

# National Culture–Intellectual Capital Inter-Relationship in EU Countries

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THE PAPER AIMS AT IDENTIFYING the type and the intensity of the relationship between the national culture dimension and the intellectual capital dimension. The purpose of the paper is to analyse the correlations of the national culture dimensions, based on the Geert Hofstede approach, with the three dimensions of the intellectual capital within the EU countries. The research procedures were: content analysis of the most representative models and methodologies for evaluating the intellectual capital and the national culture dimensions, and correlation analysis. The main outcome of our research reveals the influence of the national culture on the intellectual capital performance. It also shows that some dimensions of the national culture, such as Individualism versus Collectivism and Indulgence versus Restraint, correlate positively with the intellectual capital, while other dimensions, such as Power Distance and Uncertainty Avoidance correlate with it negatively.

*Key Words:* national culture; intellectual capital; conceptual model

## INTRODUCTION

Literature in the field presents the analyses of the national culture in relation to leadership (Dorfman and Howell 1988, 127–50; Schein 2004, 280, 413) and managers’ values (Ralston et al. 2008, 8–26), to human resources (Gerhart and Fang 2005, 971–86; Schneider 1988, 231–46), as well as their motivation, their value, financial systems (Kwok and

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Tadesse 2006, 227–47), etc. However, the national culture-intellectual capital link has been discussed less in the literature (Lynn 1999, 590–603; Sánchez-Canizares, Munoz, and López-Guzmán 2007, 409–30). Still, Lynn (1999, 590–603) evaluates the impact of the national culture and organisational culture on the ways the companies are managed. The author presents, by means of six case studies of famous companies from Canada, the USA and Sweden, the relation between intellectual capital and national culture. The result shows that both national culture and organisational culture determine successful implementation of the intellectual capital management.

The differences among the national cultural capitals (Yeh-Yun Lin and Edvinsson 2011, 17–30) were the premise of our research. More exactly, we intended to find the connections between the national culture variables and the intellectual capital variables.

#### NATIONAL CULTURE: EPISTEMOLOGICAL CONFIGURATION AND DIMENSIONS

For management research, the national culture is the system of values corresponding to and being supported by the general behaviour in a country or a large area. It has been brought up for discussion in order to understand how the organisations can cope with individuals coming from other countries (Robu 2011, p. 35).

In an international context, the term ‘culture’ has at least two determinants (Cornelius 1999, 204; Moldoveanu and Ioan-Franc 1997, 26):

- *organisational culture*, related to traditions, beliefs, behaviour rules, and the managerial style of a company; and
- *national culture* related to language, conduct codes, attitude about human rights, ethic standards, and historical influences characterizing the individuals’ behaviour in a region or a country.

In a broad sense, *the notion of culture regards the spiritual, material, intellectual, and emotional assembly of a society or a social group* (Moldoveanu and Ioan-Franc 2011, 76), as defined in The Declaration of Cultural Policies (Mexico 1995); therefore, culture includes ‘not only arts and literature, but also ways of living, systems of values, traditions and beliefs.’ Each



man is a bearer of the way of thinking, feelings, and potential manifestations acquired throughout life (Hofstede 1996, 20), reflected in the culture of a social group. Therefore, culture is the ‘collective programming of thinking, which distinguishes the members of a group from the members of another group’ (Hofstede 1996, 21). Identifying its applicability also on the organisation level (Pettigrew 1979), organizational culture is ‘a structural assembly of material and spiritual results of an organisation, including a system of values and beliefs, which is cherished and transmitted systematically among its members and outside that organisation’ (Puiu 2004). The organisational culture is an efficient factor, which enables the identification of whether an organisation can perform well or not, but which also determines the organisation’s response to change (Mărăcine 2009, 149–56).

