The impact of International Accounting Standard 41 "Agriculture" in the Wine Industry

Author:

Graça Maria do Carmo Azevedo
E-mail: graca.azevedo@isca.ua.pt
Instituto Superior de Contabilidade e Administração da Universidade de Aveiro
Apartado 58
3811-953 Aveiro
Portugal

Abstract

The increasing relevance of fair value as measurement adversely to historical cost put on the agenda of the main accounting standard setting bodies the determination of it is value and afterly its register. This has been shown by recent standard's amendments and issues that enable or even demand the valorisation of certain fair value's elements. The scarce importance given by normalization entities to the agricultural activity lead to the increasingly demanding harmonization of this sector. Aware of this situation, the IASB issued IAS 41, which specifically addresses the fair value measurement of biological assets and agricultural goods.

In this paper we will talk about the wine industry. We have chosen this specific industry based on its relevance compared to other agriculture industries. We analyse the impact of IAS 41 and its development, given particular emphasis to the perspective of some of the main players in the standard draft. Finally, this paper comprises an empirical study based on an inquiry sent to a set of companies that are classified as wine industry (CAE 15931).

In an empirical level, the methodology used varies accordingly to the different issues pretended. In this way to evaluate the impact of IAS 41 and of fair value changes we used a set of non-parametric tests, such as the test of signs and the Wilcoxon test. The application of these methodologies allowed us to conclude that the adoption of fair value would result in a positive impact on earnings. This will lead to a rise in the companies' gains, since standardization establishes that fair value's fluctuations shall be included on the result of operations over the period in which it arises.

In order to understand which relevant factors in standard's application are, we adopt the descriptive, factor, principal components, clusters and discriminant analysis. Although, the study's limitations, we have analysed the results, which allowed us to conclude that the inquired gave more relevancy to the variables related to the applicability of the standard and the experience and knowledge of this and other standards, this is, they consider the applicability of the standard relevant for the sector.

Key Words: Fair Value, IAS 41, Agriculture, Biological Assets

JEL Classification: M41, M49

1 - Introduction

The agricultural activity has very heterogeneous characteristics due to the great diversity of activities that it agglutinates. The lack of normalisation, the diversity of activities and the economic importance of the agricultural activity contributes for the increase of existing pressures in endowing the users with the financial information of the sector with relevant and reliable data, allowing them to know the real financial position and evaluate the performance of the organizations.

The agricultural activity is one of the oldest activities and assumes great importance in the different economies. Traditionally, a country economically focused on the agricultural activity was associated to an underdeveloped country. However, nowadays the developed countries have invested in the agricultural sector, making it stronger and stronger. As example of this situation we can refer the case of Australia where, by analysing the DFAT (1999), we verified that the agricultural activity presents a great importance in the Gross National Product (GNP).

In Portugal, we also verify that agricultural activity represents about 4% of the gross added value, turning it into an important activity for the economic growth of the country (INE, 2004).

In a world context, few are the countries that have specific accounting standardization on agriculture, even as this activity was always associated with small or medium size farms, with the only objective to get family income**.** However, during the last years this trend was opposed and led to a bigger demand for information concerning to the sector. This called the attention of the entities of accounting standardization in the agricultural sector.

Australia was one of the first countries to approach this subject not only because of the sector's importance in the GNP, but also because of the companies interest in appealing to the financial markets to finance themselves and the number of investors interested in the shares of these companies. On the other hand, factors like the international tendency for deregulation, the increasing number of companies listed in international stock market and the increasing investment regulate the growth, the scope and the commercialization of the agricultural activity. All these factors have originated a bigger need of financial demonstrations based on a true and appropriate image of the financial statement.

The importance of the subject and the lack of accounting standardization of the sector, lead us to do this study. Its objective is to analyse the impact that the IAS 41 will have in the wine-growing sector, more specifically in the companies with 15931 CAE (Classification of the Portuguese Economic Activities) "Produção de Vinhos Comuns e Licorosos" (production of regular and sweet wines), analysing the factors that can lead the companies to adopt IAS.

In the elaboration of this work we analysed some reasons that lead to the draw up of IAS 41 "Agriculture" preferring fair value instead of historical cost, analysing the underlying controversy of the standard draft.

After defining the empirical work methodology, we presented and analysed the results gotten from the realised survey, where we identify the factors that influenced the standard adoption. Finally, some conclusion will be summarised and synthesized.

2 - Literature revision

The attempts to find an accounting model for the sector were diverse at both national and international level. However, it is at the IASB level that the first important and broad international standard appears. This process had its accelerated development in the last years:

- In 1996: *Draft Statement of Principles* (DSOP), that settled out the issues, forms and alternatives to this standardization.
- In 1999: *Exposure Draft E65*, named as *Agriculture*, was published in July 1999 and submitted to financial information users appreciation until 31 January 2000.
- In 2001: *International Accounting Standard 41 "Agriculture"*, approved in December 2000 and that will be operative to financial statements that start at first January 2003 or after.

2.1 – DRAFT STATEMENT OF PRINCIPLES

DSOP incited for comments about the viability of an International Accounting Standard in agriculture. At this level the opinions were divergent, some defended that the diversity of the agricultural activity could not be treated in a single standard. Others thought that the standard would have to be simple but wide in application. Others were of the opinion that agricultural activities with short and long production cycles should be associated to different principles. They also pointed out that this sector is one of the main sectors in several countries and of significant relevancy in the economy of some countries.

