The Model of Intellectual Capital Approach

on the Human Capital Vision

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Abstract

The management of human capital had passionate scholars all over time. The managers have taken a long time to find the best way to monetize their human assets.

The era of knowledge is fundamental to know and identify the vectors of intellectual capital associated with organizational productivity.

In this article the dynamics associated with empirical research capable of produce an explanatory model is the subject.

These studies are part of a major line of research initiated by António Martins in 2000 and has been the subject of numerous publications.

Following the seminal studies of Edvinsson and Nonaka, the authors seek to show a model of intellectual capital, from the theoretical conceptions of the authors of human capital.

First presents a literature review, followed by the explanation and method. And then present the results and discussion on them.

Finally explore the model originally presented by António Martins, now validated and supported.

After all, in the knowledge society, the domain of the management of intellectual capital is increasingly the difference.

Keywords: Intellectual capital, Knowledge management, Human capital

1. Introduction

The first definitions of Human Capital (Mincer, 1958; Schultz, 1961; Johnson, 1960; Marshall, 1961, p. 788; Lev e Schwartz, 1971, 1972) came from the Fisher's capital definition (1930). The Human Capital has been assumed different names in academic in bibliography, such as "human elements" (Likert, 1967); "human resources" (Brummett et al., 1968; Hekmian e Jones, 1967; Elias, 1972 a, b); "cultural capital" (Tompson, 1998), "employees value" (Roslender e Dyson, 1992) or Human Capital (Liebowitz e Wright, 1999). Despite of these several definitions of Human Capital (Edvinsson e Sullivan, 1996; Grojer e Johanson, 1996; Nasseri, 2001; Roos, 1998, their purpose hasn't been to operationalize accounting or description (Bassi et al., 2000). Human Capital refers to the combination of factors held by individuals and by a company's workforce. It may comprise knowledge, ability and technical skills; personal features such as wit, energy, attitude, confidence, commitment, learning ability; it includes aptitude, imagination and creativity; to be willing to share information, make part of a team and focus on organization goals (Fitz-enz, 2000).

The bibliography on Human Capital measurement and report can be classified on the three following groups:

1) A first branch of researchers has been embraced in the development of measures to financial reports (Heckmian and Jones, 1967; Lev and Schwartz, 1971; Commitee Reports, 1973; Turner, 1996; Morrow, 1996; Dobja, 1998; Ra and Langendijk, 1998). As a matter of fact, Heckmian and Jones (1967) discussed, in their study, the use of historical costs, cost updating and opportunity cost as financial markers as well as guarantees for costing methods. Just a small amount of employees turn out to be an investment, wile the majoritu is ignored under this theory (Committee Reports, 1973). On the other hand, we've got Lev and Schwartz (1971) asserting that the Human Capital score of an organization consists on the average salaries of homogeneous groups deducted to the company's capital costs, and Turner (1996) defending the acknowledgment of human resources both as a resource and a responsibility.

Morrow (1996) compared 4 measurement methods to evaluate the value of soccer players; historical costs, multiplication of gains (transfer prices between clubs; manager instructions; and several players' evaluations (by independent consultants). However, to determine the monetary value is a complex task (Heckmian and Jones, 1967), once it's not easy to isolate Human Capital as a simple variable (Elias, 1972a).

This first set of researchers, by the developing Human Capital benchmarks, was able to take some little steps in the acknowledge and description of Human Capital on financial reports (Roslender, 1997; Fitz-enz, 2000. Nevertheless, it's interesting, from theory's point of view, that such information has been useless in practice, and there's still little evidence backing the importance of an adaptation to financial models (Flamholtz, 1976; Grojer e Johanson, 1996).

One of the factors that had pushed the need of progress in this matter was the evaluation of the employees, due to a string of evaluation factors (Roslender e Dyson, 1992; Turner, 1996;

Roslender, 1997). Although its lack of empirical (Flamholtz, 1976; Grojer e Johnanson, 1996) practical (Grojer e Johnanson, 1996) usefulness, it has been shown the potential of this line of research. But the models developed until now can concur to the cultural change of an organization, reinforcing the vision of people as a precious resource (Dozentin et al., 1989).