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Since the purpose of our paper is to identify the possible relations between the national culture dimensions and intellectual capital, the six dimensions of the national culture according to the Geert Hofstede theory are presented below:

- *Power Distance* (PDI) expresses the extent to which the most powerful individuals of a society accept that power is not equally distributed. Individuals of the societies showing a *great power distance* accept the hierarchical order where everyone has his/her own place, without requesting or needing justifications or explanations. Power and wealth inequalities are preserved and expanded, and the mounting of the social ladder is difficult. In societies showing a *small power distance*, people try to equalize power distribution and ask for justifications concerning power inequalities. Therefore, power and wealth inequalities are diminished or even removed in the attempt to provide equality and opportunities for all (Hofstede 1980, 65–109). A larger power gap means a strong social conformism, i. e. submission to a higher status. This submission refers to family relationships (child-parent, wife-husband, and younger brother-elder brother), organisational relations (subordinate-manager) or the general social relations (ordinary citizen-celebrity or personality, poor-rich, etc.) (Mihaş and Lungescu 2006, pp. 5–26).

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- *Individualism versus Collectivism* (IDV). A high level of *individualism* expresses the measure in which a society encourages interpersonal relationships and individual development, as well as individuals' propensity to care only about themselves and their families. The social framework shows no unity; on the contrary, very weak interpersonal relationships exist among the society individuals who are focused on individuality and individual rights. Diametrically opposed, *collectivism* implies a preference for the society's unity, consequently very close relationships exist among individuals. In this case, individuals may expect that relatives or members of certain groups take care of them and every member is responsible for the others. The attitude of a society in relation to this dimension is revealed by the way people perceive their own image, i. e. 'me' or 'us' (Hofstede 1980, 148–75). These relationships among people, in the form of individualism or collectivism, differ from one society to another by three features (Mihuț and Lungescu 2006, 5–26): intensity, i. e. the measure in which the members of a society depend on each other, *extent*, i. e. the number of persons with whom somebody maintains closer relationships, and *foundation* (*predetermination*) relating to the criteria on which interpersonal relationships are based. They may be based on social status elements, when they are predetermined, or be fortuitous in accordance with individual preferences. Within individualist societies, the intensity of human relationships is weak, small, and based on individual preferences. As for collectivist cultures, the human relationships are strong, expanded – therefore, multiple – and are predetermined depending on social class, ethnic group, religion or social group to which an individual belongs.
- *Masculinity versus Femininity* (MAS). Societies showing a high level of *masculinity* focus on achievements, fulfilment of purposes, and may be characterized by heroism, assertiveness, self-assertion, and may look for material reward for successes. On the contrary, *femininity* means preference of cooperation, modesty, and concern about the life of the weak ones. In this case, the society as a whole is oriented towards consensus, as defined by Hof-



stede in relation to more arrogant or more modest behaviour of individuals (Hofstede 1996, 99). Initially, a proud behaviour revealing one's own qualities was masculine, while a moderate, modest behaviour was feminine. A masculine society values the dominating behaviour and attempts to excel, while feminine societies hold them to ridicule. Masculinity does not mean placing woman at a disadvantage, but inequality, irrespective of its meaning (Mihuț and Lungescu 2006, 5–26). A high degree of masculinity shows that a society is strongly differentiated by gender; man holds a dominant position within social and power structures, while woman is controlled, dominated. A lower degree of masculinity shows less differentiation and gender discrimination; women and men are treated in the same way in all aspects.

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- *Uncertainty avoidance* (UAI) expresses the degree in which the members of a society feel uncomfortable in conditions of uncertainty and ambiguity. In this case, a major problem is the way the society deals with the fact that the future cannot be known. Should the future be controlled or should we let things happen by themselves? This is the main question on which this dimension focuses. In the countries where this dimension is strong rigid codes of belief and behaviour are maintained and non-orthodox conduct is forbidden. High values of this dimension show that the society does not tolerate uncertainty and ambiguity and is therefore oriented towards rules, laws, and control measures aimed to reduce uncertainty. Societies showing weak uncertainty avoidance maintain a more relaxed conduct, since practices are more valued than principles. Therefore, there is a high degree of tolerance regarding a variety of opinions, while changes are easily accepted and risk-taking is more frequent (Hofstede 1980, 110–47).
- *Long-term versus Short-term Orientation* (LTOVS), added by M. Bond in 1991 and extended by M. Minkov to a sample of 93 countries, deals with social virtues. Societies with a *short-term orientation* are more concerned in finding the absolute truth. They have a rule-based thinking, do not value long-term concepts and

