A SCORING METHODOLOGY FOR RANKING COMPANY DISCLOSURE ON INTANGIBLES

PAPER SUBMITTED TO THE
ANNUAL CONGRESS OF THE AMERICAN ACCOUNTING ASSOCIATION
HAWAII, AUGUST 3-6, 2003

KEY WORDS: INTANGIBLES, DISCLOSURE, RANKING METHODOLOGY.

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1. INTRODUCTION

A company's worth depends to a great extent today on its intangible assets and on its intellectual capital. Competitive advantage increasingly derives from such factors as the business idea, the quality of management, innovative capacity, market positioning, and the ability to satisfy customers and maintain their loyalty. All these assets by their nature are intangible; in other words, they are not physical and not financial. The problem is that such resources are not sufficiently accounted for in financial statements and they require special valuation and disclosure methods in order to be correctly valued and reported. In recent years, many academics and practitioners have expressed doubts about the relevance of intangibles accounting and disclosure methods reported in traditional financial statements, pointing out that often the information provided does not satisfy the information needs of a company's shareholders and creditors. Financial statement information could easily resolve the problems and shortcomings of current accounting systems. Providing greater and more detailed information on intangible assets will certainly help shareholders, analysts, and all the other economic agents involved to have a more precise idea of how the company invests its resources in intangible assets.

Many academics have focused on voluntary information, a fundamental aspect of the issue. The information voluntarily disclosed by companies has helped to make up for some of these financial statement shortcomings. This type of information will become even more important moving forward as investors attempt to follow the fundamental changes taking place in the economic environment. It is in companies' interest to supply supplementary information capable of attracting investors. On the other hand, financial markets tend to undervalue to importance of such information because it is voluntary, its accuracy is uncertain, and it cannot easily be compared. The usefulness of this type of information – which for the most part is not financial – needs to be improved in terms of accuracy, consistency, and comparability.

Some observers maintain that the first thing to do is to provide incentives for voluntary disclosure of information on intangible assets: such incentives would be aimed at making companies aware of the advantages gained from adequate reporting of intangible assets. Now, providing incentives for voluntary reporting could be a beginning, but it is not a solution to the problems caused by the lack of financial statement information on intangible assets and their use within the company. The mandatory information contained in current financial statements is not capable of satisfying analysts' information needs. Such information is also very often aimed to illustrate what is reported in the accounting statements, but they do not add any information to what can already be gleaned from the statements themselves.

Another aspect must be considered. During the course of the 1990s, Italian companies began enclosing supplementary reports along with their annual company and consolidated financial statements with the aim of providing additional information to their stakeholders. These additional statements, known as "social" or "environmental" statements, provide a new flow of information from companies to outsiders. In detail, the social statement is an account reporting model on the quantity and quality of the relationships between the company and external social groups with the aim of providing a comparable, accurate, complete and transparent framework for the complex interdependence among economic factors, on the one hand, and social and political factors, on the other, and the impact of business decisions within this framework. The environmental statement is an information statement describing the key relationships between the company and the environment, with the aim of directly communicating with the public involved. Recent studies have highlighted how these statements provide information about a company's intangible assets such as human resources and added value.

At the international level, several accounting standards setting authorities are investigating problems related to intangible assets and the information that should be provided about them in financial statements. In July 2001, the FASB issued two new accounting principles, SFAS 141 and SFAS 142, for the most part focused on the accounting of intangible assets and goodwill deriving from mergers and acquisitions. But the FASB was not satisfied with the issue of these two new principles. In the next month, the FASB proposed a new financial statement disclosure project concerning internally generated intangible assets. The aim of this new project is to provide investors – and all stakeholders – with further information on such assets which so far are not represented in annual financial statements and to improve the quality of any information that is provided up till now. At the present time, internally generated intangible assets and some assets which are acquired externally but immediately shown as an expense in the financial statements after the acquisition, have no place in company financial statements. Generally speaking, very little information is provided about them. One major problem deriving from this situation is the comparability of financial statements. In fact, comparing two companies' financial statements with the same intangible assets, which are produced internally by one and acquired externally by the other, proves to be very difficult. The project, then, is aimed to amplify such information both in terms of quality and quantity to help investors in comparing and making portfolio decisions.
In this context, the objective of this paper is to refine the intangibles information measurement model proposed by the Italian Association of Financial Analysts (AIAF) in collaboration with the University of Ferrara, and to empirically verify its effectiveness. In fact, the version of the model proposed by the AIAF will not be applied, rather several modifications will be made to optimise the analysis and make it more adaptable to the survey sample examined in this paper. In addition, several mathematical and statistical concepts will be introduced and applied to the data gathered and the results obtained with a view to increasing the model's explanatory power. The aim of the analysis will be to detect any differences in terms of information on intangibles and to understand the reasons for them.
In applying the AIAF-University of Ferrara model, we shall attempt to classify Italian companies according to the level of information supplied on intangibles in the financial years 1995 to 2000. At that point, it will be possible to trace the trend in intangibles information supply during this period. The model will also be applied to two international and industry-specific samples (telecommunications and pharmaceutical companies). The reason for this is that applying the model to Italian companies has brought to light a sharp contrast among the results due to the differences in business sector among the companies analysed. Applying the model to companies in the same industry may yield more reliable results. Companies from other countries were also taken into consideration in order to extend the analysis to the international level and to comparing these results with the Italian companies results. Finally several summary considerations about the validity of the model applied and on the results obtained from the analysis will be proposed, leading to the identification of new possible areas for research on intangibles information.

2. THE AIAF-UNIVERSITY OF FERRARA MODEL

The Italian Association of Financial Analysts[1] has recently become deeply involved with several important issues concerning intangibles. The latest study – in collaboration with the University of Ferrara – has been on intangible assets information. The focus of the analysis is on the information that analysts and other financial statement users can utilise in evaluating intangible assets. The purpose of the study is to arrive at a company classification system on

[1] The Italian Association of Financial Analysts (AIAF) was formed in 1971. Its mission is to facilitate and develop the financial analyst profession, to promote its professional qualifications, and to promote awareness of its function (taken from the Association's website).

three levels depending on the ability to provide exhaustive financial statement information with respect to five dimensions of communication. The model is based on a three-dimensional framework (Figure 1). The three dimensions are the following:

a) the nature of information

The information is identified according to its nature, both forecast and actual. As it is known, the information shown in company financial statements is actual. This does not mean, however, that forecast information is less important. In view of the definition of intangible assets proposed in IAS 38, "to ensure future and sustainable economic benefits", the publication of forecasts becomes a key factor in demonstrating the existence of such benefits.

