

A THREE WAY ANALYSIS OF THE ACADEMIC CAPITAL OF A ROMANIAN UNIVERSITY¹

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Abstract: *The paper applies three-way analysis (Kroonenberg, 1982, 2008) to the components of academic capital of a Romanian university, over a five-year period, showing the biases and the relations between the various components. The influences from inside the academia are being discussed, together with analyzing their positive or not so positive effect on the variables related to academic capital. The model of intellectual capital, thoroughly discussed in literature, is being adapted to this particular situation, of a university in the situation of "leasing" its academic capital for the sake of academic capitalism. The tensions between the two concepts are underlined, in a framework which, being applicable to every university, relies on data collected from a Romanian economic university.*

Key words: *academic capital; three-way analysis; university intellectual capital*

1. The concept of academic capital

If we speak about academic capitalism (Deem, 2001; Slaughter and Leslie, 1997), then we need to speak also about academic capital. At first sight, the two concepts are complementary, if not opposed. The academic capital includes academic freedom and collegiality (Kinman and Jones, 2004), defined as consensual decision-making, by means of cooperation and value-sharing. The *Lehrfreiheit* and the *Lernfreiheit* of the Humboldtian, collegial model, which guaranteed the freedom of teaching and the freedom of studying are, according to Cobban (1975), the persistent hallmark of the European idea of university. Paradoxically, as the university suits the free-market paradigm, its freedom is progressively lost (Solly, 1996), because it has to become accountable to its stakeholders (Tapper and Salter, 1995). The strength gained by non-academic criteria which prevail in university decision-making leads to managerialism (Harvey, 1995), the power of the experts, which may turn the university into a more dynamic, ready to react structure, but may also carry the

risk of not applying properly business principles to non-business entities (Michael, Sower and Motwaki, 1997). If we add to this the critical nature of the academics (Davies, Douglas and Douglas, 2007), which prevents them for readily accepting exterior standards, that violate the collegial model, we have the picture of the conflict between accountability and autonomy (Bridgman, 2007).

Still, according to Hanna (1989), universities have to maintain both an internal and an external image. Caught between the internal need to cut down costs and the external need to build a strong reputation, universities experience multiple pressures (Dickenson, 2003). The academic capital they transfer to their students becomes, then, an umbrella concept, including the organizational culture, particular to universities, and the indicators which make the university accountable in the eyes of its stakeholders.

We can, then, define academic capital as a transformed instance of intellectual capital, taking into account the specificities of the academic climate. Following Leal (1991), the identification and management of the intellectual capital leads to a sense of cohesion in the organizational culture, thus responding to the collegiality paradigm. On the other hand, the benchmarking and scorecarding opportunities that the intellectual capital measurement offers (Martins Rodriquez and Viedma Martí, 2006; Kaplan and Norton, 1996, 2001) contribute to rendering the university more accountable.

Back in 1895, List speaks of mental capital, which forms a "hidden" part of the economy. In 1969, Galbraith (in Bontis, 1998), defines intellectual capital as intellectual action, pointing at its dynamic nature. In the forty years which followed, researchers of the field provided around fifty definitions and ways of systematizing this concept whose final purpose is to prove meaningful and useful for enhancing organizational performance. One of the classics of the domain, Steward (1998) equals intellectual capital with intellectual material, consisting of knowledge, information and intellectual property, which, altogether, create organizational wealth. In the same period, Edvinsson and Malone (1997) see intellectual capital as "the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide the firm with a competitive edge in the market" (p.44). These definitions give a systematic view on intellectual capital, as a dynamically structured macro-asset of the organization, which has an internal, an external and an interface component.

In the works of Saint-Onge (1996), Roos and Roos (1997), Sveiby (1997), Smith and Parr (2000), Sullivan (2000) these components are, with little variation from researcher to researcher, human capital, structural (organizational) capital, and customer (relational) capital. In fact, intellectual capital is constructed by integrating the flows of knowledge circulating between these three compartments. Mouritsen and Larsen (2005) regard intellectual capital management as a second wave of knowledge management, after the first one, which supposed that knowledge is embodied in individuals, while Viedma Martí (2001) postulates that intellectual capital management implies a strategic and global perspective, while knowledge management takes a tactical or operational perspective of the same transfer processes.

In our model of academic capital, adapted from the proposed models of intellectual capital, we define three compartments: human capital, relational capital, and process capital. The human capital is considered in a dynamic perspective, taking into account both the existing human capital and the inflows and outflows of human capital to and from the academic organization. The structural capital is replaced by process capital, because

universities are loosely coupled systems, which are at the same time “open and closed, indeterminate and rational, spontaneous and deliberate” (Orton and Weick, 1990, p.4; Fusarelli, 2002), having fuzzy structures which depend more on the relational web entering the knowledge transmission process, than on the organizational routines and procedures (Elkin, Farnsworth and Templer, 2008).