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traditional orientation, have a low propensity for saving for the future and focus on the quick outcome. They are also characterized by formal observance of traditions, reciprocity in regard to favours and gifts. In societies with a *long-term orientation* people think that truth depends on context and time. They are able to adapt traditions to changes, have a strong propensity for saving and investing, and persevere in obtaining results. Although there is a cult of labour, business is not easy, especially for new-comers, since they promote values related to long-term agreements and expect long-term rewards for present efforts. The people of these cultures are characterized by perseverance, modesty, and feeling of shame.

- *Indulgence versus Restraint (IVR)*. *Indulgence*, a recent dimension based on M. Minkov's empirical analysis, i. e. a 93-country survey, refers to a society where people have fun and enjoy life. *Restraint* is specific to societies that hinder the satisfaction of people's needs and resort to strict social rules.

#### INTELLECTUAL CAPITAL: KNOWLEDGE STAGE, DETERMINANTS, AND VARIABLES

Since the purpose of our research is the analysis of the national culture-intellectual capital relationship, we have to briefly present the determinants and the variables of intellectual capital, as well as the knowledge stage in this field.

In a knowledge-based society, organisations change continuously, and the key-factor of change is intellectual capital, which is also a strategic value of an organisation (Parpandel 2013, 53–8). The changes in the power balance of nations are caused by technological innovations and new technologies (Boghean et al. 2009, 151–6), which are important elements of the structural capital. Reporting and measuring intellectual capital is controversial and no points of view are unanimously accepted in scientific theory and practice, probably due to the fact that reporting is rather voluntary than mandatory. Following the analysis of various methods and models of evaluation, reporting and measurement of the intellectual capital, we believe that the most important ones are the following: *The Intangibles Asset Monitor*, which evalu-



ates the internal and external structure of a company and employees' skills (Sveby 1997); *The Balanced Scorecard*, which evaluates the financial prospects, relationships with customers, business processes, learning and development (Kaplan and Norton 1996), the approach to intellectual capital by Edvinsson and Malone (1997); *The Scandia Business Navigator*, which includes financial aspects, renewal and development, customers, processes and human resources; *The IC Index* (Roos et al. 1997); *Performance Prism* (Neely, Adams, and Kennerley 2003). [29]

Although measurement and evaluation is difficult, the knowledge stage in this field enabled us to identify the main component variables of intellectual capital. Following the analysis of the most important concepts regarding intellectual capital and its variables, Martin-de-Castro et al. (2011, 649–62) identified the below presented dimensions and variables. *Human capital* has three dimensions: *Knowledge* (formal education, training, staff development and staff experience), *Skills* (individual learning, collaboration for teamwork, dissemination of individual knowledge and know-how, and leadership) and *Behaviour* (models, paradigms, beliefs, feeling of belonging to a group, self-motivation, labour satisfaction, flexibility, and creativity). *Structural Capital* has the following dimensions and variables: *Technological Capital* (R&D efforts, technological infrastructure, intellectual and industrial property), *Organisational Capital* (organisational culture, values and attitudes, capabilities related to ICT, organisational design). *Relational Capital* includes the following: portfolio of customers, customers' loyalty, market proximity, sales efficiency, suppliers, and relationships with other actors.