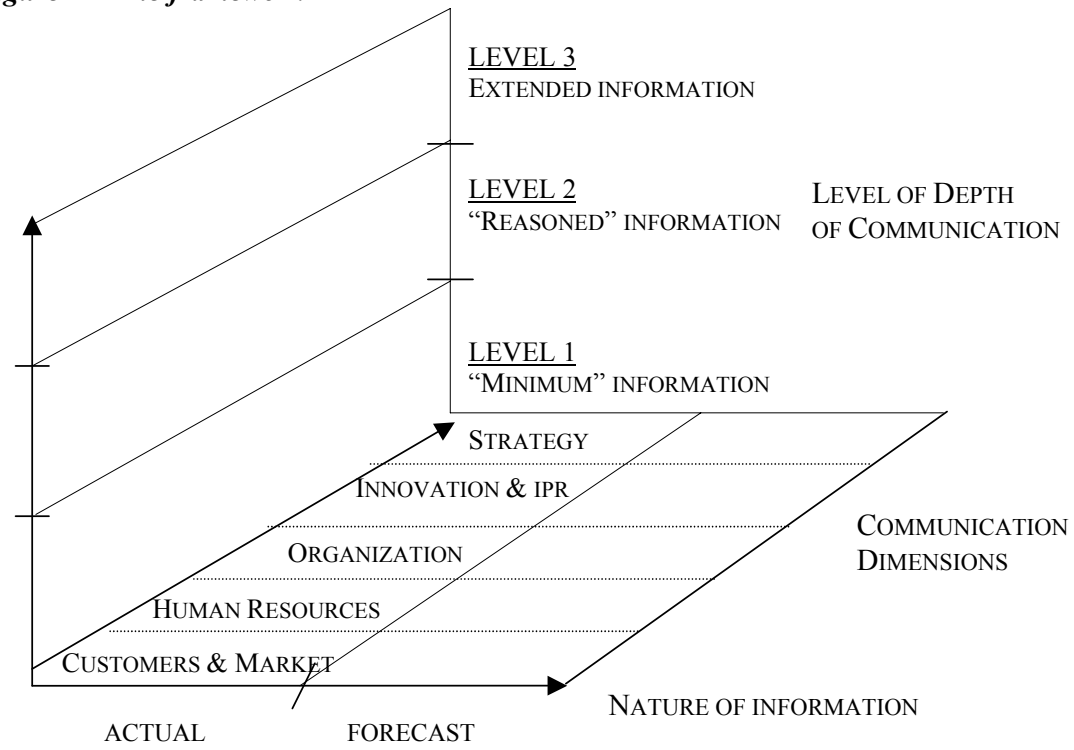
b) the five communications dimensions

The dimensions of communications are: strategy, customers and markets, human resources, processes and innovation, and finally, organisation. The analytical model should be applicable across different industries. Naturally, for certain types of companies, information on several dimensions will be unavailable or it may not be relevant to the analysis. For example, the processes and innovation dimension is certainly relevant for new economy companies, but it may not be for some companies operating in traditional markets even though intangible assets are always important for all types of companies. Once the type of information and the communication dimensions were identified, the analysts drew up a list of indicators[2] for measuring the breadth of the communication. This list is not intended to be exhaustive since it may be extended by combining sum totals according to the level of analysis sought in the empirical investigation.

c) the level of depth of communication

There are three communication levels for intangibles: "minimum" information, "reasoned" information and extended information.

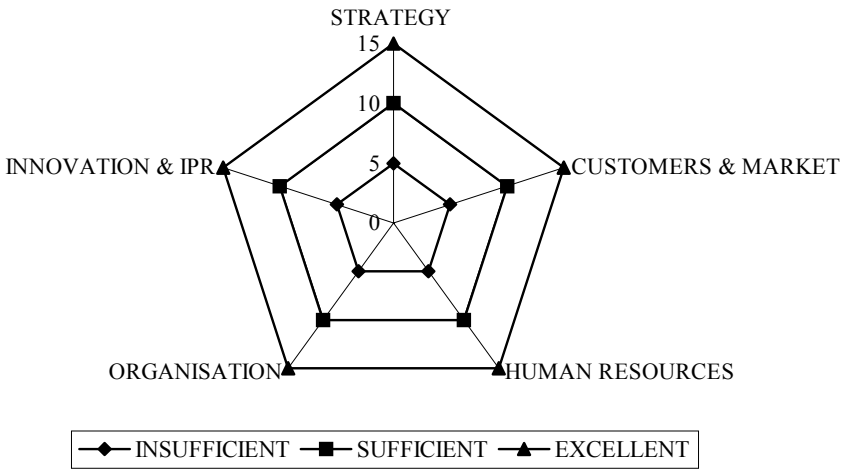
Figure 1 – The framework



Source: AIAF, 2002.

[2] Appendix A provides the complete list of the indicators.

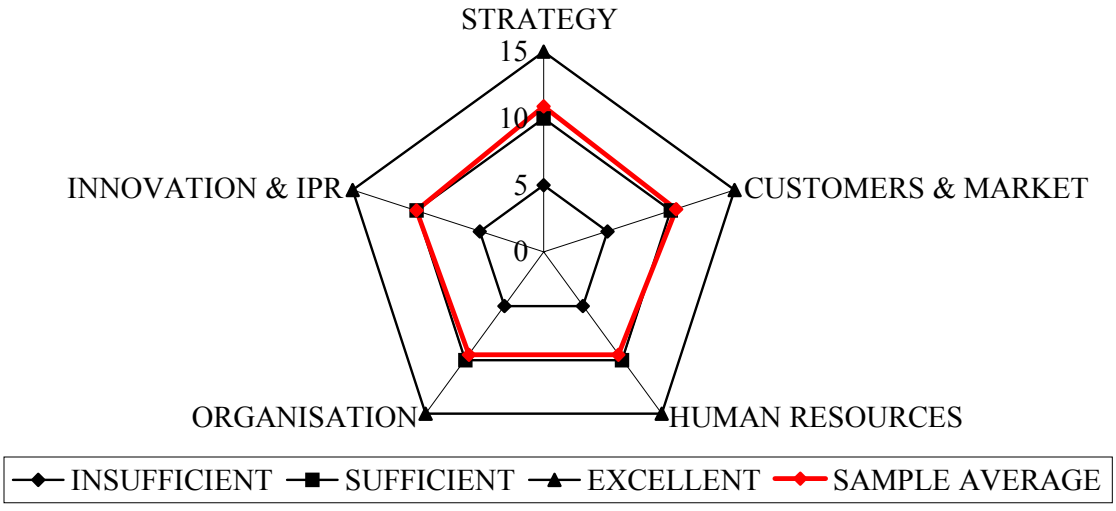
Graphic 1 – "Radar diagram"



Source: AIAF, 2002.

There is also a "zero" information level where the information supplied by the company covers none of the five communication dimensions. In such cases, the reader of the financial statements has no way of formulating any assessment since the available data are insufficient.
The difference between "zero" information and "minimum" information is the latter is enough to form at least a "minimum" picture of the situation while not even this is possible with "zero" information. At the minimum level, then, the company provides information relevant to all five communications dimensions, even though it is lacking in depth. One negative aspect to this level of communication is the scarcity or the total lack of forecast information.
The second level, "reasoned" information, reflects the company's specific intention to amplify its communications concerning intangible assets in the financial statements. The information could be grouped into a summary statement with about 15-20 indicators which, together with the commentary, should help the financial statement reader to gain an overall picture of the company's intangible assets.

Graphic 2 – Average disclosure on intangibles in the AIAF's sample



Source: AIAF, 2002

Table 1 – Scale for ranking the disclosure on intangible assets

INFORMATION QUALITY	SCORE
Any information	1
Insufficient information	2
Sufficient information	3
Sufficient and detailed information	4
Detailed and forecast information	5

At the third information level – extensive information – the company draws up a statement illustrating its intangible assets. This statement may be structured on the basis of the five dimensions of communication and each section may contain qualitative descriptions and quantitative data, both forecast and actual, on the company's intangible assets.

To further improve the model, a spider web graphic was designed, again in collaboration with the University of Ferrara (Graphic 1). This diagram represents the results obtained and it facilitates conclusions and summaries for the research. The diagram can also represent both the level of information supplied by an individual company and the level of information supplied by a sample of companies. The scale goes from 0 to 15, representing the measurement of communications capacity. A "zero" score represents a zero information level; on the other side of the scale, a score of 15 represents optimal information. Between these two extremes, two intermediate information levels have been identified: insufficient, with a score of 5, and sufficient, with a score of 10.

In addition, the AIAF conducted an empirical analysis applying the proposed model. The analysis considered a nine-company sample selected among the companies listed on the Milan Stock Exchange [3] and the New Market[4]. The investigation was carried out on their annual company financial statements, their consolidated financial statements, their social and/or environmental statements, and their presentations to analysts for the financial year 2000. Three indicators were considered for each dimension. The scores for each company were obtained by attributing a score of 1 to 5 to each indicator corresponding to the kind of information supplied (Table 1). The AIAF considered the lack of information on one dimension to be adequate if that dimension was not relevant to the company[5]. The analysis showed that the sample average supplies an adequate level of information (Graphic 2). The AIAF draws two conclusions from these results:

- the level of information provided by the companies is between the first two levels;
- the more the companies provide information beyond what is required by law, the more they supply information falling into the second level of the analysis in terms of breadth and completeness.

3. THE METHODOLOGY EMPLOYED

As already mentioned in the introduction, several changes will be made to the model proposed by the AIAF and the University of Ferrara to make it more suitable to the analysis conducted in this paper and to its specific purposes. The first change is to extend the name of the "Strategy" dimension to the "Strategy and Corporate Governance" dimension to make it more

[3] The Milan Stock Exchange is where companies operating in traditional industries are listed. Their respective market positions are consolidated and they have a positive track record in terms of operating results and financial standing.