2.2 – EXPOSURE DRAFT E65

Exposure Draft E65, named as *Agriculture*, was published in July 1999 and was submitted to financial information users until 31 January 2000. It caused controversy due to divergent opinions of the users. *Exposure Draft* (IASC, 1999) proposes in broad terms:

- All biological assets should be measured at its fair value;
- All agricultural produce at the harvest's moment measured at its fair value; and
- Recognition of changes of biological assets at fair value should be included in profits or losses.

This standard draft defines as limit its area of intervention the process that culminates with harvest. This position isn't pacific, there are even some that defend the inclusion of some goods obtained after the harvest in the agricultural activity. Thus, several entities were against this standard draft, such as: F Hoffmann_La Roche (2000) of Switzerland, IMA (2000) of EUA, ACCA (2000) of the United Kingdom, IACJCE (2000) of Spain, AICPA (2000) of America, and so on...

The standard draft put some questions for public discussion that became very polemic due to discordant opinions between the parties. Although all questions are related with our study, we will focus only on those that became more polemic.

Relatively to the definition of Fair Value, the standard draft (IASC, 1999) questioned if an active market for biological assets exists to the date of account rendering at the place where the asset is for selling or used, the market price will be the reliable measurement for just value of this asset inserted in one given localisation of sale or use. From the analysis of the parties' answers to this question, we verified that most of them agreed with the standard draft. Although some of the parties agreed with the E65 they still have some reservations, this is the case, among others of IAFEI (2000), EC (2000), ICANZ (2000), FACPCE (2000), ICAA (2000), MIA (2000), and Ernest & Young (2000). In fact, these parties consider that prices in a short period can cause an impact in the current year, however it can not be relevant for certain crops in years distant from the harvest. The application of the prices in an active market has evaluations of substantial ratios in the introduction of unnecessary risk in the volatility of the financial statements that do not reflect the performance in the current year or the potential performance in future years. In these circumstances, they considered that some relevance in the curve of evaluation of long periods would have to be used. This would have to reflect the real price trends and annul the fluctuations of the prices in short periods.

The following parties: IAA (2000), Group G100 (2000), OROC (2000), CNDC and CNR (2000), SAICA (2000), ICPAK (2000), ACAG (2000), RJ (2000), Illovo Sugar (2000) and Abe (2000) considered that sometimes the price in some markets should have to be adjusted to determine fair value, taking into consideration different situations where preselling costs are very important. Therefore, they believe that it would be more adequate to deduct these costs to fair value and to use net selling prices instead of fair value, as described in IAS 36 "Impairment of Assets".

In this question we considered that for biological assets (vines), fair value can be determined based on the active market price inserted in one given localization of sale or use.

As to biological assets valorisation at fair value, the standard draft (E65) previewed that the biological assets were valued at fair value on the balance sheet date, also requiring that the agricultural goods were measured at fair value at the harvest's moment. Most of the parties agreed with E65, we detach among others ICAZ (2000), OROC (2000), JICPA (2000) and Deloitte Touche Tohmatsu (2000). Some of the parties defended that biological assets should be valued to the cost until harvest and the agricultural goods should be valued to fair value at the moment of harvest, that were the case of FSIHC (2000), EACP (2000) and Nestlé (2000).They justified their discord with the valorisation at the balance date at fair value for all biological assets and the valorisation at fair value at the harvest's moment for the agricultural goods, with the fact that it doesn't make sense to value all biological assets at fair value before harvest; because before harvest there are no reference measures for some agricultural goods.

We still find defenders of the valuation at cost for all biological assets and agricultural goods, we name among others, the following parties: ICMAP (1999), FAR (2000), FIA (2000), IDW (2000), ICPAK (2000), EPK (2000), Sulzer (2000), Nutreco (2000) and Ernest & Young (2000), for considering that agricultural goods could be evaluated at cost or at market price. Analysing the particular agricultural goods' nature, these can be valued at fair value at harvest. However, for some agricultural goods, those that take several years to arise to maturity, it is difficult to define fair value in the balance date before the referred maturity. Thus, they considered necessary the valuation at cost for this type of goods.

In our opinion the fair value is a good way to value all the biological assets; however we have conscience of the difficulty of this valuation, especially in the case of the wine-growing sector, due to inexistence of active markets. In the valuation model based on historical cost, the physical alterations or of increase of the amounts do not have a logical consequence in the results when they

occur. We consider that, for the analysis of a company's performance, fair value supplies important information for decision making.

As to credibility of the valuation at fair value, the standard draft (E65) proposed that fair value of biological assets and agricultural goods at the harvest's moment could be determined. IASB considered that there is market for individual or group biological assets, many of which are sold to "private individuals" in local markets, constituted by similar goods, though not for identical biological assets. It considered that the price in these markets is the base to determine fair value of several biological assets and agricultural goods at the harvest's moment. Some of the parties agreed with the foreseen in the E65, for example FAR (2000) and MASB (2000).

The following entities have different opinion: IAA (2000), IMCP (2000), ICMAP (1999), ACAG (2000), Deloitte Touche Tohmatsu (2000) and Arthur Andersen (2000), for considering that the reliable estimate of fair value must usually be determined, even if sometimes it isn't with such high precision degree as the cost; in balance the calculation of fair value must be required. They justified their opinion considering that the clarification in determining fair value for biological assets and agricultural goods at harvest's moment is not enough. They consider that the historical cost model has integrated some margin of uncertainty, as the estimated useful economic life, the recoverable value and the actuarial presuppositions used in the accounting treatment of the pension funds. They do not believe that the use of fair value results in a less accurate financial information.

