INTELLECTUAL CAPITAL AS A CONSEQUENCE OF FINANCIAL COMMUNITIES

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Abstract

The majority of previous studies about communities of practice have been about the internal components (e.g. autonomy, formalization, supervisory support, flexibility, skill and development), but not about the relative influence of financial communities (e.g., financial participation's in other companies, exportation, and importation activities). The aims of this research are: 1) this work presents a theoretical argument of the literature with respect to those dimensions which are related to the efficiency of financial communities of practice and intellectual capital; 2) some criterions are established for evaluating or measuring the efficiency of financial communities of practice in the intellectual capital; 3) the relative importance and significance of financial communities of practice will be measured in the intellectual capital; and 4), in conclusion some aspects which can be used to design financial communities of practice more effectively will be shown.

Keywords: Financial communities, Intellectual, human, and organizational capital.

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1 Introduction

The 'market value' of an organization is the result of adding tangible assets and intangible assets (Edvinsson and Malone, 1997). The intellectual capital is used to name the joining of assets which are not recorded anywhere in a company's financial statements. However these hidden assets generate or will generate value to the organization in the future (Bueno, 1998). 'Knowledge management' is a dynamic process, where learning occurs over time and across levels (i.e. individual, group and organizational knowledge) in order to create intellectual capital. Crossan *et al*. (1999) assert that, in this dynamic process, the 'group learning process' represents the bridge between human and organizational capital.

Through group learning, new ideas and actions flow from the individual to the organization level. At the same time, what has already been learned feeds back from the organization to individual level, affecting how people act and think. Bueno (1998) asserts that among all the agents which a company has relationships; the most important are shareholders, because of the direct relation with financial performance and survival in the long term. Dogson (1993) suggests that through 'congenital learning', shareholders incorporate into organizations an important knowledge to accomplish goals and planning activities.

Therefore, at the individual learning level, shareholders who are in touch with employees, suppliers, clients, and other shareholders of different companies will have an information exchange, and by beginning from the onset with a literal utilization of the explicit information of the environment, they will create new knowledge. Thus, "financial communities" are teams formed by company shareholders and company workers where its members regularly share knowledge and learning together with shareholders and workers from different companies. Through 'financial communities', organizations will secure face-to-face interaction (dialogue and discussion) between shareholders and workers that constitute the organization simultaneously to share a variety of perspectives surrounding a common topic.

In order to know the impact of 'financial communities' of practice on intellectual capital, the paper is structured into three main sections: the theoretical foundation analyzes some current approaches in the fields of human capital and organizational capital and identifies relevant elements concerning financial communities. Thereafter the required modification of current approaches and the main elements of the integrated model are discussed. Finally, we describe our conclusion application of the model in 191 companies in the research and development industry of Spain. The paper concludes with a summary, a critical reflection and an outlook on further research opportunities.

2 Intellectual capital, and financial communities

According to Bueno (1998), **'**intellectual capital**'** is knowledge that can be exploited for some money-making or other useful purpose. The term combines the idea of the intellect or brain-power with the economic concept of capital, the saving of entitled benefits so that they can be invested to produce more goods and services.

There is a lot of debate and dialogue in the literature on the classification of different components of intellectual capital (e.g., Kaplan and Norton, 1992; Roos *et al*., 1997; Edvinsson, 1996; Sveiby, 1997; Brooking, 1996; Bueno, 1998). Roos and Roos (1997) assert that there are two general categories of intellectual capital: 1) those intangible assets that belong to organization members (i.e. human capital); and 2), those that belong to organizations (i.e. organizational capital).

According to a revision of relative literature on intellectual capital (e.g., Onge, 1996; Roos *et al*., 1997; Bueno, 1998; Camisón *et al*., 2000) there is consensus in identified 'human capital' as the skills, knowledge, talents and capabilities of all individuals associated with an organization.

Davenport and Prusak (1998) suggest that this human capital is a product of human reflection and experience, and this is supported by Brown and Duguid (1991) and Weick (1991), who argue that this new stored knowledge only becomes intellectual capital when individuals can apply their own experience and contextual understanding to interpret the details and implications for action. Moreover, trust and the ability of employees to work in an autonomous manner are often cited as being essential for the effectiveness of self-managed teams (Martinez and Cegarra, 2004). This is something, which makes the previous 'satisfaction and motivation' existence indispensable, since an individual will find it difficult to interpret client signs or manifestations if previously employee satisfaction has not been achieved for doing it (Fornell 2000).