[4] The New Market targets innovative companies operating in high technology industries or in industries considered traditional but with an innovative approach to products, processes, or services, and with ambitious expansion plans (information taken from the Borsa Italiana website).

[5] For example, the processes and innovation dimension may be less important to an insurance company than to a software company.

consistent with the indicators considered within this category. Next, we will illustrate the mathematical and statistical implications introduced into the model, the changes made to the evaluation method, and the indicators considered for the five communications dimensions.

3.1 MATHEMATICAL AND STATISTICAL IMPLICATIONS

Taking the Radar diagram, we calculate the areas of the three pentagons comprising it. The general formula for calculating the area of a regular pentagon is:

$$S = l \times l \times 1{,}72$$

where S represents the area and 1 is the length of one side. From the Radar diagram we cannot, however, obtain the sides of the pentagon.

An alternative way of calculating the area of a pentagon is to divide it into five triangles, calculate the area of each triangle, and then sum the areas to obtain the area of the pentagon. So the pentagon is divided into five triangles. The formula used for calculating the area of a triangle is:

$$S = \frac{l_1 \times l_2 \times \sin\alpha}{2}$$

where l_1 and l_2 represent the sides of the triangle and α represents the angle between the two sides[6]. Sides l_1 and l_2 in calculating the area of each triangle are the same length, and are 5, 10, and 15, respectively. Angle α measures 72 degrees, obtained by dividing the turn angle by 5, or:

$$\alpha = \frac{360°}{5} = 72°$$

Now it is possible to calculate the area of the three pentagons. The area of the outer pentagon is equal to:

$$S = \frac{15 \times 15 \times \sin 72°}{2} \times 5 = 534{,}96$$

The area of the middle pentagon is:

$$S = \frac{10 \times 10 \times \sin 72°}{2} \times 5 = 237{,}76$$

The area of the inner pentagon is:

$$S = \frac{5 \times 5 \times \sin 72°}{2} \times 5 = 59{,}44$$

As for the statistical analysis, we use scatter indexes for a better interpretation of the data gleaned from the financial statement analysis. The best index to use for the scatter analysis of the data around their average value is the standard deviation. The standard deviation is obtained from the square root of the variance, or:

[6] This formula will be useful in the next section for calculating the area of the pentagons obtained from reporting in the Radar diagram the results of the empirical investigation.

$$\sigma = \sqrt{\sigma^2} = \sqrt{\sum \frac{(x_i - \mu)^2}{n}}$$

where x_i is the i^{th} datum analysed, μ is the sample average, and n is the number of data. The higher the standard deviation, the wider the data scatter.
For a clearer illustration, we also show the sample average formula which will be used in section 4 to calculate the average information value supplied annually for all the communication dimensions:

$$\mu = \sum \frac{x_i}{n}$$

3.2 CHANGES IN THE SCALE OF MEASUREMENT

The data we collected in reading the financial statements will not be evaluated by adopting the method used by the AIAF. In contrast to the approach it follows, we will consider all the information supplied for each communications dimension and not limit the assessment to only three areas of information. This approach allows us to identify both companies providing from only zero up to three information areas and those providing more information. In the empirical analysis we keep the minimum score of 0 and the maximum of 15 as proposed by the AIAF. However, taking into account all the information provided in the financial statements, the AIAF scale is no longer useful. Therefore, alternative measurement methods had to be sought. One possible alternative evaluation system is as follows:

- to assign a score of 15 to financial statements providing the best information on one communications dimension;
- to assign a score of 0 to financial statements providing no information on that dimension;
- to assign scores ranging from 1 to 15 to all financial statements, comparing in proportional terms their information with the information provided in the financial statements to which a score of 15 had been attributed.

This method solves the judgement problem arising with the selection of the three information dimensions and the score to attribute to the information. Furthermore, it should be pointed out that the best information provided by a company for each dimension is not the best in absolute terms, but is considered in the context of the entire set of companies analysed. As a result, for example, choosing a different set of companies may make the best information just sufficient. Finally, another limit to this method is the number of financial statements considered in the analysis: the higher the number of financial statements analysed, the more difficult comparisons are.
An alternative to this method could be to identify *a priori* the best information obtainable for each communications dimension and assign it a score of 15. The information found in the financial statements will then be assessed by comparing it with the benchmark established. The problem in this case is deciding which criteria will establish which is the "best information". The criteria could be based on the quantity of information supplied; for example, the best information may be obtained when a company provides 10 different pieces of information on one communications dimension. This method, however, does not take into account the information content. Furthermore, it is not so easy to decide *a priori* the content that the "best information" on one communications dimension should have.
For the purposes of this paper, we seek to adopt the least subjective evaluation method possible, one not affected by the personal judgements of the person conducting the analysis. However, this method also has a problem, that consists in assigning a higher score to the reporting of a company supplying more detailed information on one communications dimension in a particular reporting period. In fact, in that reporting period that communications dimension

could have been reconsidered or been affected by extraordinary events. This would reduce the score of another company which did not supply similar information, simply because in that reporting period that communications dimension remained unchanged. For example, if a company, because of coordination problems, was forced to change its organisational set up, in most cases it would provide financial statement information on these changes, while the company whose organisational set up continues to function according to its intended operational purpose may not provide any information concerning it.

As a result, we have identified two parameters able to provide an adequate picture of the financial statement information on intangible assets. The two parameters are the following: type of information and quantity of information. The first parameter describes the breadth and variety of the intangible assets information, while the second parameter describes the depth of the information, or the extent to which the information given on each communications dimension can be analysed. Based on these two parameters, the companies will be classified in decreasing order according to the quantity of information provided. The company providing the most information by type and quantity will be assigned a score of 15, while the other companies will be assigned scores proportionally. In this way two different scores are obtained for each communications dimension for each set of financial statements. Then the average of these two scores will be calculated for each company. We have decided to use a simple average without assigning a weight to the two parameters on the assumption that, taken together, they provide a comprehensive picture of the information in terms of breadth and depth. In assigning scores to the various financial statements a distinction will not be made among the financial years subject to the intangible assets reporting analysis, that is 1995, 1998, and 2000. This disjointed time series was chosen on the assumption that classifying companies on a year-by-year basis does not reveal the trend in intangible assets reporting during the course of the overall time period chosen. By classifying the companies in decreasing order by type and quantity of information we can compare all of the financial statements and highlight the trend in intangible assets reporting.

In the final stage of the analysis, we will attempt to identify which information the company supplies voluntarily. The expression "voluntary information" refers to information supplied by the company that are not legally obliged to do so. In contrast, "mandatory information" is information which Italian companies must provide in fulfilling legal obligations set down in the Italian Civil Code, the accounting principles of the Italian National Council of Business Consultants and Accountants, and CONSOB and Stock Exchange regulations. The analysis of this information takes into account only the type of information provided so we can compare the breadth of the mandatory information with the voluntary information. By conducting this kind of analysis, then, we seek to measure the influence and importance of voluntary reporting as compared to mandatory reporting in the context of Italian-law companies.

3.3 CHANGES WITHIN INDICATOR CLASSES

The list of indicators proposed by the AIAF was changed to make it more consistent with the five communications dimensions. Information on licenses and suppliers has been switched from the Organisation dimension to the Customer and Market dimension because this is considered more suitable when identifying this dimension. In addition, information on average supplier payment conditions and average financial resource cost conditions have been eliminated from the Organisation dimension because they cannot be directly correlated to it.

For the same reason we have eliminated economic and financial indexes from the Strategy and Corporate Governance dimension, except for those which are company targets for future years of operation. Adjusting the categories was recommendable for improving the correlation between the information and the indicators, on the one hand, and the communications dimensions on the other.