2) The second branch of researchers has been trying to understand how users can make decisions based on the information from Human Capital measurement. By users we are referring to executives (Lev e Schwartz, 1971; Flamholz, 1971, 1972; Flamholtz e Holmes, 1972; Ronen, 1972; Copeland et al., 1973; Jaggi e Lau, 1974; Tomassini, 1976, 1977; Johnanson e Nilson, 1996; Olsson, 1999) and researchers (Elias, 1972b; Hendricks, 1976; Bassi et al., 2000). This approach to Human Capital also begun to explore the influence of work and relations between employees on the decision-making by executives (Handy, 1995; Kasper-Fuehrer and Ashkanasy, 2001; Raghuram et al., 2001).

The human resource accounting is an effort to describe the financial consequences of development, adjustment, reorganization and acquisition of human resource, revealing the knowledge location inside an organization, and according to principles used in traditional accountancy and, thus, with financial effects reflected on employees' wages (The Danish Trade and Industry Development Council, 1998).

3) The third branch of research is linked to the use of technical models which explore the way Human Capital is measured and described by organizations. Some studies in this direction has been taking their place in Australia (Guthrie and Petty, 2000; Guthrie et al., 1999), Canada (Bontis, 2003), Ireland (Brennan, 2001), Sweden (2001), or by joint country missions (Subbarao e Zeghal, 1997).

Altogether, Human Capital refers not only the combination of factors held by an individual, but also the collective workforce of a company. On the other hand, "Human Resource Accountancy" is an effort to describe the financial consequences of these factors. The difficulty in determining accurately the economic value of Human Capital is often pointed as crucial to the lack of progress in recognizing Human Capital in the traditional accounting sheets and, whence it needs to be described through another ways, such as the annual report.

This wider notion of Human Capital is exactly what we refer in Intellectual Capital terminology. We enhance a study examining a sample of 10.000 Canadian companies, which showed a scarce use of this terminology and concepts in their annual reports. Thus, and despite the fact that Intellectual Capital has a major role in future gains, this is simply ignored in financial reports (Bontis, 2003).

Brennan (2001) conducted a study concerning technology and people among Irish companies. The author analysed the annual reports of 11 companies listed on the Irish Stock Exchange, and another 10 private companies. Using, in both cases, a similar structure in order to get a satisfactory analysis of the reports, Brennan obtained results close to the Australian study, although we must point that these conclusions weren't totally comparable to the research of Guthrie and Peety (1999) due to the selection sample.

A study made by Olsson (2001) examined the annual reports of 18 major Sweden

corporations, selected according to a Stock Market capitalization criterion. The researcher developed five elements in order to verify the resource level in Human Capital: education and development; equality; recruitment; employees' selection; and CEOs' opinion on employees. This study concluded that, in 1998, none of the 18 companies described more than 7% of information about Human Capital. Moreover, that information was considered highly insufficient both in quality and communication dimensions. The concept of Intellectual Capital emerged from the study was the view of IC as "the withholding of knowledge, pratical experience, organizational technology, customers relationship and professional skills that provide a competitive advantage to the company in its market".

Consequently, it was assumed that the value of intellectual capital would be the measurement whereof the intangible assets could be converted in financial payoff to the company. The next step was to identify research goals, for *there's now good wind to the bad sailor*. Therefore, four goals were identified, being added, afterward, a fifth one by Carendi:

1 – Identify and extend the visibility and measurability of intangible and tangible assets;

2 – Secure and support brainstorming and the access to new ideas using knowledge-sharing technologies;

3 – Improve and cultivate intellectual capital through professional development, training and hi-tech networks;

4 – Capitalize and heighten the aggregated value using a faster recycling of knowledge and a stronger transfer and application of talents and specialized knowledge into market;

5 – Integrate swiftly the latest organizational knowledge in the intangible assets and promote its competitive application by the organization.

The undeniable richness underlying the array of information and data inside an organization is proportional to the scarcity of tools to measure it.

Thereby, all this set of aspects requires a different approach, and a selection of the true value creation elements has to be made, like non-written promises, internal reports, among others.

On the other hand, financial capitalization, the core of financial approach, folds a set of measures, indexes and indicators which allows pointing out some relevant aspects in an organization.