Other parties, like ICPAK (2000), SAICA (2000), ICAEW (2000), CICA (2000), Ernst & Young (2000) and Abe (2000), considered that as long as fair value is not determined with reliability the cost must be used. So they consider that the estimate of fair value can be determined for agricultural goods at the harvest's moment but it is less probable to get it for biological assets during the transformation period. Perhaps in these circumstances cost is safer than fair value. They believed that cost was the better measurement of value because they considered that it can be precisely measured when it occurs.

We consider that the reliable estimate of fair value must be always determined, even if sometimes it is not determined so accurately as the cost; in the balance the estimate of fair value must be required; maybe this is the most cautious option, although fair value might not always be determined accurately. In these circumstances valorimetric criterion would be always used, even if a biological asset's (vine) fair value can sometimes not be measured with accuracy. In this way there is certain comparability between the accounts of a company in different years or between a company and its sector for following the same valorimetric criteria.

Another polemic question was the recognition of fair value changes in the net results. E65 suggests that biological assets should be valued at fair value and the changes in biological assets fair value are included in the net result. It considers this judgement as the most important indicator of performance of a company focused in agricultural activities. Most of the parties agreed with the spreading of fair value changes in the net result of the period. An entity in Portugal that defends this point of view is OROC (2000). However it made a restriction to changes of fair value measurement, in the case of unrealised profits, that must be differed. That is, changes of value should not be a sort of performance measurement, unless the assets have been sold.

Another group of the parties defended the total spreading of fair value changes on the whole capital, until the asset was sold or consumed. In this time they are recognised in the net result of that period in which it arises. Examples of this group are, among others, IAFEI (2000), G100 group (2000), EACP (2000), EPK (2000), ICPAK (2000), Ernst & Young (2000), Sulzer (2000), Ascom (2000), Amen (2000) and Abe (2000). They justified this position because, on the one hand, they believed that just the value could not be measured with confidence before the accomplishment and, on the other hand one did not believe that the changes of just value of biological assets before the accomplishment were the best indicator of performance in a company involved in agricultural activities.

We still find a group of parties in favour of the total dissemination of fair value changes in the capital until harvest, when the net result of the period would be recognised with equity. The following entities, among others, are examples of this group JICPA (2000), IIMC (2000), NBAA (2000), RJ (2000) and Deloitte Touche Tohmatsu (2000). These parties considered that fair value changes alone should only be recognised by the company in the net result if fair value was accurately determined while biological assets were collected. They did not consider it right to recognise fair value changes in the statement of the results before the harvest due to the uncertainty of the gain realization. They believed that if after harvest fair value measurement could not be determined with reliability, in most of the cases a reasonable estimate of fair value could be made and variations could be recognised with equity.

We are of the opinion that fair value changes must be totally divulged in capital and recognised in the net result of the period while profits are realized. We defend that, as established in other norms, unrealised profits should not affect net result of the period, since they will wrongly influence, not only performance indicators of the company but also the partners/shareholders relatively to the dividends value.

2.3 – INTERNATIONAL ACCOUNTING STANDARDS 41

IAS 41 has as standardization scope the accounting treatment, the presentation of the financial statements and the dissemination of aspects in activities related with agriculture. The limit of its intervention area is the process that finishes with harvest. IASB encourages its early application having the company to divulge this fact.

The standard establishes as limit of its intervention area – related with the definition of the accounting treatment prescribed for the accounting recognition of the biological assets (during its period of growth, degeneration, production and procreation) and initial measurement of the agricultural good (at the harvest's moment) – the process that finishes with harvest [1] (IASC, 2000: §4).

The standard objective is the improvement and harmonization of the methods used for recognition, valuation and register in the financial states of the financial impact of the events and transactions related with the agricultural activity.

Biological assets are assets controlled by an entity as a result of past events and from which the entity expect future economic benefits (IASC, 1999: §36). IAS 41 determines whenever a biological asset fair value can be measured reliably, the entity should measure the biological asset on initial recognition and at each balance sheet date at its fair value less the estimated point-of-sale costs (IASC, 2000: §12).

IAS 41 defines as fair value (IASC, 2000:§8) the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction, being independent from each other. Once more we concluded that this definition is very similar to other standards' definitions.

In agriculture the determination of fair value for a biological asset or agricultural produce may become easier if one groups biological assets or agricultural goods according to similar attributes. These attributes are particular characteristic when the market's price is determined.

The profits or losses arising on initial recognition of a biological asset or agricultural good at fair value less the estimated costs at point-of-sale shall be included in the statement of results for the period in which it arises, as well as the changes in fair value les the estimated costs at point-of-sale of a biological asset.

[1] Harvest – is the detachment of produce from a biological asset or the cessation of a biological asset's life processes. (IASC, 2000: §5).

Based on the stipulated in the IAS 41, we will do an empirical study in which we question the entities of production of regular and sweet wines to find which factors of IAS would encourage them to apply the standard.

3 – Empirical Study

To analyse IAS 41 "Agriculture" impact in the Portuguese accounting system, particularly in the wine-growing sector, we did non-parametric tests, to verify if entities consider that the accounting value of the vines is superior or inferior to fair value and if the variation in fair value of the previous and current year is positive or negative.