3.4 Classifying the Information

In classifying the information reported in the financial statements under analysis we could use the five categories proposed in the AIAF-University of Ferrara model (Customers and Markets, Human Resources, Organisation, Strategy, and Processes and Innovation) or the five categories proposed by the FASB in its SFAS 141 (Marketing-related intangible assets, Customer-related intangible assets, Artistic-related intangible assets, Contract-based intangible assets, and Technology-based intangible assets). In our analysis, we used the AIAF-University of Ferrara classification, but we also carefully consider using the FASB classification. These two classification methods coincide on some points. Our search for financial statement information on intangible assets revealed much and varied information. The classification proposed in the model illustrated in the previous pages allows us to classify the information provided in one of the five categories. However, the same information is not so easily classified into the five categories proposed by the FASB.

Processes and Innovation information can easily be reclassified into the Technology-based intangible assets category, while information classified under Customers and Markets can be reclassified under Marketing-related intangible assets or Customer-related intangible assets. But a problem may arise using the FASB classification: not all the information can be classified into one of the categories proposed in SFAS 141. For example, the information on human resources cannot easily be classified in any of the categories proposed by the FASB, neither can those found for the Organisation dimension. In summary, the five categories proposed by the FASB appear very useful for classifying intangible assets as such, but they are not likewise useful in classifying the information concerning intangible assets.

We have seen through practical experience that in attempting to classify the information found in financial statements into the five SFAS 141 categories, some of it cannot be classified at all. The risk in applying this classification system, then, is that some information on intangible assets will have to be excluded. This arises from the fact that much of the information cannot be directly correlated with any particular intangible asset. Most of the time the sum of this information taken together gives a clearer and more detailed picture of an intangible asset or a set of intangible assets available to a company (human resources, for example).

4. Analysis and Results

We now turn to the samples of the Italian companies selected for the analysis and the results obtained applying the previous model to the samples[7].

4.1 The sample of companies from the Milan Stock Exchange

The first analysis covers the Milan Stock Exchange where Italian and foreign companies operating in traditional industries with a consolidated market position are listed. The sample range chosen for the first stage of the Italian company analysis consists of Exchange listed shares included in the Mib30 and Midex indexes in 1995. Among these index-listed companies, only those companies which are still listed on the Milan Stock Exchange were selected for analysis. Bank and insurance companies have been excluded from the sample because they draw up their financial statements according to precise and different regulations from those in effect for companies in all other industries, making the financial statements of the former basically incomparable with those of the latter. Appendix B contains a list of the companies included in the sample under analysis. The analysis will be carried out on the information contained in the annual company financial statements, the consolidated financial statements, and the environmental and/or social statements for those companies providing them, for the years 1995, 1998, and 2000. Three financial years are considered with a view to de-

[7] The complete tables showing the results of the analysis can be required to the e-mail addresses specified in the first page of the paper.

termining whether there is any positive trend in the quality of the intangible assets information reporting during the entire time span. The focus on the three specific years is not by chance. The financial year 1995 was chosen because it was the first in which Italian companies began to draw up consolidated financial statements in accordance with Legislative Decree no. 127 of 1991. The financial year 1998 was chosen as a mid-point and because IAS 38 became effective in 1998. Finally, the financial year 2000 was chosen because it is the most recent for which financial statement data is available.

4.2 THE COMPANY SAMPLE SET FROM THE NEW MARKET

The second sample consists of companies listed on the New Market in 2000. The New Market was formed in 1999 in response to the needs of small and medium-sized businesses seeking to expand and make strategic investments to develop and strengthen their competitive position, keys to their future success. The New Market's target, then, is innovative companies operating in high-technology industries or in traditional industries with an innovative approach to products, processes or services, with ambitious expansion programs. The financial year 2000 was chosen because it coincides with one of the financial years chosen for the analysis of companies listed on the Milan Stock Exchange. An attempt was made also for these companies to trace an intangibles reporting trend over the course of the years. However, a study of these companies revealed that in 1998 many of them either did not exist or were not yet fully operational, while other companies were not yet operating in the same business for which they are now listed on the New Market in the years before 2000. In any case, many of these companies were not yet public before 2000, and so their accounting statements are not comparable with those for the financial year 2000. The list of companies in the sample set is given in Appendix B.

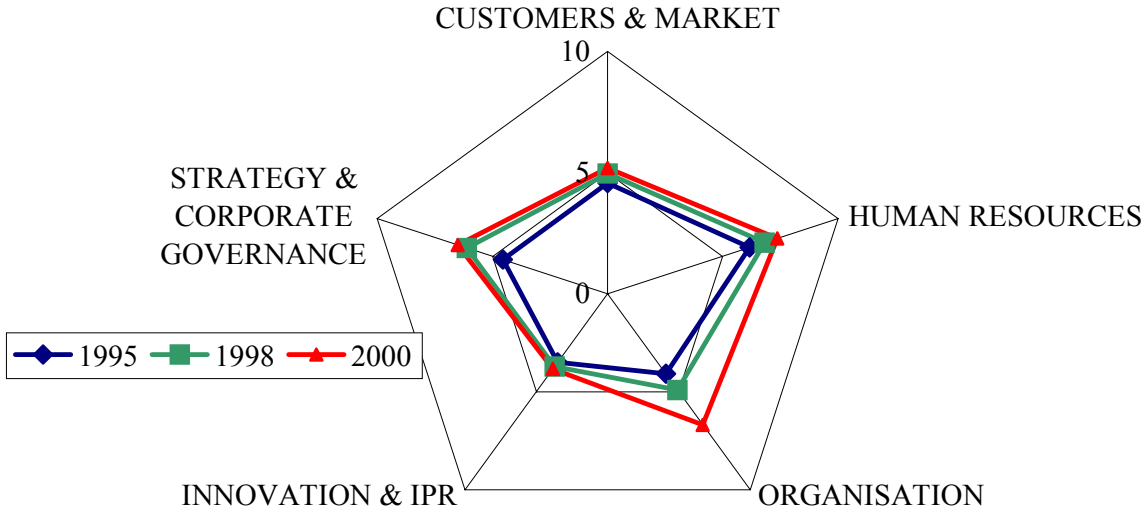
4.3 THE RESULTS

Graphic 3 and Table 2 below show the results obtained applying the modified AIAF model to a sample of 16 companies listed on the Milan Stock Exchange. Looking at the Radar diagram and the data shown in the table, we note that in the three financial years considered, the average reporting score assigned for the five communications dimensions increased. The increase was greater for a few of the dimensions (Human Resources, Strategy & Corporate Governance) as compared to others (Innovation & IPR). As for the Organisation dimension, the average reporting score assigned increased visibly from 1998 to 2000. This increase may be the result of an increased awareness of this communications dimension among companies than in the previous years.

Table 2 – Average and Standard Deviation of the scores of Stock Exchange companies

	1995		1998		2000	
COMMUNICATION DIMENSIONS	AVERAGE	STANDARD DEVIATION	AVERAGE	STANDARD DEVIATION	AVERAGE	STANDARD DEVIATION
CUSTOMERS & MARKET	4.56	2.03	4.97	2.58	5.18	2.50
HUMAN RESOURCES	6.16	2.66	6.81	3.28	7.37	3.81
ORGANISATION	4.10	2.57	4.92	2.72	6.68	3.30
INNOVATION & IPR	3.49	2.62	3.71	2.38	3.82	2.63
STRATEGY & CORPORATE GOVERNANCE	4.55	2.43	6.11	2.86	6.51	2.89

Graphic 3 – The evolution of average disclosure on intangibles in the Italian Stock Exchange



The Innovation & IPR dimension had a lower average score than all the other dimensions in almost all the financial years considered. This may be due to the make-up of the sample, consisting of companies operating in different industries and so having different approaches to this dimension. For the car industry, this dimension is certainly more important than for the publishing industry, for example. In fact the standard deviation indexes highlight the differences between the sample companies. We observe that for all the dimensions, the results are higher than the index's minimum value, equal to 1.

The Table shows that the lowest standard deviation value is 2.42 for the Strategy & Corporate Governance dimension in 1995. In the three financial years considered, the standard deviation indexes increased for almost all of the communications dimensions.