Most companies have neither the time nor the means to identify all the information streams moving within and without their organizations and even their computer networks, though it's not reasonable to provide a huge amount of information enfolded in a torrent of compound and subordinated clauses, edging the way to rumours and favouring who better control that information.

Nowadays, and in the future, organizations require new tools, capable of providing essential data towards a sustainable development, namely more convenient information to the institutions, lifestyles and systems of the information technology age. The forefront companies in all over the world are experimenting new audit and measurement systems –

firstly to identify the impact of non-financial capital in future earnings.

Altogether, we can say that the present model reveals itself as an important working tool for later researches. In the same way of accountancy and the beginning of the use of double-entry bookkeeping in the Middle Ages, nowadays we are confront with need of a new methodology capable of giving us a reliable image of existing organizational reality.

With the existence of a new value dimension, wherein the dynamic factor assumes a special importance, it has to be possible to provide investors, executives and the remaining stakeholders, an appropriate image of the constant changes operating in each moment of the organization. And this image has to be produced in the smallest possible amount of time, with the biggest possible reliability.

2. Methodology

By this mean, we'll use in the present research the Multidimensional Scaling (MDS). This methodology was previously referenced by various researchers (for example, Quinn and Rohrbaugh, 1981; Quinn and Rohrbaugh, 1983; Farrell, 1983, 1988). This method provides experimental-based results (Bedejan, 1987), which points it out positively when compared with another researches (Morin, 1994).

In fact, by applying empirically the theoretical conceptions of researchers, this methodology has been referred as the only to provide results from scientific experimentation.

MDS – multidimensional ordination – allows the development of a map, representing a spatial configuration, through the analysis of equal/non-equal relations accredit by individuals to **p** attributes. Thus, in front of a multidimensional space, it is possible to ascertain the graphical representation resulting from a conceptual table of **n** individuals.

Thereby, we can obtain up to (n-1) dimensions, from which the choice of the map with lesser dimensions should be favoured; this will simplify the analysis, namely the accounting and interpretation of the observed segments and dimensions, as well as the graphical explanation.

The methodology consists in the "conversion of initial similarities in a spatial representation" and "it's done through the goal function which sets a tangible relation between the matrix values and the range of the graphical explanation", as it's exposed by Elizabete Reis and Raúl Moreira (in *Pesquisa de Mercados*, p231).

In order to achieve the aforementioned goals we turn up to various software, having been chose for this case the INDSCAL – Individual Differences Scaling of Perceptual Data, conceived by Dr. J. D. Carroll and Jih Jie Chang.

This programme is able to constitute perceptual maps based on similarities/differences data. Its core is the relative position of each object in the several dimensions resulting from the map, which are based in pairwise comparisons.

The algorithm parameters can be introduced interactively or as data file labels, being this last the chosen option. Therefore, the initial data file included:

-     a line with parameters supporting the algorithm;

-     a line with the Fortran format declaration ;

-     a line with parameters controlling the size of the matrices

-     various lines containing the different matrices

-     various lines with designations of attributes to the final graphic

After the programme application, we'll have, firstly, a group of aggregated and (optionally) individual perceptual maps, and a data file including, namely:

-     Normalized matrix – containing the weight each subject gives to the dimensions in question, and the coordinates of the object in that dimension;

-     Sum of products – containing information related to the axes;

-     Data validation – this section presents indicators allowing to check if estimation is correct.

The use of an empirical formulation, synthesised on the present research, appears to be fundamental to accomplish the goals initially presented.

Therefore, the exploratory analysis towards an explanatory model of the new emerging paradigm, following an array of scientific production on this matter, imposed the constitution of a perceptual map. The need to produce an integrator element of the perceptual diversity within former researches, kept us away from using the traditional methodologies of multivariate analysis, which don't account the specificities revealed by scientists and researchers.

Incidentally, as explained by Quinn (1983), Abdi (2003), Molinero et al (1996), Vilkinas and Cartan (2006), Panayotopoulou and Papalexandris (2004), the research method practised in this study, multivariate as well, develops from specific assumptions, different from factorial analysis. Its core is the cognitive structure of organizational tissue.

The constitution of the perceptual map we are going to present, assumes a decisive role in the choice of methodology.