In our opinion, the organisational culture should transform into a knowledge culture. Moreover, the link between entrepreneurial dynamics and R&D policy is demonstrated through complex systems of indicators (Năstase 2013, 561–99; Yin-Kuan et al 2012). Drucker (1992, 95–105) considers that organisations should direct their efforts towards achieving the '3 I': Innovation (creation of knowledge), Information (knowledge acquiring), and Interactivity with partners for knowledge. Stimulating the formation of partnerships between university and business environment is decisive for meeting the requirements of a knowledge-based society (Șerbănică 2011, 431). Therefore, it is necessary to make profound changes in the whole structure of

[30] a company, its processes, as well as human resources, which ensure the company's transformation into a knowledge-based company. Human resources are special as regards their potential to grow and develop (Pănoiu, Belu and Marinescu 2008, 103–6). Nevertheless, given the current economic crisis, the training level diminished resulting in a negative impact on the human resources (Bălănescu 2010, 527–32) and the human capital. The impact of intellectual capital on the economy of any European Union member state is even greater as the problem of population ageing is topical in almost all developed states (Ioneci and Mîndreci 2011, 997).

#### SCIENTIFIC RESEARCH METHODOLOGY

The objective of this paper is to analyse the correlations between the national culture dimensions, in accordance with Geert Hofstede's approach, and the three dimensions of the intellectual capital, i. e. structural, relational, and human capital, for EU member countries.

Our intention is to identify the type of links established among the variables. Therefore, we tested for the existence of a positive association between previously identified variables. The correlation shows the strength of the link between the variables; therefore identifying the variables with the strongest link, as well as those with weaker correlations. In order to test this hypothesis we used the Pearson correlation coefficient  $r$ , where  $S_x$  and  $S_y$  are standard deviations for series  $X$  and  $Y$ .

$$r = \frac{\text{cov}(X, Y)}{S_x S_y}. \quad (1)$$

To conceptualize the model we formulated the following hypotheses:

- H1 *There is a negative association between the Power Distance (PDI) and the three dimensions of intellectual capital, i. e. structural, relational, and human capital. Therefore, bigger power distance will cause a diminution in intellectual capital.*
- H2 *There is a positive correlation between Individualism versus Collectivism (IDV) dimension and the three dimensions of intellectual capital – structural,*



relational, and human capital. Therefore, increasing individualism causes an increase in intellectual capital.

- H3 Masculinity versus Femininity (MAS) dimension does not significantly influence intellectual capital in its three dimensions.
- H4 There is a negative correlation between the Uncertainty Avoidance (UAI) dimension and the structural, relational, and human capital; while uncertainty and ambiguity increase, the performance of intellectual capital diminishes.
- H5 Long-Term versus Short-Term Orientation (ITOWVS) dimension influences intellectual capital. Thus, long-term orientation, which implies a strong propensity for saving and investing, is positively correlated with intellectual capital performance.
- H6 There is a positive link between the Indulgence versus restraint (IVR) dimension and intellectual capital, i. e. indulgence, seen as a relaxation of rules and constraints, favours an increase in performance of the three dimensions of intellectual capital.

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#### Operationalization of Variables and data Collection

For the purpose of this analysis, we used a model of intellectual capital evaluation for companies from the EU countries, which was proposed and tested by us for previous research work (Dindire 2012, 33–9). We considered the results of the performance evaluation of the companies from the EU countries in relation to the elements that determine organisational behaviour oriented toward knowledge-intensive development and identification of critical items, which was smaller than the performance index average for each dimension of intellectual capital: structural, relational, and human.

The performance index was calculated by means of the following formula:

$$I_{pi} = \frac{V_i - V_{i \min}}{V_{i \max} - V_{i \min}}, \quad (2)$$

where  $V_i$  is the value of criterion  $pi$  (in our case, score value per item),  $V_{i \min}$  is the minimum value of criterion  $i$  (in our case, minimum scorecard value per item), and  $V_{i \max}$  is the maximum value of criterion  $i$  (in our case, maximum scorecard value per item).