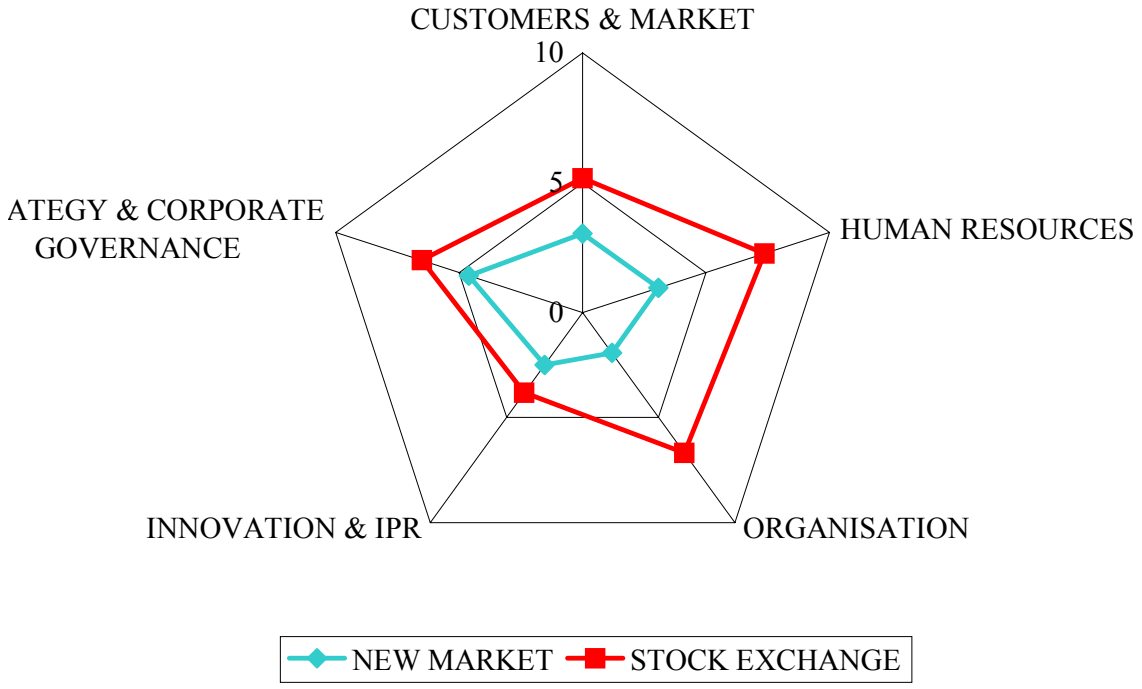
Calculating the area of the three pentagons obtained in the graphic, we observe that the area increased over the three financial years under examination. Specifically, from 1995 to 1998 the increase was 16.34, and from 1998 to 2000 it was 15.63. This increase may be interpreted as a demonstration of the growing interest among Italian companies to disclose information on the intangible assets involved in their operations.

Graphic 4 and Table 3 show the results of the analysis conducted on the New Market sample companies. We immediately observe that for all the communications dimensions, the average score for these companies is lower than for the Milan Stock Exchange companies in the financial year 2000. The Stock Exchange companies examined deliver a disclosure on intangibles which is located between the "minimum" level and the "reasoned" one, while the New Market companies position themselves under the level of "minimum" disclosure.

For some dimensions, the deviation indexes are lower than those obtained for the Milan Stock Exchange companies, showing a smaller difference among the New Market sample companies than among the Milan Stock Exchange sample companies analysed above.

We also observe that for the Innovation & IPR dimension, the difference in the average score assigned to the Milan Stock Exchange companies and that assigned to the New Market companies is smaller than the difference between the other four dimensions. This may be due to the importance that these companies attach to these dimensions, companies which by definition operate on markets where technological innovation and research are key success factors.

Graphic 4 – Stock Exchange companies vs. New Market companies (year 2000)



For the other dimensions the difference between the average score is noticeably greater[8]. As can be observed in the tables included in Appendix 3, this divergence is mainly due to the quantity of information provided: Milan Stock Exchange companies supply on average more information than New Market companies. So the New Market companies seem to provide less information both in terms of type and quantity than the Milan Stock Exchange companies. This may be due to the relatively young age of these companies and so a lack of experience in drawing up financial statements. Most of the information on intangible assets was found in the report on operations. This statement is not subject to rigid regulations and so companies are basically free to include in it all the information they believe to be the most adequate. Most of the New Market companies draw up the same report on operations for both the statutory and the consolidated financial statements, reporting only different numerical values.
The quantity of information supplied in these statements is therefore much lower than what Milan Stock Exchange companies report in their two sets of financial statements and corresponding operating reports. In addition, the operating reports presented by the Milan Stock Exchange companies contain a much larger number of pages than the operating reports prepared by the New Market companies.

Table 3 – Average and Standard Deviation of the scores of New Market companies

	CUSTOMERS & MARKET	HUMAN RESOURCES	ORGANISATION	INNOVATION & IPR	STRATEGY & CORPORATE GOVERNANCE
AVERAGE	3.01	2.68	1.90	3.31	4.44
STANDARD DEVIATION	1.44	1.56	2.23	2.68	2.52

[8] See especially the differences between the Human Resources and the Organization dimensions.

Table 4 – Radar's areas

STOCK EXCHANGE COMPANIES	AREA
Financial Year 1995	49.59
Financial Year 1998	65.93
Financial Year 2000	81.56
NEW MARKET COMPANIES	
Financial Year 2000	21.73

Table 4 shows the pentagon area obtained by inserting into the Radar diagram the scores obtained for the New Market companies. The pentagon area comes to 21.73, 59.83 less than the pentagon area obtained for the Milan Stock Exchange companies reporting information from the financial year 2000. This area is in any case smaller than all three areas calculated for all three of the financial years examined in the first analysis. The New Market companies provide on average less information in terms of both type and quantity than the Milan Stock Exchange companies even in comparison to the data for the financial year 1995.

3.4. MANDATORY DISCLOSURE VS. VOLUNTARY DISCLOSURE

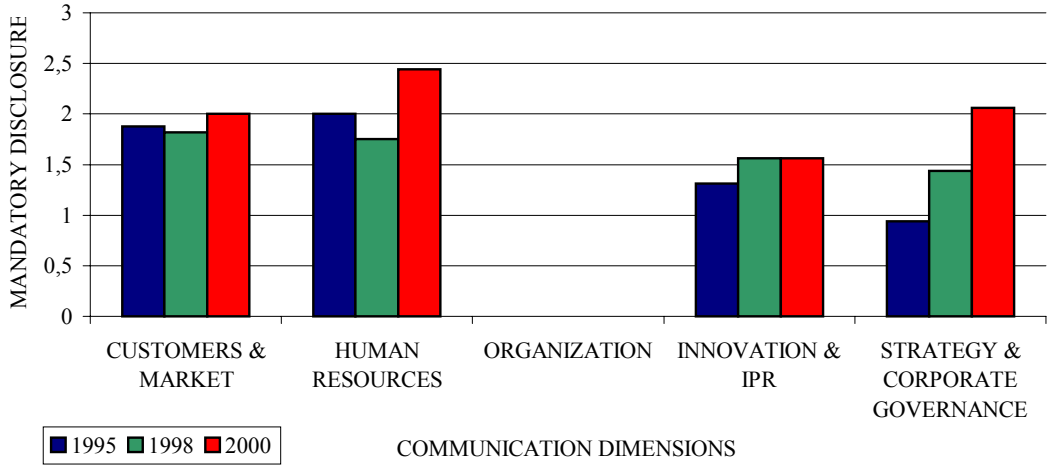
The analysis of mandatory disclosure, that is the reporting required by the Italian Civil Code, the Borsa Italiana (Italian Stock), and the CONSOB in Italy, has revealed unexpected results. Table 5 contains the information required by Italian law governing intangible assets. As seen in Graphic 5, companies provide less information than what the law requires. The expectation was that the average quantity of information types provided by companies would be equal to what that law requires for all of the financial years examined. However, Italian companies behaved differently, neglecting in several cases to provide some information, perhaps not considering it convenient or significant.