Ancona (1987), Pearce and Ravlin (1987), Hackman (2003) suggest that 'satisfaction and motivation' in employees is related to reward systems, and compensation. Krogh (1998) asserts that the higher the level of retribution, the higher the level of collaboration among members of the company, which is a significant factor to create new knowledge. Guzzo and Shea (1992) consider 'interdependence of the results' as recognition and individual remuneration's by projects accomplished by the team. Some authors, (e.g., Gladstein, 1984; Hackman, 1987; Pearce and Ravlin, 1987; Sundstrom *et al*., 1990) say that this circumstance is important in the efficiency of the individual, group, and organizational learning, and therefore 'interdependence of the results' are good predictors of human capital.

Camisón *el al*. (2000) suggest that, 'organizational capital' represents the knowledge systematized and internalized by the organization. According to Narver and Slater

(1990), ‘organizational capital’ represents the knowledge learnt and created by groups within organizations. Cegarra and Rodrigo, (2003) suggest that ‘organizational capital’ refers to the tacit and explicit knowledge stored, recodified, and recorded in information systems, operating procedures, white papers, routines, diagnostic systems, rules, mission statements and procedures. Hamel (1991) and Szulanski (1996) assert that the capacity to create ‘organizational capital’ is influenced by capabilities of members of the organization to identify and assimilate related knowledge.

Mowery (1983) suggests that organizations which are able to manage its own investments are better using related knowledge. Under this circumstance, Cohen and Levinthal (1990) suggest that ‘organizational capital’ is created because of the technical change pushed by investments, which fosters individuals using related knowledge to create new knowledge. Rosenberg (1982) asserts that ‘organizational capital’ can be created because of the manufactured efforts of the company, since a company will find it easy to interpret related knowledge with its own manufacturing process. In this sense, Tilton (1971) and Allen (1977) suggest that the higher the level of stock, the higher the effort of a company in looking for related knowledge to sell and place its goods.

Reichheld (1996) asserts that “in some companies, productivity gains never translate into cash-flow, because employees harvest the gains for themselves” (p. 46), in other words, human capital is not transformed into organizational capital. According to Reichheld (1996), the key to quantifying the cash-flow consequences of human capital is to recognize that “employee retention is not only critical for cost efficiency but and important factor in revenue growth as well, because of its direct link to customer acquisition and retention” (p. 96). Therefore, in normal conditions cash-flow is another consequence of using related knowledge which belongs to different agents correctly (e.g. customers, employees, shareholders, banks, etc.,).

Organizations have a considerable variety of ways to create ‘human and organizational capital’. The role of the chief knowledge management will be to choose the adequate context in which everyone would be able to interact (i.e. dialogue and discussion) with each other. El Sawy *et al*. (1997) suggest that it is precisely the conflict, which pushes the people to question the existing premises and to feel their experience in a new way. However, this conflict cannot be presented at organizational level as all encompassing.

It will not be able to offer face-to-face interaction among all the agents that constitute the organization simultaneously.

Therefore, it will be necessary to create ‘financial communities of practice‘, which are smaller groups as opposed to one big group that would become the entire organization, through which members could share their know-how and experiences. However, there is an aspect in the process of financial communities that can effect negatively on the decision making of the community. Janis (1982) calls it ‘groupthink’ or trends in members of the high cohesion groups to lose their critical potentials.

According to Robbins (1996), the two crucial factors, which explain the emergence of the ‘groupthink’ are the ‘degree of cohesion’ and the ‘conformity level’ of the members. In these circumstances, the desire to maintain a united financial community is more important than the quality of the decisions. Janis (1982) suggests a series of actuation’s to offset the possible negative effects of the ‘groupthink’ these activities are:

1) In the first place, Janis considers, ‘creating sub-groups’ with different leaders that work on the same problem. With regard to Janis´ consideration, Gladstein (1984) suggests that the size of the group needs to be sufficiently large to accomplish the tasks, which they have been entrusted with (e.g. the larger number of shareholders, the bigger the possibility to create subgroups with different leaders).