Therefore, by the use of MDS, we were able to explain and specify several implicit and abstract notions enunciated by scientists and researchers.

2.1 Research Description – participants, procedures and data

Thereby, it's time to present the research data. This work is formed by two major parts: a prior exploratory study using three panels; and a later study using two panels. We intend to answer the following question: how do scientists and researchers comprehend Intellectual Capital.

Stage I – Initial Study

With the exploratory study they were constituted three distinct groups. The first group is

formed by seven teachers, all of them doctorate, who've shown interest in this subject and focused their attention on organizational change areas, human resource, strategic management, business strategy, industrial management and consumer behaviour.

The seven elements aforementioned formed the designated panel A, with experts from the initial exploratory study. These experts possess diverse qualification areas, such as business management, psychology, finance and sociology; 57.1% of them have a degree-level qualification prior to 1990; the remaining academic degree levels obtained before 1995 (71.4%). Professional background includes teaching in diverse scientific areas, both in public and private schools; 71.4% are also consultants. Roughly 71.4% are male, and 28.6% are over the age of 50 years. This panel is highly qualified on this subject, both in theory and practise, and the diversity of its abilities and age groups becomes a valuable contribution.

Thus, the level and date of the education somehow determines the opinion formation and mastery of the theories on Intellectual Capital, more abundant since 1997.

The panel B is constituted by 10 MBA-graduate students, whereof 60% are female and 50% are over 50 years (20% under 25 years). Management training appears in 50% of the inquired individuals; 20% in sociology; 10% have training in economy; the two remaining individuals were trained in transports and psychology. On the other hand, the degree course conclusion is prior to 1990 in 40% of the cases, while 2 individuals were graduated between 1990 and 1995. Their professional background is very diverse, with 3 teachers, 5 individuals assuming executive positions and 1 consultant.

Ultimately, the panel C is constituted by 28 postgraduate students of various ages (10 are over 30 years, and only 4 are under 25). The majority of the inquired are female, summing 57.1%. The academic education reaches multiple management schools, from economics, 82,1%, to political science, 14,3%.

The various ages and graduation dates (14,3% prior to 1990; 39,3% between 1990 and 1995; 46,4% between 1995 and 1999) are a valuable factor to the present study.

Everyone aforementioned shows an interest by the current research, namely on new tendencies. The participants represent a wide spectrum of training, interest and professional areas.

After a careful analysis of the scientific bibliography, we have selected 37 statements reflecting the diversity in this area.

Thereby, we've consulted scientific publications from several countries – USA, Sweden, Canada, Mexico, Portugal, France, UK, Spain, Brazil, etc. – in order to represent multiple research approaches. The statements on what is Intellectual Capital Management can be found in an a array of magazines, scientific papers, books and e-books, crossing areas like informatics, management, economics, consumer behaviour, marketing, finance, organizational studies and accountancy, as well as the internal reporting in corporations.

By a careful reading of the bibliography, we have firstly intended to obtain a comprehensive collection of research in this area.

Thus, it was requested to the panel members to collaborate in the first stage of the research. We asked both groups to apply four decision rules, eliminating the statements which didn't follow those rules. Those four markers were elaborated by methodological relevance, being similar to the ones used by Quinn and Rohrbaugh (1983), Abdi (2003), Molinero et al (1996), Vilkinas and Cartan (2006), Panayotopoulou and Papalexandris (2004), in an identical research.

The four rules are:

- It's a single indicator, and not of a conjunction of two or more;

- It's a mental construct and not a particular operationalization;

- Identifies clearly an Intellectual Capital indicator;

- It's different from all the other statements.

Altogether, the first stage goals were to obtain only individual constructs clearly related to Intellectual Capital. The cut in the 37 statements' list aimed to build a relevant basis to explicit and validate the intended Intellectual Capital model.

In order to grant scientific rigour to the study, we have used the three aforementioned panels, which represent a diverse and adequate sample to the research purposes (in the research present by Quinn, 1983, it was only used a group with seven doctorate experts), once the statements had already been filtered, we've considered relevant to establish a greater degree of exigency.

Thereby, we only eliminated statements when 6 out of 7 judges agreed and consider the same, in the case of the panel A. The use of the two other panels, B and C, was essential to check the obtained results; the seriation criteria consisted in a 70% concordance in group B and 2/3 in group C. The degree of concordance diminishes as the number of individuals in the sample grows.