Graphic 6 shows the performance with respect to voluntary disclosure. Italian companies provide a high quantity of voluntary information. The trend in voluntary information disclosure, however, was not constant in the financial years examined, reflecting the freedom of choice associated with this type of information. In any case, this behaviour may be an indicator of the interest among Italian companies to disclose intangible asset information beyond what is required by law. Graphics 7 and 8 show a comparison between the Milan Stock Exchange companies and the New Market companies with respect to mandatory and voluntary disclosure for the financial year 2000. Also in this case, New Market companies disclose less than the Milan Stock Exchange companies, except for voluntary disclosure of information on the Innovation & IPR dimension where New Market companies supply on average a somewhat higher quantity of information types than the Milan Stock Exchange companies. These results once again highlight the importance of R&D operations for these kinds of companies.

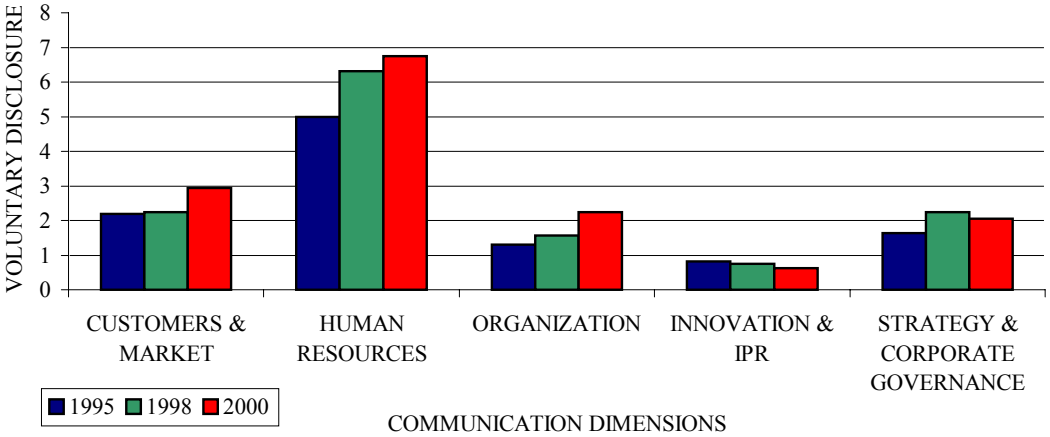
Table 5 – The Mandatory information in the Italian context

COMMUNICATION DIMENSIONS	MANDATORY DISCLOSURE
CUSTOMERS & MARKET	Licenses and trade-marks Per categories or geographical income distribution
HUMAN RESOURCES	Number of employee Employee distribution per categories Stock option (since financial year 2000)
ORGANISATION	
INNOVATION & IPR	R&D activities R&D investments
STRATEGY & CORPORATE GOVERNANCE	Market and sector description Corporate governance (since financial year 2000)

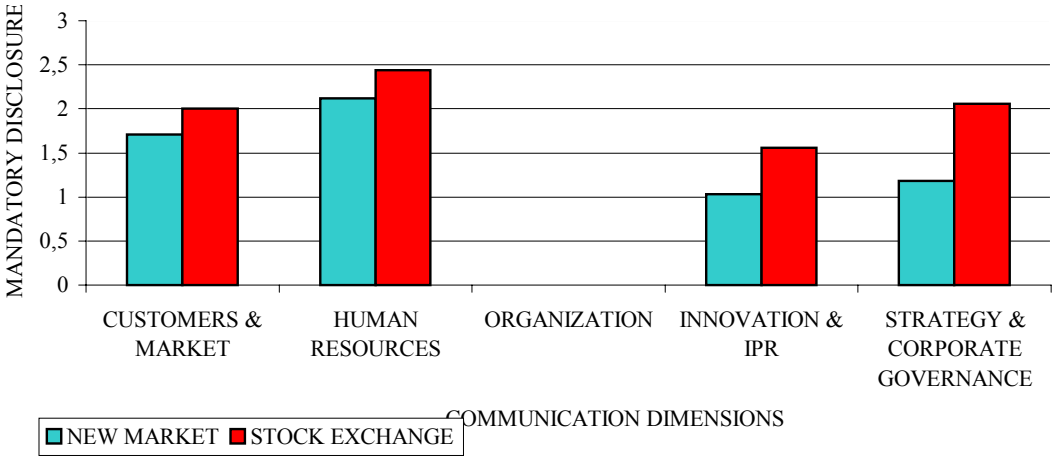
Graphic 5 – Evolution of Mandatory disclosure on intangibles (Stock Exchange companies)



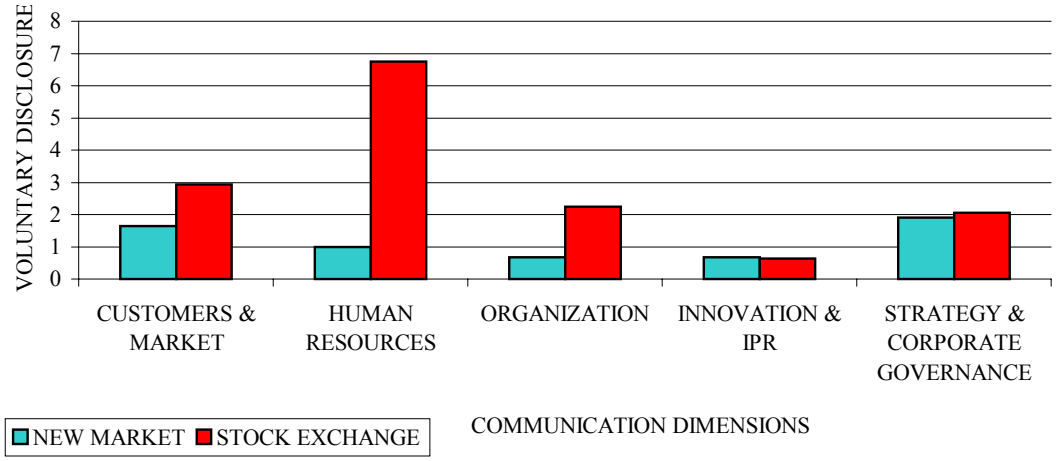
Graphic 6 – Evolution of Voluntary disclosure on intangibles (Stock Exchange companies)



Graphic 7 – Mandatory disclosure on intangibles: New Market vs. Stock Exchange (2000)



Graphic 8 – Voluntary disclosure on intangibles: New Market vs. Stock Exchange (2000)



4. THE FOREIGN COMPANY SAMPLE

The foreign company sample consists of 13 telecommunications companies and 14 pharmaceutical companies. Appendix B contains a list of these companies and selected financial statements. This sample was selected to test the model's applicability in comparative contexts within an industry and internationally. The company selection method was simply to take the major international companies and for each of them to analyse their more recent financial statements. In contrast to the previous analysis, no distinction among financial years was made for the results obtained from scrutinising the annual statements.

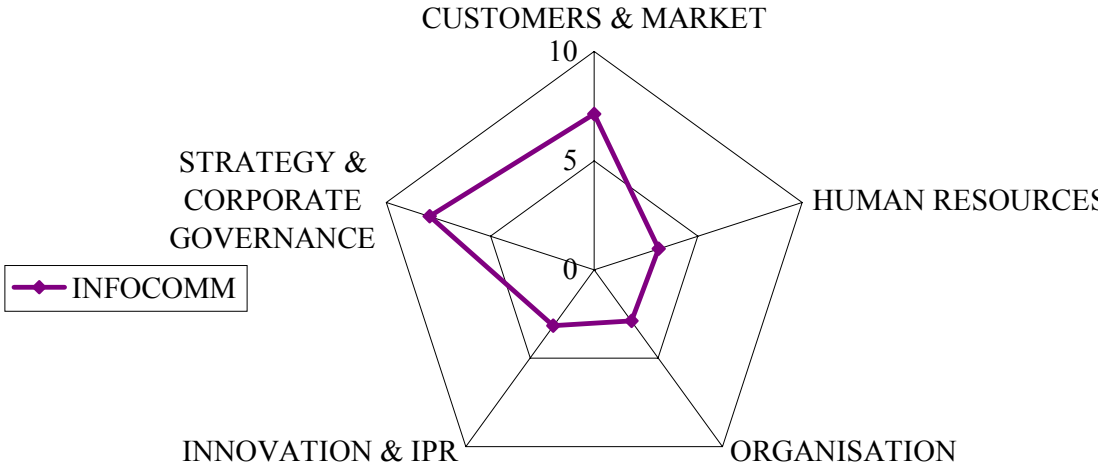
The model generated meaningful results. One problem arising from the selected sample of Italian companies is the high degree of diversity among them, reflected also in the standard deviation indexes obtained. In contrast, the sample selected for this analysis includes companies operating in very specific industries and so we can expect them to provide similar information in terms of type and quantity. In reality, in this case too, as shown in Table 6, the standard deviation indexes are not much lower than those obtained for the sample of Italian companies listed in the Milan Stock Exchange, except for the Human Resources dimension in which all companies in the two industries prove to provide little information in comparison with the information provided by the Italian companies. This result may be attributable to the fact that the selected sample groups together companies from different countries and that the analysis covers financial statements from different years for the same company.