2) Gladstein (1984), Goodman *et al*. (1986), and Hackman (1987) suggest that ‘heterogeneity of activities’, also have a positive effect on the group learning of the community. This is justified, because, if the tasks assigned to the team are assorted with other activities, it will facilitate ‘intrusion learning’. Therefore, companies which develop exportation and importation activities can contribute to an increase in heterogeneity, because of the opportunity that individuals have for accomplishing several tasks (i.e. exportation and importation activities), which is motivational because, it allows the team members to develop different skills and it also allows the members to learn from one another (Hackman, 1987).

3) Reichheld (1996), and Day (2000) suggest, that the knowledge about customers is so dispersed that it is impossible for all this knowledge to belong to only one company, because, it can not only be contained within the individuals that form part of the company. Through ’holding shares’ in other companies, employees are able

to seek out both the technical and cultural aspects of their new roles and responsibilities. 'Holding shares' are a set of systems and mechanisms through which information exchange is facilitated and at the same time employees have access to relevant information, on the needs and desires of customers to interpret and to act consequently (Alfaro, 2000).

3 Methodology

Once the importance of financial communities has been justified this work is going to develop the methodology to test the hypothesis. In this mission, the most important companies of the research and development industry of Spain were considered. In this sense, according to the criterion of the European Union from 1996, the research considered the medium companies with more than forty-nine employees and financial participation in other organizations as a population. Under these criterions 191 firms were considered. The information was collected using data from the SABI database (i.e. SABI is a database containing information on over 550.000 Spanish companies and over 67.000 Portuguese companies).

Table 1 shows articles used to measure every component (i.e. financial communities, human capital, and organizational capital). These articles to facilitate comparison were transformed into indices (i.e. numbers without dimension) with a minimum value of one and a maximum value of ten. This methodology is based on the model of Roos *et al*. (1997) consistent into transforming a list of numbers without representative dimension of the intangible assets, into an intellectual capital index that serves as a reference on the efficiency of the intangible resources. The mathematical expression which was used is shown below.

$$\hat{O}_i = \frac{X_i x\, 10}{Max(X_1 .... , X_n)}$$

Where:
X_i: Represents a case of the variable,
Max ($X_1 \ldots X_n$): Maximum value for the different cases,
$\hat{O}_i$: Index that serves as a reference.

A total of sixteen indices were used to measure all constructs (e.g. personal costs, employee number, retribution costs, profit per employee ratio, stock value, current assets, turnover, total tangible assets, number of shareholders and their participation in the companies' capital, participation in other companies and their percentage of participation, countries where participated firms are working, exportation sales,

importation purchases and total purchases). The evaluation of psychometric properties in each of the measurement scales used for different constructs is based on methodological suggestions developed by Churchill (1979) and was validated for convergence and discrimination (Anderson and Gerbing 1988; Lehmann *et al*., 1999).

Results of the confirmatory factor analysis and reliability of the scale are shown in Table 1. The standard coefficient regression between the set of explanatory variables of scales and their corresponding variables of saturation are significant, confirming the existence of three inherent dimensions to measure each of the proposed variables. In all cases the coefficients of reliability exceed the minimal level of 0.6 recommended by Bagozzi and Yi (1988) confirming the reliability of each construct. The standardized parameters (>0.5) indicate that there is convergent validity and that they are significant at the level of reliability of 99%. Discriminate validity is guaranteed between each pair of dimensions because the interval of reliability in their correlations does not include unity (Anderson and Gerbing 1988).