After the analysis of the most representative models and method-

[32] ologies for intellectual capital evaluation and content analysis of reports concerning the intensive knowledge development of top ranked companies by Forbes in 2011 (*The World Most Valuable Companies*), as well as relevant reports of international organisations (World Bank, World Economic Forum), Eurostat and UNCTAD statistics and publications, Eurobarometers and EU reports on intellectual capital, we proposed the following dimensions and variables (showing positive correlations, as demonstrated by our research):

- *Structural Capital*:  $v_1$  – ethical conduct of the company;  $v_2$  – the company’s investment in R&D;  $v_3$  – knowledge-intensive production process;  $v_4$  – confidence in the professional capability of the leaders;  $v_5$  – degree of absorption of new technologies;  $v_6$  – determinants of competitive advantage;  $v_7$  – competence delegation; and  $v_8$  – innovation capacity of the company.
- *Relational Capital*:  $v_9$  – customer proximity;  $v_{10}$  – sophistication of marketing instruments;  $v_{11}$  – R&D cooperation between the academic environment and the entrepreneurial environment;  $v_{12}$  – the level of protection of investors.
- *Human Capital* –  $v_{13}$  – employee-employer cooperation;  $v_{14}$  – brain drain;  $v_{15}$  – personnel training level;  $v_{16}$  – the effectiveness of boards of directors.

We calculated the average score per item for each dimension; furthermore, we calculated – using the above-mentioned formula – the performance index of structural capital, relational capital, and human capital. For our research we used data on companies from the EU countries provided by the World Economic Forum (2012) and the World Bank (2012). It is worth mentioning that we identified qualitative data on companies from the EU countries only from these international organisations. We obtained the following data to be further used for evaluating the intellectual capital of companies from the EU countries (table 1)

For this research we collected data from the six dimension data matrix, *Dimensions Data Matrix* (Hofstede and Hofstede 2012). The matrix contains the scores of the national culture dimensions for 110 coun-



TABLE I Performance indices of the three dimensions of intellectual capital

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Austria	5.31	0.70	5.15	0.57	5.08	0.76
Belgium	5.33	0.71	5.88	0.86	4.85	0.67
Bulgaria	3.29	0.00	4.25	0.22	3.30	0.01
Cyprus	4.01	0.25	4.45	0.30	4.13	0.36
Czech Republic	4.19	0.31	4.78	0.43	4.18	0.38
Denmark	5.86	0.89	5.68	0.78	5.30	0.86
Estonia	4.39	0.38	4.88	0.47	4.30	0.43
Finland	5.93	0.91	5.50	0.71	5.28	0.85
France	5.15	0.65	5.05	0.53	4.23	0.40
Germany	5.74	0.85	5.30	0.63	4.90	0.69
Greece	3.39	0.03	3.70	0.00	3.28	0.00
Hungary	3.66	0.13	4.40	0.28	3.65	0.16
Ireland	5.06	0.61	6.00	0.91	4.58	0.55
Italy	4.18	0.31	4.60	0.36	3.48	0.08
Latvia	3.74	0.16	4.50	0.32	3.95	0.29
Lithuania	3.89	0.21	4.78	0.43	3.90	0.26

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tries. From this matrix, we selected data on EU countries (table 2). Since in case of Cyprus, data was provided only on the Indulgence versus Restraint (IVR) dimension, we eliminated this country from the correlation matrix.

The model, i. e. the national culture-intellectual capital relation, is presented in the form of a diagram to facilitate the presentation of the relations between variables (figure 1).

#### DATA ANALYSIS, RESEARCH RESULTS, AND INTERPRETATION

Statistical data were processed by means of EXCEL, Data Analysis. Hypotheses were tested by the correlation method. The correlation displays the strength of the link between variables. Therefore, we calculated the Pearson correlation coefficient. The interpretation was based on the results of the Pearson coefficient  $r = \text{cov}(X, Y) / S_x S_y$ , where  $S_x$  and  $S_y$  are standard deviations for series  $X$  and  $Y$ . The correlation