Graphics 9 and 10 show the results in terms of the average score assigned to the intangibles disclosure for the two samples. Telecommunications companies tend to disclose, in terms of type and quantity, more information in Customers & Marketing and Strategy & Corporate Governance. Pharmaceutical companies on average provide more information on Strategy & Corporate Governance and Innovation & IPR.

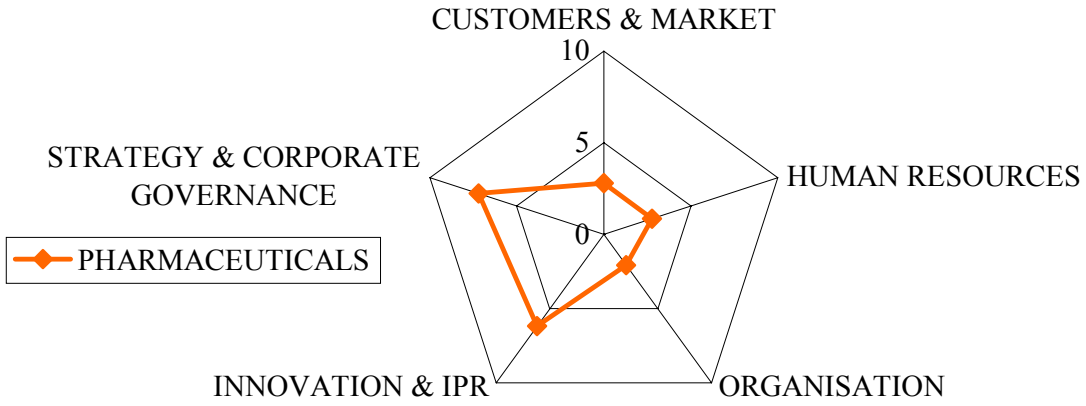
Table 6 – Average and standard deviation

	INFOCOMM		PHARMACEUTICALS	
COMMUNICATION DIMENSIONS	AVERAGE	STANDARD DEVIATION	AVERAGE	STANDARD DEVIATION
CUSTOMERS & MARKET	7.14	3.76	2.81	1.18
HUMAN RESOURCES	3.10	1.29	2.77	1.22
ORGANISATION	2.89	2.16	2.08	2.35
INNOVATION & IPR	4.14	2.26	6.17	2.93
STRATEGY & CORPORATE GOVERNANCE	7.26	2.06	7.19	2.89

Graphic 9 – Level of information gives by telecommunication companies



Graphic 10– Level of information gives by pharmaceutical companies



The companies selected for this analysis provide less information on the Human Resources dimension as compared to the Italian company sample taken from the Milan Stock Exchange. In fact, most of these financial statements lack a full section for the purpose of illustrating this key competitive advantage factor for companies. The only section in which human resources are mentioned is in the illustration of the company's compensation system (bonuses, stock options, pension plan, etc.). The same is true for the Organisation dimension where the average scores were higher for the Italian companies than for the foreign companies in this second analysis.

Table 7 – Radar's areas

	AREA
INFOCOMM COMPANIES	57.92
PHARMACEUTICALS COMPANIES	43.25

5. THE BEST INFORMATION OBTAINED FOR EACH COMMUNICATIONS DIMENSION

Table 8 below shows the best possible information in terms of type and quantity obtained from the three sets of sample company financial statements subject to this analysis.

Table 8 – The best information

COMMUNICATION DIMENSIONS	TYPES	NUMBER
CUSTOMERS & MARKET	- Market shares - Sales network description - Licenses and trade-marks costs - Licenses and trade-marks description - Per categories or geographical income distribution - Competitors information - Number of customers - Satisfaction index - Loyalty - Retention - Caring - Penetration index - Suppliers information - Types of customers - Number of subscribers, number of page views - Number of repayments - Number of customers with Fidelity Cards[9]	48[10]
HUMAN RESOURCES	- Number of employee - Hours of training activities - Number of employee participant at the training activities - Employee costs - Per categories and geographical distribution of employee - Number of graduated employee - Number of women - Training activities description - Number of new employee - EVA per employee - Average age - Seniority in company - Number of people in stage - Educational level - Absenteeism index - Description of the remuneration system - Stock option - Turnover - Social Caring - Number of part-time employee - Number of foreign employee - Bonus plan - Income per employee	35[12]

[9] Tim 2000 and France Telecom 2001 with 12 types of information released.
[10] Vodafone Group 2002.

	- People satisfaction - Hours of strike[11]	
ORGANISATION	- Organisation chart of the group - Number of factories - Description of the organisational structure of the company - Cultural activities - Information system - Organisation chart of the company[13]	8[14]
INNOVATION & IPR	- R&D activities - R&D investments - Number of researchers - Number of research centres - Technologies implemented - Aims of the research - Number of research projects - Organisation of the research area[15]	24[16]
STRATEGY & CORPORATE GOVERNANCE	- Strategic agreements concluded - Market description - Strategic plan - Knowledge management system - Sector description - Corporate governance - Aims - Focus of the company - Mission - Legislation - Market forecast - Environmental plans[17]	20[18]

CONCLUSIONS

Traditional financial statements are clearly not designed to provide meaningful information on intangible assets which are crucial for a company. Financial statements are handicapped by the lack of a description of several kinds of intangible assets which do not satisfy the criteria for entry into the accounting ledgers. This lack contributes to the loss of status up to now assigned to financial statements as the company's main tool for disclosing information. However, abandoning currently used accounting systems does not seem to be the best solution for the future. Some of the information contained in the traditional reporting systems is still pertinent and in any case the costs associated with a radical change in the accounting system are

[11] Rinascente 2000 and Tim 2000 with 13 types of information provided.
[12] Fiat 2000.
[13] Pirelli 2000 and Fiat 2000 with 4 types of information released.
[14] Pirelli 2000.
[15] Astra Zeneca 2001 with 7 types of information dsclosed.
[16] Fiat 2000.
[17] Eni 2000, Italgas 2000, Tim 2000, British Telecom 2001, Vodafone Group 2002 and Astra Zeneca 2000 with 7 information provided.
[18] Fiat 1998.