Table 1. Construct summary, confirmatory factor analysis and scale reliability of Intellectual Capital and Financial Communities

Human Capital	**Items**	**Value**	**T-value**	$\lambda_i+2\varepsilon$	**SCR**
Satisfaction and motivation	Total personal costs / number of employees	0.50	6.52	0.66	0.676
Level of retribution	Total retribution cost / number of employees	0.60	7.67	0.76	
Interdependence of the results	Total profit / number of employees	0.82	10.69	0.98	
Organizational Capital	**Items**				
Human capital translate into cash-flow	Stocks value / number of employee	0.60	8.29	0.74	0.663
Effort of a company to looking for related knowledge	Current liabilities / turnover	0.78	11.11	0.92	
Technical change pushed by investments	Total assets / turnover	0.50	6.52	0.66	
Financial Communities	**Items**				
Number of International shareholders	Total foreign shareholders x percentage of participation	0.50	6.53	0.66	0.671
Exportation and importation activities	Exportation / total sales + Importation / total purchases	0.63	8.75	0.77	
Holding shares in other companies	Total financial investments in foreign companies x percentage of participation	0.78	11.21	0.92	

The confirmation statistics of the hypothesis have been accomplished using the statistical technique of regression analysis. A correlation analysis was conducted in order to avoid multicolinealidad problems that are associated with hierarchical

regressions (Peterson 1994; Hair *et al*., 1999). Results of the correlation analysis are shown in Table 2.

Within this technique we opted for the hierarchic method, which examines the relationships between the financial communities and the components of Intellectual capital and permits the introduction of the independent variables in different blocks. In the first step, only the control variables were regressed. In the second step, each one of the components of intellectual capital included –human capital and organizational - was added to the equation. The degree of explanation of the variance in the dependent variables is studied through these equations. For this, we designed some standardized coefficients of the independent variables. Tests were completed to see if the assumptions for the regression analyses were met.

In order to test the hypotheses and determine the variables that maintain a significant relationship with the financial communities of practice, one factor Anova analysis has been carried out. In order to find out if means of different groups which are integrated into each one of these variables is significant or not, the Bonferroni or Tamhane test was used. Results of the confirmation statistics and reliability of the scale are shown in section 5.

4 The equation model and hypotheses

Rolandi (1986) and Mykytyn *et al*. (1994) assert that the background, skills, training and traits of knowledge of the workers are the key essentials for successful intellectual capital creation. However, these factors do not emerge spontaneously or in a vacuum. They evolve out of the context and the history of the organization and their impact is conditioned by the subjective perceptions of employees whose experience is ruled by that history. This has resulted in questioning where organizations should begin. What enables human and organizational capital creation?

Hedberg (1981), Senge (1990), Kim (1993), and Nonaka and Takeuchi, (1995) argue that knowledge only becomes intellectual capital when 'individual learning' happens. Narver and Slater (1990) suggest that individuals can learn from the experiences of other agents (e.g. customers, banks, suppliers, competitors, employees, shareholders, etc.) or using organizational memory. In other words, intellectual capital is created when individuals can apply their own experience and contextual understanding to

interpret the knowledge stored in the organizational capital or created with the interaction that takes place among internal and external agents.

However, knowledge that has been institutionalized by an organization is difficult to change. Spender (1998) suggests that organizations cannot change and 'unlearn' and that only individuals can do so. Jelinek (1979) draws attention to the fact that organizations cannot have quasi-individual thought processes, and that only people are capable of learning and 'unlearning' by means of mental activity. Consequently it is through individual 'unlearning' that the members of an organization will allow change to occur and result in improved productivity (Hedberg, 1981).

On the other hand, changes in groups' behavior without a corresponding change in organizational capital are transitional states since they create a tension between organization's beliefs and group's action. This tension can only be resolved by integrating changes in groups and organizations with changes in individuals so individual, and group beliefs and organization actions are in accordance with each other. Hedberg (1981) describes this process, as a series of 'little deaths' at the micro-level, since old structures and ways of thinking must be removed from the repertoire in order to make room for new structures.

Existing literature analyzes the factors that affect the learning process from a multitude of perspectives, since each organization will have its own factors, which will depend on the size of the company, legal form, whether or not it is in the stock market, and character of the sector (Day, 2000). Therefore, financial communities, human capital, and organizational capital can be affected by contingent factors.