By considering the modifications occurring over time in the human capital of the university – practically, although tenure was long regarded as the extreme form of career stability, new career literature tends to undermine this myth (Wicks, 2004), and the university human capital is continuously moving –, the process instead of the structure and the complex web of relationships surrounding the university and proliferating, also, inside, due to the numerous and diverse university stakeholders (Neave, 2002), we place academic capital in a dynamic perspective and we are able to identify not merely the indicators related to this capital, but the trends which are significant for the university management, in the sense of being able to forecast its future performance. The link between intellectual capital and performance being already proved (Bontis and Fitz-enz, 2002; Choo and Bontis, 2002; Sveiby, 1997; Kaplan and Norton, 1996, 2001), we take the indicators we propose for academic capital as representative for evaluating the overall efficiency of the academic activities.

2. Methodology

We studied the intellectual capital indicators in the University of Economics, Bucharest, on a period including the academic years 2003/2004, 2004/2005, 2005/2006, 2006/2007 and 2007/2008. The sources of data were the 2004-2008 Report of the Senate of the Academy, secondary data from the Economic Research Department, and survey results synthesized in the intermediary report, on 2007, of the CEREX research project (authors: Al. Isaic-Maniu, C. Bratianu, C. Herteliu, A. Dima, S. Vasilache, I. Jianu). The system of indicators used is presented in Table 1 below:

Table 1. Academic capital indicators

ACADEMIC CAPITAL COMPONENTS		
HUMAN CAPITAL	RELATIONAL CAPITAL	PROCESS CAPITAL
H ₁ : staff to student ratio	R ₁ : number of academic exchanges (Fulbright, AUF, etc.)	P ₁ : number of taught disciplines
H ₂ : drop-out rate in PhD programmes	R ₂ : number of incoming research visits	P ₂ : number of specialties
H ₃ : Rookie ratio (staff with less than two years in the organization over total staff)	R ₃ : number of outgoing research visits	P ₃ : number of research centers
H ₄ : retention rate (former students choosing an academic career)	R ₄ : co-tutorship PhDs	P ₄ : number of doctoral domains
H ₅ : staff turnover (staff leaves over staff recruitments)	R ₅ : external partnerships (other universities and business environment)	P ₅ : number of research projects.

We recorded, in a SPSS database, the yearly variation of these indicators, on a 1 to 5 Likert scale, where:

1 = decrease; 2 = slight decrease (less than 20%); 3 = unchanged; 4 = slight increase (more than 20%); 5 = increase.

Then, we imported the Fixed ASCII database in the 3WayPack programme, and we performed a three way analysis in the following system of coordinates:

- Mode 1: scales (5)
- Mode 2: years (5)
- Mode 3: components (3).

The results were presented per slices of cases, according to the distribution of components per scales and per monitored years.

3. Results

The goodness of fit for the analysis was of .76. For the human capital indicators the Cronbach alpha value was of .56, for the relational capital indicators of .71, and for the process capital indicators of .66. Between H_2 , drop-out rate in PhD programs, and H_3 , Rookie ratio, there is a correlation of -.48, which means that, at least partly, the students graduating from a PhD program become assistant professors, and a high drop-out rate reduces the proportion of recently recruited staff. Between H_3 , Rookie ratio, and H_5 , staff turnover, there is a correlation of -.25, which proves that not only recently hired and presumably young staff leaves the system. Between R_3 , outgoing research visits, and R_5 , external partnerships, there is a .219 correlation, signifying that, in part, the contacts with foreign universities result in research projects with those universities. Between P_4 , number of doctoral domains, and P_5 , number of research grants, there is a .495 correlation, which shows a significant correspondence between doctoral specializations and research interests.

The distribution of human capital as compared to relational capital, across scales and years, is presented in Figure 1:

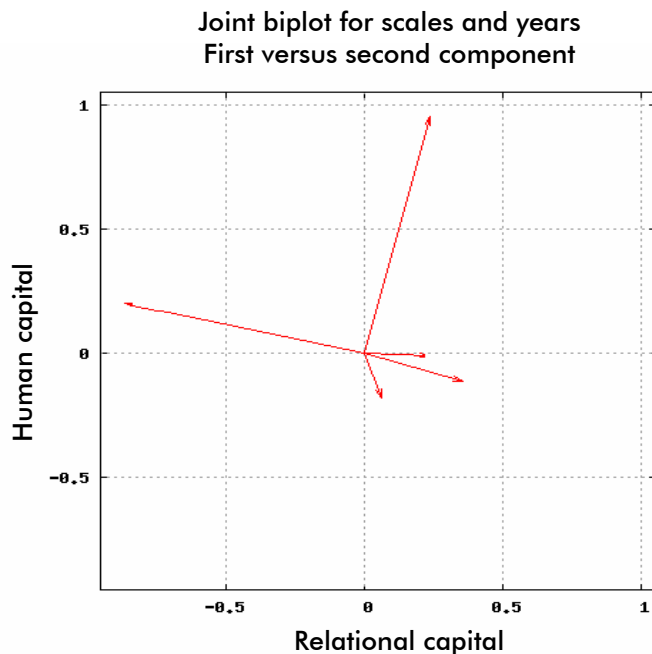


Figure 1. The distribution of human and relational capital across years and scales