Following these criteria, we are reduced to 16 statements. Thus, only if 6, 7 and 18 judges, in the panels A, B and C, respectively, agreed to retire the statement, this could be subtracted from the initial matrix. After a qualitative evaluation, and despite of the conservatism in elimination factors, it's our belief that the conceptual diversity is, essentially, reflected in the new sequence of statements.

Stage II – MDS Analysis

We have two distinct panels in this stage of the research. On one hand, we maintain the group formerly known as A, that is, seven doctorate teachers from various universities and scientific areas, who we shall designate as group **a**; at the other, it was formed an expert panel, professional connected to management, henceforth designated as group **b**.

Our mission was to ascertain, among these two groups, the perception of what is Intellectual Capital. Having already described group **a** in the previous stage, we shall now explain the constitution of group **b**. This expert panel is formed by 72 individuals with professional

experience in management, namely financial management, sales management, and also in informatics, consultancy and project management.

The participants are assuming or had assumed recent functions involving team management and strategic and organizational direction, and have an average age of 32. Their education and training comprehend various scientific areas and universities, with a wide range in the years of conclusion of their first academic graduation (degree course), and with master's graduates having concluded this degree after 1990, on the other hand.

This diversity intends to assure representativity, in a random way, to the potential business universe, which is essential to the construction of an exploratory model.

Both groups were asked to evaluate the similarity degree between every possible pair of statements, as a result of the stage I application (16 statements). This evaluation results from the systematic comparison between statements, which were ranked, afterwards, on a scale from 1 (very dissimilar) to 7 (very similar).

The sequence of statements was random, being the similarity degree assigned to a matrix especially conceived to this purpose (appendix), after a detailed explanation about the selected task.

This group of similarities was subjected to a MDS analysis, afterwards, in order to identify the dimensions of Intellectual Capital underlying and consonant with the "scores" given by participants.

The subjects evaluated the similarity between statements (16) resultant from stage I (each one with all the others). Thereby, it's possible to identify the cognitive dimensions underlying the similarity judgements.

The comparison and similarities involve 120 comparison pairs, carried out by all the individuals referred in stage II. The answers are comprised in a 7 point similarity scale, and assigned in the related matrix from 7 (very similar) to 1 (very dissimilar).

Thus, like many other multivariate methodologies, it's assumed that the judgements of participants about the similarities and distances between pairs of statements are located in a space common to all participants. However, INDSCAL differs from other analysis techniques by assuming that individuals diverge according to the perceptual importance or weight of each dimension in their common space/group. Theoretically, thus, the dimensions weight, to a single individual, doesn't interfere with the identification of the common space.

This algorithm, INDSCAL, as well as the factorial analysis, doesn't provide a clear indication on the number of available dimensions.

The individual correlations of distances to the original similarities matrix are, in general, high, pointing a relative cohesion between the panel members. However, as it can be verified in the present perceptual maps, there is a statement (in the 16) placed clearly in the margin of the remaining relational system.

Therefore, "to measure knowledge observing the results" according each group is, in general, specific, no to say absent in the scientific discussion on Intellectual Capital.

Group a)

In the doctorate teachers' group, we notice a maximum correlation of 75,2%, a minimum correlation of 46,3%, being the correlations average 57,4%.

In the following matrix, the main diagonal indicates the individual importance of the two dimensions. The sum of this diagonal is presented in the end.

Table		
	X	Y
Sum of Products		
1	1.27810	.80440
2	.80440	1.08878
Sum of Squares =	2.36688	

Table 1. Importance of each dimension

Table		
	X	Y
1	.61547	.27644
2	.45465	.08338
3	.31135	.36423
4	.28262	.40607
5	.68787	.29931
6	.14634	.56127
7	.14557	.55067

Table 2. Weight attributed to dimensions by subjects

The two dimensions assume a great explanatory power, both in global (Table 1) and individual terms (Table 2). Moreover, as we can see through the correlation between dimensions, this solution has a high degree of orthogonality (the more orthogonal, the better is the solution).