In Table 3 we present the results of testing the theoretical model shown in Figure 1 through testing the three hypotheses:

H_1: The higher the level of financial communities of practice, the higher the level of human capital

H_2: The higher the level of financial communities of practice, the lower the level of organizational capital

H_3: Human capital, and organizational capital are influenced by contingent factors

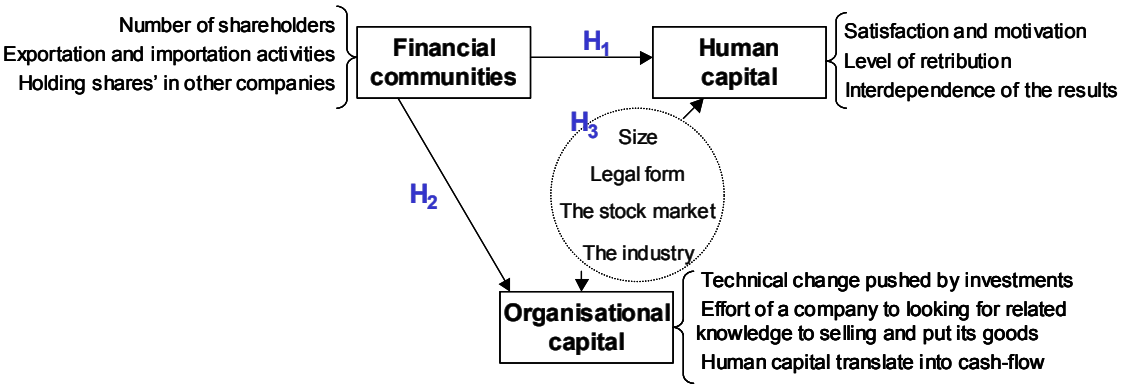

Fig. 1. The Theoretical Model

5 Results

Table 2 includes the correlations for all the variables in the research and development sector. None of the correlation coefficients are large enough to expect substantial multicollinearity problems in estimating the regression equations. Our results show that financial communities of practice have a significant positive relationship on intellectual capital (i.e. they have a positive influence on human and organizational capital).

Table 2. Correlations Matrix for Research and Development sector

	Human Capital	Organizacional Capital	Financial Communities	Activity sector	Firm size	Stock market quotation
Organizational Capital	-0.034					
Financial Communities	0.133 [b]	-0.034				
Activity sector	0.261 [a]	0.132 [b]	0.313 [a]			
Firm size (employees)	-0.086	-0.033	0.174 [b]	0.043		
Stock market quotation	-0.104 [c]	0.083	0.587 [a]	0.217 [a]	0.137 [b]	
Legal Form	0.090	0.074	0.019	-0.102 [c]	0.102 [c]	0.086

[a] <0.01; [b] p<0.05; [c] p<0.1

Starting by "human capital" (Table 3), Model 1 examines the relationship between human capital and the four control variables. Activity sector, stock market participation, and legal form have a significant relationship with human capital, the first and are third positive and the second is negative, what means a company that belongs to stock market develops less 'human capital'. Model 2, which includes the four control variables along with the human capital index, represents significant explanatory improvements over Model 1 (ΔR^2=0.036, p<0.01). This is due to the stock market participation improving its relationship and significance, and the firm size generating a

negative significant relationship. This means that a big company (i.e. an organization with more employees) produces less human capital. In Model 2, it can be seen that financial communities are positively related to human capital (β=0.243, p<0.01). Therefore, this analysis supplies support for H_1.

The same conclusion is reached when analyzing organizational capital (Table 3). The incremental variance explained between Model 1 and Model 2 is significant (ΔR^2=0.020, p<0.5), and financial communities are significantly associated with organizational capital. Control variables show activity sector has a significant and positive relationship with organizational capital (Model 1) and this variable and stock market participation has the same kind of relationship in Model 2, improving with respect to Model 1. In Model 2, it can be seen that financial communities are negatively related to organizational capital (b=-0.183, p<0.05). Therefore, this analysis supplies support for H_2. According to our results there is support for H_1, and H_2. Therefore, financial communities have a very important impact on human and organizational capital levels.