TABLE I Continued from the previous page

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Luxembourg	5.25	0.68	4.98	0.51	5.25	0.84
Malta	4.15	0.30	3.93	0.09	4.33	0.44
[34] Netherlands	5.66	0.82	5.30	0.63	5.30	0.86
Poland	3.78	0.17	4.65	0.38	3.88	0.25
Portugal	4.10	0.28	5.00	0.51	3.78	0.21
Romania	3.34	0.02	4.23	0.21	3.40	0.05
Slovak R.	3.65	0.13	4.23	0.21	3.73	0.19
Slovenia	4.01	0.25	4.93	0.49	3.75	0.20
Spain	4.23	0.32	4.60	0.36	3.85	0.24
Sweden	6.18	1.00	5.98	0.90	5.63	1.00
United Kingdom	5.43	0.74	6.23	1.00	5.20	0.82
	$V_i \text{ min}$	3.29	$V_i \text{ min}$	3.70	$V_i \text{ min}$	3.28
	$V_i \text{ max}$	6.18	$V_i \text{ max}$	6.23	$V_i \text{ max}$	5.63
	$\overline{I_{pi}}$	0.44	$\overline{I_{pi}}$	0.48	$\overline{I_{pi}}$	0.44

NOTES Column headings are as follows: (1) EU member countries, (2) average score per items of structural capital, (3)  $I_{pi}$  of structural capital, (4) average score per items of relational capital, (5)  $I_{pi}$  of relational capital, (6) average score per items of human capital, (7)  $I_{pi}$  of human capital. Adapted from Dindire (2012).

matrix allowed us to test the relation between the six dimensions of the national culture and the performance of the three dimensions of intellectual capital as follows:

H1 *There is a negative association between the Power Distance (PDI) dimension and the three dimensions of the intellectual capital (structural, relational, and human).*

Therefore, a bigger power distance causes a diminution in the intellectual capital dimensions. We used the correlation method to test Hypothesis 1 (H1). The correlation displays the strength of the link between variables. The negative correlation coefficients point to the fact that an increase in the Power Distance (PDI) dimension causes decreases in the performance of the structural, relational, and human capital. The three correlation coefficients take on values below  $-0.5$ , which means a good to very good negative correlation. The highest



TABLE 2 Matrix of national culture dimensions

Country	PDI	IDV	MAS	UAI	ITOWVS	IVR
Austria	11	55	79	70	60	63
Belgium	65	75	54	94	82	57
Bulgaria	70	30	40	85	69	16
Czech R.	57	58	57	74	70	29
Denmark	18	74	16	23	35	70
Estonia	40	60	30	60	82	16
Finland	33	63	26	59	38	57
France	68	71	43	86	63	48
Germany	35	67	66	65	83	40
Greece	60	35	57	112	45	50
Hungary	46	80	88	82	58	31
Ireland	28	70	68	35	24	65
Italy	50	76	70	75	61	30
Latvia	44	70	9	63	69	13
Lithuania	42	60	19	65	82	16
Luxembourg	40	60	50	70	64	56
Malta	56	59	47	96	47	66
Netherlands	38	80	14	53	67	68
Poland	68	60	64	93	38	29
Portugal	63	27	31	104	28	33
Romania	90	30	42	90	52	20
Slovak R.	104	52	110	51	77	28
Slovenia	71	27	19	88	49	48
Spain	57	51	42	86	48	44
Sweden	31	71	5	29	53	78
United Kingdom	35	89	66	35	51	69

NOTES Adapted from Hofstede and Hofstede (2012).

negative correlation is found between PDI and the human capital performance index ( $r = -0.69$ ), followed by the correlation structural capital performance index ( $r = -0.66$ ) and between PDI and the relational capital performance ( $r = -0.56$ ). Therefore, *all the three components of intellectual capital are negatively associated with the Power Distance (PDI) dimension*. This result allows us to validate Hypothesis 1 (H1).