For the purpose of analysing the influence of the different factors in the adoption and use of IAS 41, we will proceed with the descriptive analysis. Next to reduce the information to be analysed we did the factor analysis. To conclude if the companies who constitute the sample have some degree of homogeneity regarding to factors previously identified, we did the analysis of *clusters*. Finally, we carried out the discriminant analysis with the sole objective to validate the division in *clusters* of the companies of the sample.

3.1 – DESCRIPTION OF THE POPULATION IN STUDY AND IDENTIFICATION OF THE SAMPLE

The study is based on 288 continental companies classified as wine industry (CAE 15931). In this universe are included 33 companies that do not have workers nor turnover and therefore were excluded, thus, the population is now narrowed to 255 companies. Inquiries were sent to all companies that constitute the target universe. Our sample will be constituted by the companies that answered the inquiry having this number risen up to 81 entities. Our sample represents 32% of the total population. The distribution of these entities according to its legal form is the following (table 1):

[TABLE 1]

The legal form sub-represented is of the private limited companies as it represents 21% of the total population. However we consider that our sample represents 32% of the total population. Each one of the different legal forms is individually well represented.

Hence, the inquiry assumed the questionnaire form, mostly with closed-ended questions. The open-ended questions have content and free form answers, while the closed-ended questions have reduced options of reply, presenting categories or alternatives of fixed answers (Lessard-Hébert *et al.*, 1990;

Barros and Lehfeld, 1986; Hill and Hill, 2002). In this way, our questionnaire resulted of qualitative answers.

3.2 – METHODOLOGY

To simplify the reading and the construction of tables, we decided to abbreviate the name of our variables in each one of the tables in data processing. Next, we present a table with the corresponding designations (table 2).

[TABLE 2]

To analyse the impact of IAS 41"Agriculture" in Portuguese accounting system, particularly in the wine-growing sector, we will analyse the same population in two different years. We have used the non-parametric tests for two matched samples, since the presupposition of normal weren't confirmed for the use of parametric tests. This situation allowed us to analyse the differences between two conditions in the same group. Hence we will proceed with the test of signs and the *Wilcoxon test*, which allow us to analyse differences between two conditions in the same group of individuals (Curto, 2002). The accounting value and fair value or market value are available at two distinct moments, one for the year of 2002 and another for the year of 2003. To carry on the test of signs, we must have one a clearer meaning of the relations $X = Y$, $X > Y$ and $X < Y$, what it is verified in this case, since fair value or market value can remain, improve or get worse from one year to another.

With the objective of analyse the influence of the different factors in the adoption and use of IAS 41, we will do the descriptive, factor, *clusters* and discriminant analysis In the descriptive analysis, we calculate the values of central tendency and the measures of dispersion, among others, in order to characterise each one of the seven general reasons. Then with the measures of central tendency or localisation (mean, mode and median) and measures of dispersion (standard deviation, overall range, interquartile range, coefficient of variation), we construct the topology of the most frequent characteristics pointed as decisive to our objective.

The factor analysis allows us to identify a relatively small number of factors that can be used to represent relations between groups of several interrelated variables. According to Ferreira (2000, p. 91), the factor analysis has the objective *of describing, if possible, the covariance relations between the several variables according to a reduced number of aleatory quantities, not observable, named factors*.

In the factor analysis model each variable is expressed as a linear combination of unobserved factors. Its objective is to simplify the complex relations that exist between groups of observed variables, by means of common factors that make the connection between apparently independent variables (Johns and Lee-Ross, 1998).

The *Clusters* analysis is one exploratory technique of multivariate analysis that has the objective to group individuals or variables based on their characteristics. Hence, the data grouped in the same *Cluster* are very similar relatively to any predetermined criterion of selection (Hair *et al.*, 1995; Maroco, 2003; Johns and Lee-Ross, 1998). Each observation of a determined *cluster* is similar to all the other that belong to that *cluster* and is different to the observations that belong to the others *clusters*. Like this we want to identify groups of repliers that gave similar answers to two or more variables, by grouping the already determined factors in a smaller number of *clusters* with specified similarities.

Discriminant analysis is one multivariate statistic technique that is applied when the dependent variable is qualitative and the independent variables are quantitative. This analysis has as purpose to choose the variables that distinguish the groups, creating for this discriminants functions proceeding from linear combinations of the initial variables. These will maximise the differences between the means of the groups and simultaneously minimise the probability of erroneous classifications of the cases in the groups (Pestana and Gageiro, 2003, p. 655). We use the discriminant analysis only to determine the variables which are discriminants between the groups, through the univariate and multivariate variance of the analysis (anova and manova) or through the method of Kruskal-Wallis, which validates the cluster analysis and confirms the Factor Analysis data.

3.3 – EMPIRICAL RESULTS

3.3.1 – Test of Signs

We want to analyse the impact of the IAS 41 "Agriculture" in the Portuguese accounting system, specifically in the wine-growing sector. For that it was asked to the inquired to indicate the number of grapevines they had in 2002 and 2003, as well as the correspondent value for accounting purposes and/ or their market value, or even the value for restocking each grapevine. They were also asked to indicate the estimated costs at the point-of-sale for the mentioned years.