Table		
	X	Y
Soma dos Produtos		
1	1.00000	.07379
2	.07379	1.00000
Soma dos Quadrados =	2.00000	

Table 3. Correlation between dimensions

The closer are values to zero are the values, the better is the solution presented, once the axes are more orthogonal.

On the other hand, it can be verified a high correlation between original data and the solution (Table correlations).

Quadro	
1	.676072
2	.462678
3	.480459
4	.496002
5	.751665
6	.580805
7	.570353
Coeficiente de Correlação Médio =	.57400
Coeficiente de Correlação Médio ao Quadrado =	.33938

Table 4. Correlation between results and original data by subject

Thereby, we believe that the former perceptual map is representative of judgments in the questioned panel.

Group b)

The observed results are equal to the ones formerly obtained to group a)

The value of the detected correlations (Table below) indicates a high reliability of the established map and a fair adequacy to the ideas of the inquired experts – we are dealing with a 72-individuals group – presenting an average correlation of 41,3%.

Table							
1	.330324	21	.491350	41	.285716	61	.283480
2	.498787	22	.484345	42	.438219	62	.525664
3	.215497	23	.534939	43	.508478	63	.340508
4	.444880	24	.329082	44	.355555	64	.454935
5	.430781	25	.332058	45	.534565	65	.280323
6	.464878	26	.494719	46	.511267	66	.440084
7	.458390	27	.211549	47	.566725	67	.500768
8	.531134	28	.441657	48	.364670	68	.367590
9	.321132	29	.431453	49	.335502	69	.534455
10	.347665	30	.465737	50	.529774	70	.512703
11	.505353	31	.458845	51	.216596	71	.563235
12	.277752	32	.531072	52	.488677	72	.358209
13	.276830	33	.319296	53	.387112		
14	.471373	34	.344477	54	.476226		
15	.276301	35	.493268	55	.499934		
16	.453501	36	.288808	56	.573114		
17	.277794	37	.259818	57	.334251		
18	.410955	38	.496224	58	.357350		
19	.447189	39	.314004	59	.527824		
20	.326062	40	.441199	60	.332198		

Coeficiente de Correlação Médio =   .41272

Coeficiente de Correlação Médio ao Quadrado =   .17993

Table 5. Correlation between results and original data by subject

As a matter of fact, it can be observed by the correlation between dimensions (Table above) the high degree of orthogonality of this solution.

Table		
	X	**Y**
Soma dos Produtos		
1	**1.00000**	**-.03534**
2	**-.03534**	**1.00000**
Soma dos Quadrados =	**2.00000**	

Table 6. Importance of each dimension

This test confirms fairly the results formerly obtained, thus, although a higher number of dimensions improve the correlation degree, the obtained differential doesn't justify its adoption.

Besides the inclusion of three dimensions presents subtle improvements concerning the correlation coefficient, we've chosen to work with a two-dimensional solution as more appropriated the later analysis, which we believe, furthermore, that maintains essentially the features of a three-dimensional solution.

In the next matrix, the main diagonal indicates the individual importance of two dimensions.

This diagonal sum is presented in the end.

Table		
	X	**Y**
Soma dos Produtos		
1	**6.96999**	**5.79019**
2	**5.79019**	**6.00048**
Soma dos Quadrados =	**12.97047**	

Table 7. Importance of each dimension

Table					
	X	**Y**		**X**	**Y**
1	.20192	.25956	37	.13054	.23545
2	.39127	.29528	38	.26670	.44809
3	.19183	.09769	39	.18139	.27940
4	.43769	.15231	40	.32177	.29853
5	.32193	.26942	41	.27310	.08362
6	.32892	.31396	42	.35295	.25927
7	.45487	.09056	43	.31688	.39724
8	.24003	.47743	44	.16920	.31248
9	.21138	.23416	45	.39661	.35788
10	.29809	.18852	46	.39142	.32840
11	.33930	.35741	47	.41988	.38008
12	.17126	.20808	48	.32210	.17056
13	.13660	.25868	49	.20970	.26161
14	.26736	.42279	50	.40301	.34333
15	.17931	.20943	51	.19086	.10216
16	.32456	.30437	52	.44209	.20767
17	.26364	.09855	53	.31801	.22032
18	.33948	.23334	54	.33784	.33519
19	.31375	.33178	55	.48027	.13821
20	.15722	.27720	56	.25367	.51356
21	.38290	.28132	57	.22303	.24866
22	.37364	.27438	58	.30420	.18711
23	.39741	.33439	59	.34907	.39545
24	.30402	.13073	60	.19442	.26910
25	.20386	.26144	61	.13987	.24638
26	.38934	.29591	62	.25902	.45706
27	.19728	.07574	63	.19308	.28021
28	.43344	.15550	64	.33621	.30603
29	.32280	.27003	65	.26985	.07557
30	.32958	.31563	66	.35478	.25993
31	.45893	.09178	67	.31290	.39055
32	.24008	.47707	68	.17453	.32327
33	.20989	.24159	69	.39581	.35861
34	.30052	.18008	70	.39224	.32966
35	.32785	.36394	71	.42208	.37238
36	.16752	.25701	72	.32220	.15611