TABLE 3 The Pearson coefficients of correlation between Power Distance (PDI) and performance of the three dimensions of intellectual capital

Dimensions	(1)	(2)	(3)	(4)
(1) PDI	1			
(2) $I_p$ Structural Capital	-0.668	1		
(3) $I_p$ Relational Capital	-0.569	0.837	1	
(4) $I_p$ Human Capital	-0.690	0.946	0.790	1

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TABLE 4 The matrix of correlation between the Individualism versus Collectivism (IDV) dimension and the three dimensions of the intellectual capital

Dimensions	(1)	(2)	(3)	(4)
(1) IDV	1			
(2) $I_p$ Structural Capital	0.585	1		
(3) $I_p$ Relational Capital	0.546	0.837	1	
(4) $I_p$ Human Capital	0.584	0.946	0.790	1

H2 *There is a positive correlation between the Individualism versus Collectivism (IDV) dimension and the three dimensions of intellectual capital: structural, relational, and human. Therefore, an increase in individualism causes increases in the intellectual capital dimensions.*

The correlation matrix allowed us to test for positive association related to Hypothesis 2 (H2). The values obtained are presented in table 4. We obtained correlation coefficients that are positive and  $> 0.5$ , which allows us to validate the association implied in the hypothesis. However, the correlation coefficients are not very close to +1, which means a moderate association between dimensions. Therefore, an increase in individualism causes moderate increases in the intellectual capital performance.

H3 *The Masculinity versus Femininity (MAS) dimension does not significantly influence the intellectual capital.*

This hypothesis was based on several scientific studies supporting gender equality and equal opportunities for women and men. For testing Hypothesis 3 (H3) we used the correlation matrix. The correlation coefficient ranges between -1 and +1. The closer the coefficient is to



TABLE 5 The matrix of inter-item correlation between the Masculinity versus Femininity (MAS) dimension and the intellectual capital performance indices

Dimensions	(1)	(2)	(3)	(4)
(1) MAS	1			
(2) $I_p$ Structural Capital	-0.225	1		
(3) $I_p$ Relational Capital	-0.200	0.837	1	
(4) $I_p$ Human Capital	-0.237	0.946	0.790	1

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+1, the higher the positive linear relation intensity. The closer the coefficient is to -1, the higher the negative linear relation intensity. In our case, the values are closer to 0, which justifies the hypothesis validation, i. e. *the Masculinity versus Femininity (MAS) dimension does not significantly influence the intellectual capital.*

H4 *There is a negative correlation between the Uncertainty Avoidance (UAI) dimension and the structural, relational, and human capital, i. e. while uncertainty and ambiguity increase, the performance of intellectual capital decreases.*

Hypothesis 4 (H4) was also tested by means of the Pearson correlation coefficient. The values obtained are presented in table 6. We obtained values below -0.5, which shows a good negative correlation between the analysed dimensions. Considering that the closer  $r$  is to -1, the stronger the link intensity is, we may conclude that the highest negative association is between UAI and the relational capital performance index ( $r = -0.66$ ), followed by the negative correlation between UAI and the human capital performance index ( $r = -0.65$ ), and the link between UAI and the structural capital performance index ( $r = -0.61$ ). The results allow us to validate the hypothesis that *while uncertainty and ambiguity increase, the intellectual capital performance decreases.*

H5 *The Long-term versus Short-term Orientation (ITOWVS) dimension influences intellectual capital. Thus, long-term orientation, when people have a stronger propensity for saving and investing, is positively correlated with intellectual capital performance.*

The correlation matrix allowed us to test hypothesis 5 (H5). The values obtained are presented in table 7. The Pearson coefficients ob-

TABLE 6 The Pearson coefficients of correlation between the Uncertainty Avoidance (UAI) dimension and the performance of the structural, relational, and human capital

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Dimensions	(1)	(2)	(3)	(4)
(1) UAI	1			
(2) $I_p$ Structural Capital	-0.612	1		
(3) $I_p$ Relational Capital	-0.660	0.837	1	
(4) $I_p$ Human Capital	-0.655	0.946	0.790	1

TABLE 7 The matrix of correlation between the Long-term versus Short-term Orientation (ITOWVS) dimension and the three dimensions of intellectual capital

Dimensions	(1)	(2)	(3)	(4)
(1) ITOWVS	1			
(2) $I_p$ Structural Capital	-0.053	1		
(3) $I_p$ Relational Capital	-0.132	0.837	1	
(4) $I_p$ Human Capital	-0.023	0.946	0.790	1

tained are close to 0, which means that there is no correlation between the Long-term versus Short-term Orientation (ITOWVS) dimension and the three dimensions of intellectual capital. Therefore, there is no association – either positive or negative – between the analysed variables.