The number of responses to this question was low. Only 38.3% of the companies that make up the sample answered this question. The reduced number of answers to this group is justified by the fact

that many companies with Classification of the Portuguese Economic Activities code CAE 15931 are Wine Producers Association. They have no production, this is, they don't have grapevines as they only buy grapes from the producers of the region for the wine production.

We wish to carry out two separate analyses. On the one hand we want to verify if the fair value or market value is equal, superior of inferior to the book value, and on the other hand analyse if the fair value or market value stayed equal, has risen or diminished from one year to another. To carry out these objectives we started by applying the test of signs, this is, we will verify if the fair value or market value is equal, superior or inferior to the book value, as per tables 3 and 4, for the years 2002 and 2003, respectively.

[TABLE 3] AND [TABLE 4]

The hypotheses to be tested are:

H_o: There is no difference between fair value and book value;

H_a: There are differences between fair value and book value;

By analysing the tables we verify that for a significance level of 0.05, the hypothesis null is rejected, meaning that there are differences between the values: fair value is superior to historical cost in 71% of the cases. From the analysis of the frequencies we also verified that there are more companies where fair value is superior to historical cost (22 companies in 2002 as well as in 2003), than companies where fair value is inferior to historical cost (6 companies in 2002 and 7 in 2003). Only three companies in 2002 and two in 2003 consider that the value is the same.

Hence we can presume that if the companies in question started applying the IAS 41 during the analysed years they would have had positive differences as a result of the application of the IAS, so that in this case they would be apply the recommendations of the IFRS 1 "Adoption of the IAS for the first time".

As second objective we want to analyse the variations of the fair value from one year to another. In this way we will apply the test of signs and present its result in table 5.

[TABLE 5]

Analysing this table we can verify that 74% of the inquired consider that fair value or market price has risen from 2002 to 2003, what should cause an increase in the companies' performance, as the IAS 41 establishes that the differences of the fair value should be reported as loss or profits, whatever the case, of the operation in question.

Through this test it is impossible to analyse if the inquired that consider that the fair value has diminished from 2002 to 2003 (26% of the inquired) have a more significant importance in terms of value, although they are fewer. Therefore, next we will carry on with the *Wilcoxon* test next.

3.3.2 – Wilcoxon Test

After verifying the symmetry of distribution we carried out the *Wilcoxon* test by testing the following hypotheses:

H_0: The median of fair value in 2003 is equal to the median of the fair value in 2002

H_a: The median of fair value in 2003 is different to the median of the fair value in 2002

H_a can be represented by E (Y) > E (X), being the right unilateral critical region since the test starts with the difference in form of Y – X.

[TABLE 6]

Analysing table 6 we verify that regarding the statistical tests the unilateral significance level can be obtained through the bilateral test, dividing this one by two, this means, 0.012/2 = 0.006, leading to the rejection of the hypothesis null with $\alpha = 0.01$. So we can conclude that the fair value has risen 74% of the cases in 2003 compared to 2002.

We have also verified by the analysis of the mean of ranks[2] that this one is superior for the positive ranks presenting a value of 16.24 against 15.31 of the negative ranks, indicating that 74% of the companies consider that fair value has risen in 2003 relatively to fair value of 2002, presenting this difference a higher median value relatively to the companies that consider that this value has diminished. Hence we can conclude that considering this data and should the companies be applying the IAS 41 the differences of the changes of fair value from 2002 to 2003 would be positive what would lead to an increase of the companies' performance, as the IAS establishes that the positive differences should be reported as operating profits.

3.3.3 - Descriptive Analysis

We start by analysing the localization measures (table 7) where we can see that there is a lot of resemblance between arithmetic[3] mean and trimmed mean at 5%, concluding that the sloping of the

[2] The non parametric techniques are usually designated as rank test or classification tests as they refer to the order or rank of the data and not its numerical values (Siegel 1975).

[3] In spite of variables admit as more restrict level of measurement the ordinal scale, yet we decided to calculate the mean, as well as the measures that depend on it, being however conscious of the limitation of this measures in data of that nature.

distribution is little enhanced. On the other hand we can also verify that the central tendency measures (mean, mode and median) don't separate much from each other.

[TABLE 7]

Regarding the dispersion measures, overall range was calculated, variance and standard deviation. So, regarding overall range we observed that the variables have an interval of variation from 4 to 6. With the analysis of overall range and considering the extreme close values to the mean, trimmed mean at 5% and median, we can have an idea of the variables' dispersion.

The analysis of the standard deviation of the different variables shows us the existence of different dispersions in the answers to the inquiries, for each one of the studied variables, as we can report they assume a maximum value of 1.360 for the variable X7 and a minimum value of 0.785 for the variable X8. After analysing all variables, those ones that show a higher standard deviation are, by ascending order: X7, X4, X1, X9 and X5, what leads us to the conclusion that the values of these variables are those more dispersed relatively to the mean. However, here it is important to analyse the variation coefficien (VC), by verifying if the dispersion is weak, medium or high. We can say that we have a high dispersion for the variable X7 (the competitors have already done it), as its VC is superior to 30%. The remaining variables present a medium dispersion, highlighting the variables X8 (management decision), X15 (improving the levels of accounting information), X24 (supervision of the accounting demands), X14 (capability of measuring accurately the fair value) and X13 (confidence in the obtained results with the application of IAS) with an inferior dispersion.