Table 8. Weight attributed to dimensions by subjects

That way, we also verify that the effectiveness of the established maps is assured. Once the second analysis confirms the results of the first one, having this last a wider formulation of the 16 statements in the multidimensional space, joined to the fact that the observed correlation is higher in the first panel, the discussion is grounded on the framing and conceptualization obtained foremost.

From the classification of these four quadrants results clearly their own positioning, assuming the following designations:

- Tacit Knowledge / Human Capital = Individual Knowledge;

- Tacit Knowledge / Structural Capital = Customers Knowledge;

-       Explicit Knowledge / Structural Capital = Applied Experience;

-       Explicit Knowledge / Human Capital = Team.

Thereby, we present and validate the following explanatory model:

Figure 1. Explanatory Model of Intellectual Capital

3. Conclusion

It's inevitable to refer that the constitutive subdivisions of intellectual capital interact reciprocally, no matter the designation or model we placed them (Bontis, 1998; Nonaka e Takeuchi, 1997; Martins e Reis, 2008).

Arguably, knowledge has an economic value which is developing fast and, namely, the intangible assets are financed by a share of the accounting liabilities which is equally intangible (Sveiby, 1998).

"Financial measures may overcome another value performance measures and claim to themselves an unmatchable amount time and attention, though accountancy constitutes a poor indicator of the company condition once its measures only focus the short-term income, instead of reflecting the long-term growth abilities" (Rosabeth Moss Kanter).

Thus, knowledge has become one of the most important factors to economic life. It's the main ingredient of what we buy and sell nowadays. It's the raw material wherewith we work. In the new economical order, intellectual capital, much more than natural resource, machinery or even financial capital, seems to assume more and more a major role in the corporate assets.

This shows us how the emergent knowledge era has modified the nature of wealth and its creation, giving us a new and powerful insight to what companies do and how they are being managed.

It's possible to observe the intellectual capital in the skills of those who work in a company; notice that it provides and grows with customers' loyalty, brand value, copyrights, patents and other intellectual properties; the collective knowledge embodied in their cultures, systems,

and management and registry techniques. But these vital assets are scarcely mentioned on balances; they are seldom managed, and almost never well managed.

Deep down, knowledge is more than information. Information is organized data in a logical archive. Information is turned into knowledge when someone reads, understands, interprets and applies information into a specific task. Knowledge gets visible when experienced people apply lessons they took through times.

One people's knowledge can be information to another. If one person can't understand and apply information in any situation, it remains just that – information. However, another individual, dealing with the same information, may understand and interpret through his past experience, applying the new knowledge to take business decisions or redefine an experimental procedure. Acceding to same set of information, and using his unique experience, a third person may even apply knowledge in a way the second person would never be able to consider. These situations tell us that each piece of gained knowledge will be as important as any other.

Thereby, as the Human Capital Theory (Schultz, 1971 e Becker, 1975) indicates, knowledge forms the most important production factor, when we are speaking of productivity build-up, and the complementary nature of human resource reveals itself as pivotal to understand companies' performance; the unique character of an organization lies in its workers and ability to heighten value to the process, to customer and, globally, to the organization.

Altogether, the long road that Business Management has developed will certainly help us to continue our learning, in a deeper way, the emergence of Intellectual Capital in this Knowledge Era.

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