H6 *There is a positive link between the Indulgence versus Restraint (IVR) dimension and intellectual capital, i. e. indulgence, seen as a relaxation of rules and constraints, favours an increase in performance of the three dimension of intellectual capital.*

Hypothesis 6 (H6) was tested by means of the correlation coefficients. Data analysis allows us to identify a good to very good correlation between the Indulgence versus Restraint (IVR) dimension and intellectual capital. Therefore, we conclude that *indulgence, seen as a relaxation of rules and constraints, favours increases in performance of the three dimensions of intellectual capital* and validates the hypothesis. We may notice that all coefficients take on values  $> 0.5$ . Moreover, between IVR and the structural capital performance index there is a very good positive association ( $r = 0.76$ ). Also there is a very good positive correlation between IVR and the human capital performance index ( $r = 0.75$ ).



TABLE 8 Coefficients of correlation between the Indulgence versus Restraint (IVR) dimension and intellectual capital

Dimensions	(1)	(2)	(3)	(4)
(1) IVR	1			
(2) $I_p$ Structural Capital	0.761	1		
(3) $I_p$ Relational Capital	0.598	0.837	1	
(4) $I_p$ Human Capital	0.756	0.946	0.790	1

[39]

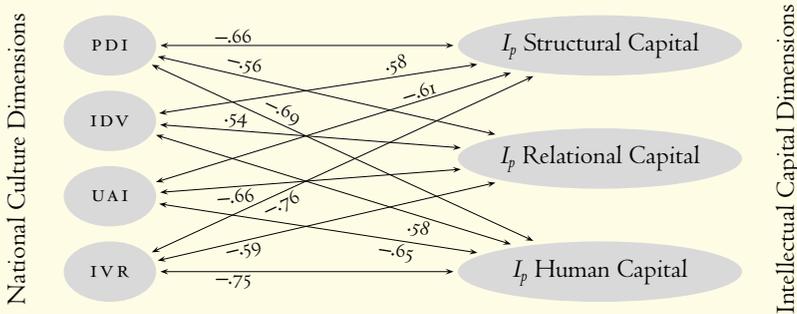


FIGURE 1 National culture–intellectual capital inter-relationship (PDI – Power Distance, IDV – Individualism versus Collectivism, UAI – Uncertainty Avoidance, IVR – Indulgence versus Restraint)

The smallest value – although implying good positive correlation – was found between IVR and the relational capital performance index ( $r = 0.59$ ). The proposed model is presented in figure 1.

CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

This paper analyses National Culture – Intellectual Capital inter-relationship. An important result was the demonstration of the national culture influence on intellectual capital.

The research conclusions, which reveal the development of the relations between variables, are the following:

- All the three components of intellectual capital are negatively associated with the *Power Distance* (PDI) dimension of the national culture. Therefore, a rise in the Power Distance dimension will cause a diminution in the performance of structural, relational, and human capital.

[40]

- A rise in the *Individualism* level will cause a moderate growth in intellectual capital performance.
- The *Masculinity versus Femininity* (MAS) dimension does not significantly influence intellectual capital.
- When uncertainty and ambiguity increase, intellectual capital performance decreases.
- There is no association, either positive or negative, between the *Long-term versus Short-term orientation* (ITOWVS) dimension and the three dimensions of intellectual capital.
- Indulgence, considered as a relaxation of rules and constraints, favours higher performance of the three dimensions of human capital.

For future research we intend to extend the sample to see if it is applicable to non-EU countries. Furthermore, we intend to draw a cause-effect map to be used as a diagnosis and control tool for intellectual capital performance.

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