Considering the analysis of the corrected mean and the arithmetic mean and verifying that the values move away relatively little and that the values of the standard deviation can be assumed as representatives of the distributions' dispersion, we can interpret the mean as representative of the centre of distribution. Hence, we consider the values of central tendency to hierarchy the different variables in terms of importance, which are conditioners of more or less importance in adopting the IAS 41 "Agriculture". For that we are going to use the mean, the mode and the median that register the value around which the observations tend to group.

Next, in table 8 we will present the measures of central tendency that are going to be used to hierarchy the different variables according to levels of importance :

[TABLE 8]

In this table we split the variables in three levels, in the first level the mean stays between 5.52 and 5.05, corresponding to the variables X14, X8, X13, X6, X24, X9, X25, X15, X16, X3 and X12. At the second level the mean is situated between 4.8 and 4.54, corresponding to the variables X1, X19,

X4, X2, X20, X21, X22, X17, X18, X5 and X23. At last at the third level the mean is between 4.42 and 4.28 corresponding to the variables X10, X7 and X11.

Analysing the median through the different levels we can conclude that at the first level appear values of 6.00 and 5.00, at the second level values of 5.00 and at the third level values of 4.00. Regarding the mode we have at the first level values of 6 and 5, at the second 5 and 4, having in this case two variables that don't fit in terms of mode, which are X4 and X23 because they present a value of 4, and at last, at the third level we have values of 4.

We can conclude that the variable X14 (capability of measuring accurately the fair value) is considered the one that probably will have more influence in the companies that adopt the IAS 41 "Agriculture", following in decreasing order of importance the variables: X8 (management decision), X13 (confidence in the obtained results with the application of IAS), X6 (qualified personnel available), X24 (supervision of the accounting demands), X9 (being theoretically prepared), X25 (interest in innovation), X15 (improving the levels of accounting information), X16 (agreement with the acknowledgement of loss and profit of fair value adjustments), X3 (easy adaptation to change) and X12 (confidences in the applicability of the IAS).

We verified that the inquired, considering that the value of the previously calculated measures gave more relevancy to the variables associated to the applicability of the IAS41, as well as the variables associated to the experience of recognition whether of the IAS41 or the other standards, allowing us to conclude that the inquired considered the applicability of the IAS relevant for the sector.

Next we are going to proceed with the factor analysis, as we are in presence of strongly correlated variables, thus simplifying the data samples reducing the number of necessary variables to explain the correlation between them.

3.3.4 - Factor Analysis

The factor analysis implies the existence of a small number of variables unobservable underlying the data that express what is in common with the initial variables.

To verify if the factor analysis is adequate we calculated the statistics of KMO and run the Bartlett test (table 9). Considering the value of KMO (0.810) and once the Bartlett test has a significance level of 0.000 associated we reject the matrix hypotheses of the correlations in the population to be the identity matrix, showing like that that correlation between some variables is statistically significant. We can conclude that the factor analysis is adequate.

[TABLE 9]

In table 10 we present the results of the factor analysis using for the extraction of the factors the method of the principal components. To rotate the factorial axes we use the orthogonal Varimax method with the Kaiser normalization, according to Maroco (2003) has the objective to obtain a factorial structure in which one and only one of the original variables is strongly associated to a single factor, being however little associated to the remaining factors.

[TABLE 10]

The factor analysis respecting the criteria of explained variance resulted in the extraction of five responsible factors for 78.40% of the total variance (table 10). The non explained variance of 21.60% could be related with other less important factors, which result from other variable combinations. The Cronbach's Alpha shows us that we are in presence of a very good internal consistency in factors 1 and 2 (Cronbach's Alpha = 0.94 and 0.90 respectively), a good internal consistency in factors 3 and 4 (Cronbach's Alpha = 0.89 and 0.86 respectively) and a reasonable internal consistency in factor 5 (Cronbach's Alpha = 0.74).

Next we are going to describe how the selected factors were nominated and interpreted from the analysis of the principal components (table 11).

[TABLE 11]

Relatively to factor 1 the observation of the variables that contributed for the explanation of this factor allowed us to conclude that we are in presence of variables related with the innovation, basing us essentially on qualified personnel (X6), carrying out free revaluations (X10), experience in the application of other IAS (X2), confidence in the obtained results with the application of IAS (X13), carry out legal revaluations (X11), confidence in the applicability of the IAS (X12), easy adaptation to change (X3) and supervision of the accounting demand (X24). Hence this factor is explained by the companies that try to keep up with the new accounting demands, revealing qualified personnel with experience in applying other international standards.

A collection of variables related to aspects of the standard is responsible for factor number 2 , supporting its applicability to the agricultural goods at harvest's moment (X19), agreeing with the distinction between conditioned and non conditioned governmental grants (X20), trusting the capability of measuring realisably the fair value (X14), considering that the standard improves the levels of accounting data (X15) and agreeing with the acknowledge of losses and profits of faire value adjustments (X16).

On their turn the variables that contribute for the factor 3 are related with the interest for information in the innovation sector, being that their priority. These variables reveal the comparison between

companies of the sector (X22), the levels of information for management (X21), the interest for innovation (X25) and for being pioneers within the sector (X23).

What concerns factor 4 the variables that are associated to it reveal knowledge of the standard relatively to the distinction of biological assets as they agree with the distinction between consumable biological assets and of production (X17), agree also with the distinction between mature or adult biological assets and immature or young (X18) and for the importance in knowing the IAS 41 (X1).

