and innovation culture, appeared to be decisive for firm performance. In accordance with previous research, our findings confirm that IC is positively and significantly related to organisational performance (Ashkanasy *et al.*, 2011). It also confirms that work environment, in terms of innovation culture (Ferraresi *et al.*, 2012), is a critical factor for the BP and competitiveness of a firm, while OC (Isaksen *et al.*, 2001) has not been observed to have any significant impact.

This emphasis on context has been increasingly recognised by entrepreneurship scholars as important and in need of more explicit attention than it has had in the past. In this case, the specific context is post-socialist Croatia, which is striking because the context for innovation in new member states and the former transition economies of Central and Eastern Europe is very specific, particularly with regards to innovation. As discussed, this is because, during former socialist times, the majority of research and development was found in state-owned research laboratories rather than in individual firms. Nevertheless, the contribution of the study is wider than former socialist economies, particularly with respect to the emphasis on IC, which has important potential policy implications.

At the same time, the research presented here must be considered exploratory. It helps us to identify key factors in the innovation process, although a qualitative investigation would provide a useful complement to this. The findings also emphasise the important role of tacit knowledge in the innovation process, of which IC and OC are good examples. The study also contributes a conceptual model that links a firm's intangible assets to its innovation culture and overall BP.

Managerial and practical implications

The paper suggests that owners and managers of companies can improve their firm's performance by enhancing their IC, jointly with their contextual factor of innovation culture. Following our findings, managers can develop appropriate strategies to achieve better BP.

From a public policy point of view, our findings suggest that supporting policy measures and programmes for entrepreneurship should not exclusively include investments in SMEs' equipment and infrastructure, which is currently the most common measure for supporting entrepreneurship in our country. Based on this study, public policies should also create measures for supporting the intangible assets of the companies, primarily all three aspects of IC. It is well known that strategic and business management is a critical point of the Croatian economy, as in many other post-socialist countries whose economic growth and business propensities have been slowed.

Therefore, fostering human capital in combination with relational and structural capital is of utmost importance for SMEs' competitiveness. Public policies should also strongly promote ideas concerning good management practice, i.e., nurturing a good OC and an innovation culture that can lead to better BP, both economically and socially.

Finally, from an academic point of view, our research results corroborate the findings of other studies grounded in the resource-based and knowledge-based theory. In contrast to other research studies, which mainly focus on a single factor (either IC, OC, or innovation culture), our research presents an intersection of these four issues and could be used for further studies in this domain.

The main limitation of the research is the subjective nature of our study. The data used for this study were self-reported, where the respondents in a survey gave their assessment of firm performance without access to financial and/or business reports. Although this was necessary because of the absence of other data, this issue must be taken into account when interpreting the findings in the study. The second limitation is that the non-representative sample could cause inflation bias, and our third limitation is the research design, as this did not allow for the development of causal relationships and the construction of more sophisticated statistical models.

There is no proof of the reliability of the data as a result of the online form of data gathering. Our results are, therefore, only indicative, and do not provide a strong platform for generalisations.

Future research would benefit from a comparative study of several countries, both innovation followers and innovation leaders, as this would enable us to make an assessment of the role of innovation systems on the performance of individual enterprises.

Seeing as our results suggest that firm size can impact upon innovation culture and company performance, future studies should explore the differences between SMEs and larger companies. Another important aspect worthy of exploration would be the influence of foreign direct investments on the contextual factors analysed in this research.

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Appendix

Table AI.
Scales of the human, structural, and relational capital

Human capital scale	Structural capital scale	Relational capital scale
(1) The employees of the enterprise are highly-motivated	(1) The enterprise has a clear strategy	(1) There is a significant degree of customer loyalty
(2) Financial measures motivate employees	(2) The enterprise has a clear sales strategy	(2) Customers are very satisfied with their relationship with the enterprise
(3) Non-financial measures motivate employees	(3) The enterprise has clear marketing practices	(3) The enterprise is very willing to cooperate with customers
(4) Employees are satisfied and are proud of the enterprise	(4) The enterprise has a clear structure that helps its development	(4) Customers are very willing to cooperate with the enterprise
(5) Employees are satisfied with their work	(5) The enterprise has a clear strategy for intellectual property management	(5) The enterprise is very willing to cooperate with suppliers
6) Employees are satisfied with working conditions	(6) The enterprise has a strong culture that helps its overall development	(6) Suppliers are very willing to cooperate with the enterprise
(7) Employees are satisfied with the climate within the enterprise	(7) The enterprise can be seen to develop human resource management practices	(7) Suppliers are very satisfied with their relationship with the enterprise
(8) Employees have good flexibility and can adapt to changes	(8) The enterprise develops practices to reconcile familiar and working life	(8) Investors are very satisfied with their relationship with the enterprise
(9) Employees are very creative	(9) Leadership in the enterprise fosters its overall development	(9) Cooperation and alliances with competitors are very important to the enterprise
(10) The degree of academic education achieved by employees is tailored to the needs of their position	(10) The company's organisational system helps to improve employees' work	(10) The enterprise is very satisfied with its cooperative relations with competitors
(11) Employees have a high degree of expertise in relation to the needs of their position	(11) There are positive expectations for the growth of the enterprise activity	(11) The competitors are very satisfied with their cooperative relations with the enterprise
(12) Employees achieve required skills through ongoing training developed by the enterprise	(12) The enterprise has been acquiring the objectives fixed in the business plan	(12) Quality certificates are very important to the enterprise
(13) Employees have a high learning capability	(13) The enterprise has the capacity to self-finance itself	(13) The enterprise has implemented a quality system
(14) Employees have a high teamwork capability	(14) The company has values, attitudes, and behaviours shared by employees	(14) The enterprise is concerned about engagement with the government
(15) Employees have a high communicative capability	(15) There is a culture of accumulating and transferring experience to other workers	(15) The enterprise is concerned about having presence within the media
(16) Employees demonstrate a high degree of leadership	(16) The enterprise facilitates teamwork amongst different departments	(16) Society's perception of the brand of the enterprise is quite good