Table 3. Hierarchical regression analysis for Financial Communities

	$H_{1=}$ FC ➔HC		**$H_{2=}$ FC ➔OC**	
Independent Variables	**Mod. 1 (β)**	**Mod. 2 (β)**	**Mod. 1 (β)**	**Mod. 2 (β)**
Control				
Activity sector	0.317 [a]	0.271 [a]	0.130 [c]	0.166 [b]
Firm size (employees)	-0.091	-0.114 [c]	-0.026	-0.007
Stock market quotation	-0.173 [b]	-0.302 [a]	0.052	0.148 [c]
Legal Form	0.147 [b]	0.151 [b]	0.088	0.085
Financial communities				
Financial communities		0.243 [a]		-0.183 [b]
F	6.452 [a]	6.934 [a]	1.434	2.079 [c]
R^2	0.103	0.135	0.007	0.022
ΔR^2		0.036 [a]		0.020 [b]

[a] p <0.01; [b] p<0.05; [c] p<0.1. ΔR^2 is the incremental variance explained between each Model.

In testing the third hypothesis, Table 4 shows that different activity sectors, construction, financial services and energy have the most significant positive relationship with human capital and organizational capital (p<0.01). So, information technology and edition are positive related, but their significance is less (p<0.05). Firm

size and participation in stock market have a negative relationship with human capital and organizational capital, due to the companies with more employees and with participation in the stock market develop less human capital and organizational capital.

On the other hand, companies develop different human capital and organizational capital depending of legal form. Comparing Table 3 with Table 4, we can assert that 'activity sector', 'firm size', 'participation in stock market' and 'legal form' have a relationship with human and organizational capital. Therefore, they could be considered 'contingency factors', which supports H_3.

Table 4. Hierarchical regression analysis for and Contingency Factors

	$H_{3=}$ CF ➔HC & OC	
Independent Variables	**Mod. 1** (β)	**Mod. 2** (β)
Control		
Agriculture	-0.081	-0.078
Industry	0.036	0.041
Information Technology	0.205 [b]	0.175 [b]
Edition	0.203 [b]	0.194 [b]
Construction	0.357 [a]	0.324 [a]
Financial services	0.248 [a]	0.237 [a]
Energy	0.252 [a]	0.218 [a]
Pharmacy	0.011	0.011
Firm size (employees)	-0.168 [b]	-0.175 [b]
Stock market quotation	-0.180 [b]	-0.271 [a]
Legal Form	0.160 [b]	0.167 [b]
Financial communities		
Financial communities		0.169 [b]
F	4.703 [a]	4.311 [a]
R^2	0.177	0.185
ΔR^2		0.016 [a]

[a] p <0.01; [b] p<0.05; [c] p<0.1. ΔR^2 is the incremental variance explained between each Model.

6 Conclusions

This study has examined three key constituents of financial communities (International shareholders, exportation and importation activities, and holding shares in other companies) and their effects on the creation of 'human capital' and 'organizational capital'. The study has also investigated how some 'contingent factors' (i.e. size of the company, legal form, participation in the stock market, and character of the sector) contribute to the creation of human capital, and organizational capital.

The results indicate that 'human capital', is unlikely on an individual basis without being fostered by financial communities and therefore require empowerment by shareholders, exportation and importation activities, and holding shares in other companies. However, once financial communities have created 'new knowledge', which is materialized in the form of experiences and mental models, it is necessary to transform this individual and grupal knowledge into 'organizational capital', thus starts the 'knowledge restructuring' (Watzlawick *et al.,* 1974). This justify that 'financial communities' has a negative effect on the creation of organizational capital.

Consideration should be given to how existing rules, procedures, etc obstruct or facilitate 'human capital', and 'organizational capital' created by financial communities, and how financial communities are encouraged to share their knowledge outside their conventional boundaries by knowledge structures.

The results indicate that some contingency factors affect the existence of financial communities (transnational cultural, computer sector, construction sector and energy sector). For instance, the activity sector and stock market quotation are a moderating factor on the relationship between the financial communities and human and organizational capital in the research and development industry of Spain.

The study is not without limitations, especially, because although the constructs have been defined as precisely as possible by drawing on relevant literature, and validated by practitioners, they can realistically only be thought of as proxies for an underlying latent phenomenon that is itself not fully measurable.

7 Business benefits

A tool to evaluate the presence of the financial communities and human and organizational capital has been developed. This tool is easy to understand and to apply. Its implementation will underline where CEOs should focus on in order to create an internal and external environment that will facilitate the creation and transmission of knowledge in their companies, and its contribution to the business. This research also outlines the importance on the external relationships in the creation of human and organizational capital.

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