At last the variables associated to the factor 5 are related with the theoretical preparation. Hence the following variables contribute for this factor: management decision (X8), being part of international groups (X4) and being theoretically prepared (X9). We think that both management decisions, and the fact of being part of international groups reveal factors of greater opening to new knowledge.

To sum up we verified that the factor analysis replaces variables by factors. Each factor by representing a group of variables relates more with the preparation for innovation (factor 1), with the concordance with standard aspects (factor 2), with the interest for information in the sector and innovation (factor 3), with the knowledge for the standard relatively to the distinction of biological assets (factor 4) or with the theoretical preparation (factor 5). We consider that we would reach more easily our objective of investigating which variables could influence the companies to adopt and use the IAS 41, associating some of them based on the factors now determined. We are going to proceed with the analysis of *clusters* for that.

3.3.5 – Cluster Analysis

Through the *cluster* analysis we are going to classify the companies in groups or categories so that it is possible to verify if the factors contribute for the association between them. The *clusters* are formed based on on closer pairs of cases according to a chosen measure of distance which in our case was the Euclidean[4] square distance following the method of hierarchal cluster analysis.
We did the analysis[5] of R^2 which is used to analyse the differences between each group and *cluster*, meaning it measures the percentage of the total variability which is withdrawn in each one of *cluster*

[4] When two cases are similar, the value of the distance is small and the measure value of similarities is big, because while the distances measure the separation between two cases, the similarities measure how close these cases are from one another (Pestana and Gageiro 2003, p. 558).

[5] R^2 - is got through the division of the square sum of the *clusters* of all variables dependent through the sum of the total squares for all variables, this is, $R^2 = SQC/SQT$ (Maroco, 2003).

solutions. When companies concentrate themselves on one single *cluster* the variability between *clusters* is zero.

Through the univariate analysis of variance we can test simultaneously the mean equality of the 5 factors obtained in the factor analysis of the four *clusters* now built. To test these differences between the factor means in the *clusters* we did the One-way Anova test to discover factor by factor which one presents the differences in the statistically significant means between the *clusters*.

In table 12 we can analyse the measures of descriptive statistics and the number of elements in each *cluster. Cluster* 1 has 70 companies, *cluster* 2 has 6 companies, *cluster* 3 has 3 and *cluster* 4 has 2 companies. The mean of the first four factors is positive for *clusters* 1 and 3 and negative for *clusters* 2 and 4 (exception factor 2). Concerning factor 5 we could verify that the *cluster* with negative value is 1 (mean below the mean) and the remaining *clusters* have positive standardized values (mean above zero).

[TABLE 12]

So, the *cluster* analysis done from 5 factors extracted from the factor analysis resulted in the extraction of 4 different groups of companies relatively homogeneous. Next we are going to interpret each one of the found groups in order to hierarchy the variables initially defined. *Cluster* 1 is made up by 70 companies that on one hand have interest in the information and image and on the other hand have knowledge of the standard, especially concerning the distinction to the biological assets, considering that they are prepared for innovation. Hence we report a positive mean in the interest for information and image (factor 3), in the concordance with various aspects of the standard (factor 2), in the preparation for innovation (factor 1) and in the knowledge of the standard relatively to the distinction of biological assets (factor 4). We can verify that the companies of *cluster* 1 register a higher mean in other *clusters*. However, the factor with higher mean in this *cluster* is factor 3, so that we associate *cluster* 1 to factor 3 as being constituted by the companies that have interest in information and innovation and as this *cluster* holds the variables considered more relevant by the inquired, as to this *cluster* are 70 companies associated (86% of the sample fits this group).

The second *cluster* is constituted by 6 companies. Taking into consideration the mean of the factors we found out that within this *cluster* the companies are theoretically prepared (factor 5) to be the only factor with positive mean. By its turn the *cluster* 3 is formed by 3 companies and in spite of having positive mean in all factors as some of these factors are already associated to other *clusters*, we consider that are associated to them companies prepared to innovate (factor 1) and the companies with knowledge of the standard relatively to the distinction of biological assets (factor 4)

are associated to it. In spite of factor 2 having positive mean in this *cluster* it isn't yet associated to none of the previous *clusters*, we don't consider that it belongs to this *cluster* for having greater mean in cluster 4. Hence, cluster 4 is formed by 2 companies that agree with several aspects of the standard (factor 2). In terms of synthesis we present in table 13 the results of the *clusters* analysis.

[TABLE 13]

According to Maroco (2003) *cluster* analysis is a multivariate technique that doesn't have solid theoretical fundaments, grouping objects more or less homogeneous according to criteria more or less heuristically. So *cluster* analysis should be fundamented with other analysis with which is possible to calculate probabilities of error associated to the obtained conclusions. In this way to validate the *cluster* analysis we are going to do the discriminant analysis.

3.3.4 - Discriminant Analysis

According to Pestana and Gageiro (2003) the objective of the discriminant analysis is to choose the variables that distinguish the groups so that knowing the characteristics of a new case one can foresee to which group it belongs. So one might say it consists in creating discriminant functions, deriving from linear combinations of the initial variables that maximize the differences between the group means and minimize the probabilities of incorrect classifications of cases in the groups.

This analysis allows us to validate the *cluster* analysis and simultaneously confirm the results of the factor analysis. Therefore, through table 14 we check that the first discriminant function contributed with 67.5% for the total variance between groups, being the one with more separation power. The second explains 20.5% of intergroup variance that together with the first can differentiate substantially the groups. The third function explains only 11.9% of the intergroup variance.