(*continued*)

Human capital scale	Structural capital scale	Relational capital scale
(17) Employees develop new products and processes, even when resources are limited	(17) Internal customer-oriented procedures are documented and standardised (18) External customer-oriented procedures are documented and standardised (19) Supplier-oriented procedures are documented and standardised	(17) Environmental certificates are very important to the company (18) The company has implemented an environmental management system (19) The enterprise is constantly and proactively developing its social networking (20) The enterprise considers relationships with trade unions to be important (21) The enterprise is concerned about communicating its activities and achievements to society (22) The enterprise is concerned about its environmental and social impact

Table AI.

Tukey HSD					
	(I) Intellectual capital	(J) Intellectual capital	Mean difference (I–J)	SE	*p*
Organisational climate	1.00	2.00	−2.61703*	0.56072	0.000
		3.00	−3.68787*	0.56517	0.000
	2.00	1.00	2.61703*	0.56072	0.000
		3.00	−1.07084*	0.10968	0.000
	3.00	1.00	3.68787*	0.56517	0.000
		2.00	1.07084*	0.10968	0.000
Innovation culture	1.00	2.00	−2.10876*	0.86709	0.041
		3.00	−3.75171*	0.87396	0.000
	2.00	1.00	2.10876*	0.86709	0.041
		3.00	−1.64296*	0.16961	0.000
	3.00	1.00	3.75171*	0.87396	0.000
		2.00	1.64296*	0.16961	0.000
Company performance	1.00	2.00	−2.20998*	0.79548	0.016
		3.00	−3.64612*	0.80179	0.000
	2.00	1.00	2.20998*	0.79548	0.016
		3.00	−1.43614*	0.15561	0.000
	3.00	1.00	3.64612*	0.80179	0.000
		2.00	1.43614*	0.15561	0.000
	(I) Organisational climate	(J) Organisational climate	Mean difference (I–J)	SE	Sig.
Innovation culture	1.00	2.00	−2.69637*	0.78520	0.002
		3.00	−3.67555*	0.79794	0.000
	2.00	1.00	2.69637*	0.78520	0.002
		3.00	−0.97918*	0.19882	0.000
	3.00	1.00	3.67555*	0.79794	0.000
		2.00	0.97918*	0.19882	0.000
Company performance	1.00	2.00	−2.14598*	0.71955	0.009
		3.00	−3.01457*	0.73122	0.000
	2.00	1.00	2.14598*	0.71955	0.009
		3.00	−0.86859*	0.18220	0.000
	3.00	1.00	3.01457*	0.73122	0.000
		2.00	0.86859*	0.18220	0.000
Innovation culture	(J) Innovation culture	Mean difference (I–J)	SE	Sig.	
1.00	2.00	−0.76912*	0.22567	0.002	
	3.00	−1.84864*	0.25146	0.000	
2.00	1.00	0.76912*	0.22567	0.002	
	3.00	−1.07952*	0.17401	0.000	
3.00	1.00	1.84864*	0.25146	0.000	
	2.00	1.07952*	0.17401	0.000	

Table AII.
Post hoc tests

Note: *The mean difference is significant at the 0.05 level

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Marina Dabić, Full Professor tenured is the Author of more than 200 articles and case studies, and has edited five books; the latest of which is a co-authored book entitled *Entrepreneurial Universities in Innovation-Seeking Countries: Challenges and Opportunities* which was published by Palgrave Macmillan in 2016. Her papers appear in wide variety of international journals, including the *Journal of International Business Studies*, the *Journal of World Business*, the *Journal of Business Ethics*, the *International Marketing Review*, the *European Management Journal*, the *Thunderbird Business Review*, the *International Journal of Physical Distribution Logistic Management*, and the *Management International Review*, among many others. In her career, Dabić has achieved success and acclaim in a range of different projects and is Primary Supervisor for projects granted by the European Commission. Marina Dabić is the corresponding author and can be contacted at: mdabic@efzg.hr

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