too high. So, in order to obtain better financial information from companies the only way to go is to encourage voluntary disclosure while attempting to develop new accounting principles pertaining to intangibles.
The information attached to financial statements is not always a sufficient remedy for the applications of accounting principles which, however, are themselves unfit to accurately represent intangible assets in the financial statements. Of course the intangibles assets problem is not limited only to their valuation. Some of these assets, such as an individual skills, for example, are not measurable at all, that means that it is difficult to identify a unit of measure or a method useful for this purpose. Disclosure, then, is currently the only possible solution to the problem of partial representation provided by the intangibles section of financial statements.
The new US accounting principles (SFAS 141 and 142) seem to be more of an accounting innovation than a step forward in disclosure. In early 2002, the FASB approved a project concerning disclosure of intangible assets produced internally by companies with the aim of inserting these assets in the financial statements which according to current rules are immediately charged to the income statement. This project is still being developed and a first Exposure Draft should be ready by year-end 2002. The AIAF-University of Ferrara model allows the results obtained from the model to be represented both quantitatively and graphically. The model also allows for analyses over a pre-established period of time among financial statements from a group of companies as well as analyses among companies operating in different industries, markets, or countries. Nonetheless it is clear that the differences in industries in which the companies under analysis operate will have an impact on the results obtained. Research focused on companies operating in the same industry could perhaps limit this negative impact.
In this analysis, we tried in addition to use the most objective evaluation method possible with a view to limiting researchers' subjective evaluations which could distort the results obtained. One useful alternative to this method could be to establish *a priori* a top disclosure benchmark for each intangibles dimension against which to compare the level of disclosure from time to time made public.
However, identifying such a benchmark could also be problematic in the sense that it is not easy to establish *a priori* what exactly should be the best information to disclose for each communications dimension. Extending the analysis to foreign companies would make setting this disclosure standard even more difficult.
The results emerging from this study were in part unexpected. The Milan Stock Exchange companies on average report more information than the New Market companies both in terms of type and quantity of information. As a consequence, the average score assigned to the information reported by the Milan Stock Exchange Companies for each communications dimension is higher than the average score assigned to the information reported by the New Market companies. The reporting trend, analysed only with reference to the Milan Stock Exchange companies, shows an increase in the information reported in the three years considered, though scrutinising the reporting trend for each of the communications dimensions for intangible assets we saw widely varying performances among them. We have also observed that Italian companies provide a lot of voluntary information on intangible assets. This tendency is probably due to Italian laws on accounting disclosure which do not require specific information on intangible assets to be reported in the financial statements, except for some details on the evaluation or amortisation method applied. In fact it is quite interesting in light of the legislation in this area and it could be an indication that Italian companies are interested in disclosing information on intangible assets.
The results from the second analysis on foreign companies show there is a difference between the information disclosed by the Italian and foreign companies selected. Keeping in mind the

problems associated with the different types of companies in the first survey, Italian companies provide more information in terms of type and quantity on Human Resources and Organisation as compared to the foreign telecommunications and pharmaceutical companies. On the other hand, the analysis focusing on companies of the same industry brought to light how they provide more information on one communications dimension rather than another, depending on the type of business. Telecommunications companies disclose more information on Strategy & Corporate Governance and Customers & Market, while pharmaceutical companies provide more information on Innovation & IPR and Strategy & Corporate Governance. What the two industries have in common, it seems, is the tendency to disclose information on strategy.
It would be interesting to measure the information disclosed by companies in other industries to verify whether strategy has the same importance for them as well.

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APPENDIX A – LIST OF INDICATORS PROPOSED BY THE AIAF

"STRATEGY" COMMUNICATIONS DIMENSION
Indicators:
Market analysis
Industry analysis
Competitors
Company's competitive strategy
Products/Services: degree of diversification and exclusivity
Information sources for market analysis
Description and history of brands/licenses/copyrights
Internal growth vs. external growth
Business/manufacturing alliances
Product life cycle (description and company positioning)
Disclosure on corporate governance
Summary financial indexes (ROE, EVA, and so forth) [19]

"CUSTOMER & MARKET" COMMUNICATIONS DIMENSION
Indicators:
Total potential market
Active customers
Customers divided into categories
New customers
Number of sales outlets/affiliates/sellers (network)
Number of new sales outlets
Franchising agreements
Distribution channels (description)
Advertising expense for corporate campaigns
Recurring advertising expenses
Orders backlog
Time necessary for fully operational sales outlet
Contacts (audience, subscribers, visitors)
Level of customer satisfaction
Audience by time of day
Audience by type
Registered users
Active users
One-time visitors
Number of pages visited on the site
Average duration of site visit
Number of registered domains
Number of servers hosted

"HUMAN RESOURCES" COMMUNICATIONS DIMENSION
Indicators:
Employees
Employees by category

[19] The AIAF list does not contain this item though it is included in this dimension in the analysis fact sheets for the new companies considered by the Association. It was recommendable, then, to include the item in this list also in view of the considerations illustrated in section 3.

Employees per division
Incentives by category
Company benefits policy
Top management's track record
Degree of management alignment to strategy
Education level
Average age
Seniority in company
Average time of employment and seniority in company
Training programs
Training programs by category
Training expenses
Turnover
Turnover by category
Ability to attract qualified human resources
Degree of employee satisfaction
Versatility indexes
Multi-skill indexes

"ORGANISATION" COMMUNICATIONS DIMENSION
Indicators:
Company organisational Graphic (decision structure)
Plants/headquarters/location
Number of suppliers
Supplier turnover
Average supplier payment conditions
Average cost of capital
Indication of legally protected intangible assets
Seniority intangibles rights ownership
Cohesiveness of company culture
Licenses sold
Licenses paid
Information system description
Network connections
Internet connections
Database consultations (*shared knowledge*)
Database contributions (*shared knowledge*)

"PROCESS & INNOVATION" COMMUNICATIONS DIMENSION
Indicators:
Internal research (initial stage)
Projects developed internally (development stage)
Ongoing research
New product development (design, implementation)
New ideas
Number of publications
Technology used
Technologies in competition
Productivity indicators

APPENDIX B – THE SAMPLES

THE STOCK EXCHANGE SAMPLE

BENETTON GROUP	Clothing
ENI	Energy
FIAT	Automobile
GEMINA	Holding
ITALCEMENTI	Holding
ITALGAS	Gas
MARZOTTO	Clothing
MONDADORI	Publishing
OLIVETTI	Holding
PARMALAT FINANZIARIA	Foodstuffs
PIRELLI	Holding
RINASCENTE	Supply
SAIPEM	Oil company
SNIA	Medical Technology
SOGEFI	Holding
TIM	Telecommunication

THE NEW MARKET SAMPLE

ACOTEL	Application Provider
AISOFTW@RE	Software
ART'E'	Retail
BIOSEARCH ITALIA	Biotechnology
CAD IT	Software
CAIRO COMMUNICATION	Media
CDB WEB TECH	Investment company
CDC	IT Distribution
CHL	Internet company
DADA	Internet company
DATAMAT	System Integrator
DATA SERVICE	Software
DIGITAL BROS	Entertainment
DMAIL.IT	Retail
EBISCOM	Broadband Telecommunications
EL.EN	Manufacturing
ENGINEERING INGEGNERIA INFORMATICA	System Integrator
EUPHON	Media
FIDIA	Manufacturing
GANDALF	Air transport
I.NET	ISP & Telecommunication
MONDO TV	Media

NOVUSPHARMA	Biotechnology
OPENGATE GROUP	IT Distribution
E.PLANET	ISP & Telecommunication
PRIMA INDUSTRIE	Manufacturing
POLIGRAFICA SAN FAUSTINO	Manufacturing
REPLY	Web services
TAS	Application Provider
TC SISTEMA	System Integrator
TECNODIFFUSIONE ITALIA	IT Distribution
TISCALI	ISP & Telecommunication
TXT e.solution	Software
VITAMINIC	Internet company

THE FOREIGN COMPANY SAMPLE

Infocomm	**Year end**
NTT GROUP	31-mar-00
BRITISH TELECOM (BT)	31-mar-01
CABLE & WIRELESS	31-mar-01
VODAFONE GROUP PLC	31-mar-01
TELECOM NZ LIMITED	30-giu-01
TELSTRA CORPORATION LIMITED	30-giu-01
AT & T GROUP	31-dic-01
FRANCE TELECOM	31-dic-01
KOREA TELECOM	31-dic-01
SK TELECOM	31-dic-01
TDC	31-dic-01
VERIZON CORPORATION	31-dic-01
VODAFONE GROUP PLC	31-mar-02

Pharmaceuticals	**Year end**
AMERSHAM	31-dic-00
ASTRA ZENECA	31-dic-00
BIOCOMPATIBLES PLC	31-dic-00
OMEGA PHARMA NV	31-dic-00
ROCHE	31-dic-00
SHIRE PHARMACEUTICALS	31-dic-00
SIGMA COMPANY LIMITED	31-gen-01
AGENIX LIMITED	30-giu-01
ASTRA ZENECA	31-dic-01
AMERSHAM PLC	31-dic-01
CELLTECH	31-dic-01
BIOCOMPATIBLES PLC	31-dic-01
SERONO SA	31-dic-01
SHIRE PHARMACEUTICALS GROUP PLC	31-dic-01