The first year we monitored exhibits more the influence of the human capital indicators, while the second year shows a sudden growth in relational indicators (due to the significant increase in research visits of the staff). Afterwards, the next years are still predominantly relational, but with visibly lower scores. This decrease in relational capital, after an initial boom, may be explained by the appearance of selection mechanisms, of filters which limit research visits, academic exchanges, external partnerships, etc. Some of these filters are intrinsic, and take into account the quality of the relationships and the outcomes they might bring, some others are extrinsic, institutional, referring to the number of approved research visits per academic year, to the value of the external research contracts, etc. While the first filters are beneficial, the second category artificially decreases the relational capital, which has indirect effects on the variation of the human capital indicators.

Figure 2 shows the distribution of human and process capital:

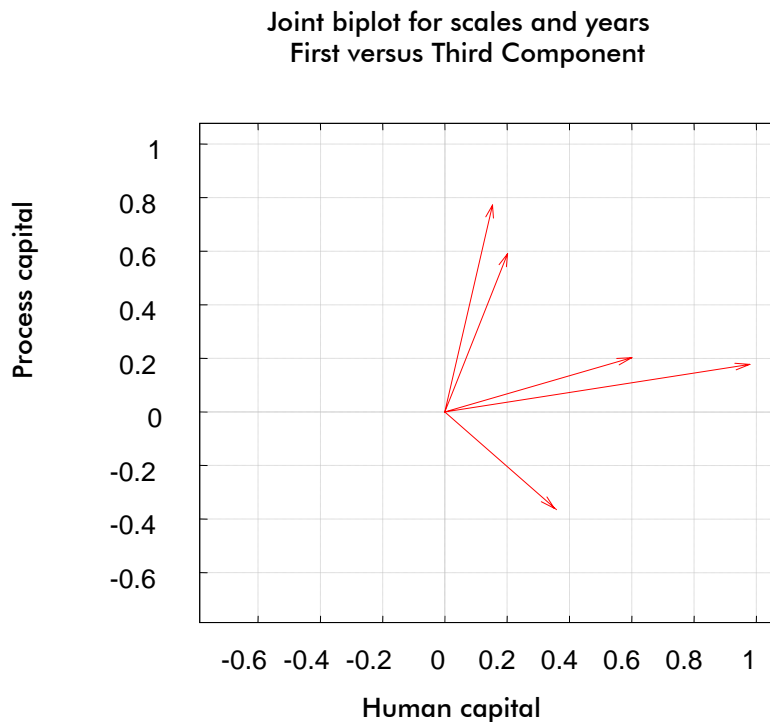


Figure 2. The distribution of human and process capital across years and scales

The competition between human and process capital is neatly favourable to the former, in all investigated years, especially in the last three. Whereas human capital was thought to influence structural capital (Bontis, 1998; Sveiby, 1997), it can be seen that in the university considered, the equilibrium is pulled to the human capital, which is the main asset behind research centers, doctoral programs, scholarly disciplines, etc, disputed by both the research and teaching processes. The development of the human capital with little or no focus on structural capital bears a risk for the university, the risk that the human capital is not particularly trained and co-interested in specific programmes, which have the capability

to absorb and to structure what the human resources can offer and, thus, promote a sense of institutional stability, no matter how dynamic and fluid the human capital is.

Figure 3 relates relational and process capital:

Joint biplot for scales and years
Second versus Third Component

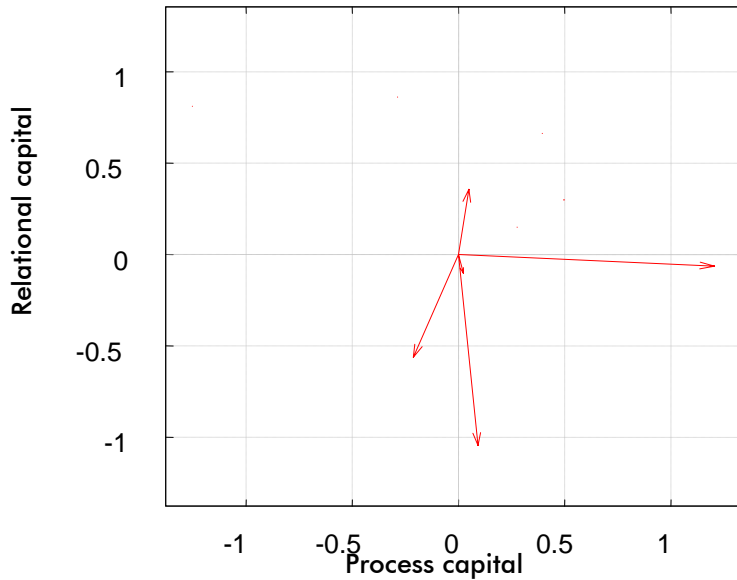


Figure 3. Relational and process capital distribution across scales and years

The relation between process and relational capital is more equilibrated than in the case of the previous categories, showing that the grow at approximately the same pace. The number of specialties, of taught disciplines, and of doctoral programs depends, ultimately, on the degree of openness of the university, on its relationships with external partners, either universities or business entities. External partnerships provide opportunities for doctoral research to gain depth, while research visits and academic exchanges create the normal tendency to equalize curricula and, thus, to modify the number of disciplines, specialties, etc.

Finally, in the three-dimensional plot presented in Figure 4, we brought together the three considered components, taking into account multi-annual averages:

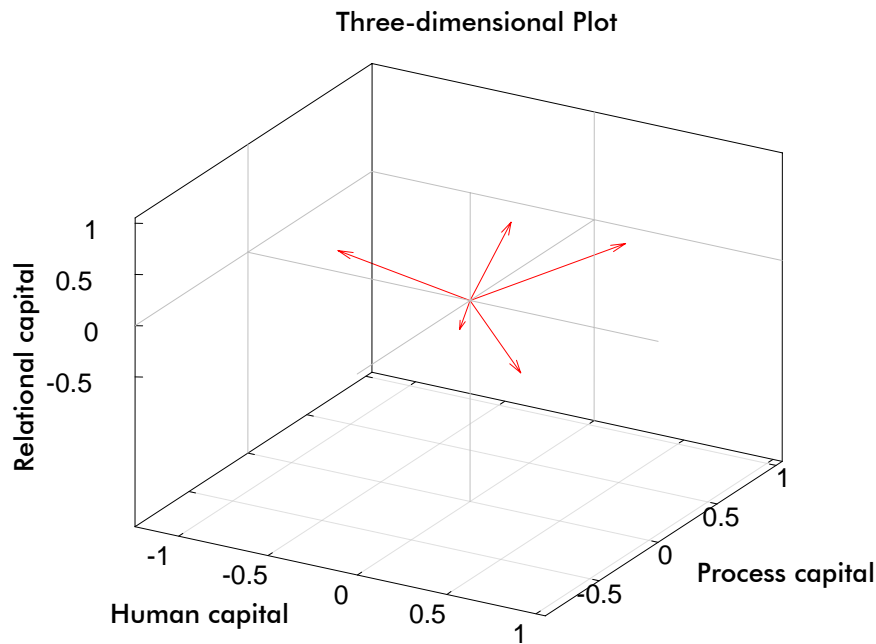


Figure 4. The distribution of human, relational and process capital

As it can be seen, considering the five scales, the human capital is underrepresented in the considered university, while process capital seems to be in progress, as the number of taught disciplines increases and so does the number of research grants and of research centers. Still, if this increase in process capital is not paralleled by a corresponding increase in human capital, which means that the same human capital will have to maintain more processes, this will result in organizational wear and tear and dramatic decrease of the quality of the human capital.

4. Conclusions

The study reveals that the three components of academic capital, which we adapted after the classical constituents of intellectual capital, referred to in literature, are asymmetrically distributed. While studies have been made on the influence of human capital on structural and relational capital, our plots show that there are biases towards one or other of the components, some of them explainable by means of internal regulations or changes in the way each of the components is regarded. Some components are underrepresented, and the apparent compensation in other components is illusory, since each of the three components needs, for its proper functioning, the collaboration with the other two. For sure, the short period, of only five academic years, on which these indicators were monitored, may introduce significant seasonal variations – if we take into account the revisions of the sets of criteria for staff recruitment, staff promotion, research activities recognition, etc. occurring during this period, we may have the environmental explanations for most of the disequilibria. Still, these biases have to be followed over larger intervals and ways to eliminate them and to correlate the evolution paces of the three interrelated components are to be sought for. If this doesn't happen, the danger of converting academic capital into academic capitalism, interested only in indicators, without taking a close look to the processes underlining them, is obvious.

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¹ The authors would like to thank Professor Pieter M. Kroonenberg, Leiden University, The Netherlands, and the organizers of the Spring Seminar (March 2008, GESIS - ZA, Cologne), for the training in using three mode data analysis.

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