[TABLE 14]

To assess from which value on the percentage of cases correctly classified is acceptable we are going to compare the correct classifications with the results of one classification obtained by chance, according to table 15. According to Pestana and Gageiro (2003, p. 666) we calculated in each group the probability *à priori* (n_i/N) and the percentage of correctly classified cases by chance got by the product of probability *à priori* with the number of elements of each group (n_i). The sum of this classification (60.8) is divided by the total of elements (81), and we get the percentage of correct classifications of 75.1% given by chance.

[TABLE 15]

As the correct classifications have to be superior to the bigger value between the maximum probability à priori and the percentage of correct classifications obtained by chance and in our study

we have 100%> (Max {86.0%; 75.1%} = 86.0%) revealing the almost perfect case classification, validating like this the results of the *cluster* analysis.

Once the *cluster* analysis validated it is now important to characterize the companies of each group. Hence we checked that *cluster* 1 is formed by the companies that give more importance to the group of variables concerned in improving the comparison between companies of the sector, improving the levels of management information, that have interest in innovation and for being pioneers within the sector.

Cluster 2 is formed by companies that give more importance to the variables associated to the theoretical preparation for giving relevance to management decision, belonging to international groups and being theoretically prepared.

Cluster 3 comprises the companies that give more importance to variables related to the preparation for innovation and the variables related to standard recognition relatively to the distinction of biological assets. Therefore these companies give more relevancy to the existence of qualified personnel, to the fact that they do free revaluations, to the experience in the applicaction of other IAS, to the confidence in the results got with the application of the IAS, to the fact that they do legal revaluations, to the confidence in the applicability of the IAS, to the easiness of adaptation to changes and to the supervision of the accounting demands. Combined with these variables the companies that belong to this *cluster* also agree with the distinction of consumable biological assets and the production, with distinction between mature or adult biological assets and immature or young, having knowledge of the IAS 41.

At last, the *cluster* 4 is formed by companies that agree with several aspects of the standard. Hence they agree that the standard should only be applied to agricultural goods at the haverst's moment, with the distinction between conditioned and non conditioned governmental grants, with the ability of measuring reliable the fair value, with the recognition of losses and profits of the fair value adjustments and with the fact that this information will improve the levels of accounting data.

It is yet important to point out that the majority of companies are comprised in *cluster* 1 because we are in presence of small or medium size companies as it is the general Portuguese case, so that these companies give relevancy to the comparison between companies of the sector and even for being pioneers (characteristics of cluster 1) in it.

4 - Conclusions

The actual tendency for using fair value is the basis for lot of controversies and polemics as it is a little consensual theme, starting with its own definition.

The launched polemic conducted to a higher relevancy of fair value valorisation with regards to historical cost, although it could lead, at least in a first stage, to some reduction of the reliability and the rising of the system complexity due to its own acceptance of fair value valorisation. Having fair value caused attention and the interest of the international entities, leading to the publication of a international accounting standard (IAS 41) about agriculture, we point out some controversial points of which we can conclude that fair value can be determined based on the price of active market when it exists, considering this measuring more reliable for this asset. In case of the wine-growing sector we are conscious that it is difficult to find active market due to the characteristics of the vines and the corresponding grapes in the different regions, although we can use for example the value of a vine expressed in litres of wine.

We also considered that fair value variations should be spread totally in the capital and recognized in the net results for the period by the time the profits are realized. The non realized profits shouldnot affect the net result of the period as they influence wrongly, whether the indicators of performance of the company, or the partners/ shareholders about the value to distribute as dividends. We understand that the variations resulting of the value relatively to the vines value could be conditioned, for example, by the climatic conditions and therefore should not affect the result of the period. We suppose so that the non realized gains should be reflected in the balance sheet, this is, in the accounting value of the active as compensation for capital and should only be transferred to results by the time they are realized.

Relatively to the empirical study and taking under consideration the investigation limitations, the results of the descriptive analysis allow us to conclude that the inquired gave more relevancy to the variables related with the applicability of the standard and also to the experience and knowledge of this and other standards, this is, they considered the applicability of the standard relevant for the sector.

Grouping the initial variables related with the adoption and use of the IAS 41, we got 5 factors or groups responsible for 78% of the accumulated variance, where the first factor comprises the group of variables related with the preparation for innovation, the second group the variables related with the concordance with various aspects of the standard. The third group is formed by variables that reveal interest in information and image. The fourth group comprises the variables related with

knowledge of the standard relatively to the distinction of biological assets and at last, the fifth group is constituted by the variables that.

5 - Bibliografia

Abe, R., University of Kyoto – Japan, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Amen, M., University of Berne – Switzerland, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

American Institute of Certified Public Accountants, **AICPA**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Arthur Andersen, International, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Ascom – Switzerland, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Association of Chartered Certified Accountants, **ACCA** – UK, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Australasian Council of Auditors-General, **ACAG** – Australia, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, Novembro, 02.

Barros, A. J. P.; N. A. S., **Lehfeld**, 1986, *Fundamentos de Metodologia: Um Guia para a Iniciação Científica* (Copyright of the Publisher Mc Graw-Hill, Lda).

Canadian Institute of Chartered Accountants, **CICA** – Accounting Standards Staff, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Consiglio Nazionale dei Dottori Commercialisti, **CNDC** and Consiglio Nazionale dei Ragionieri, **CNR** – Joint Response – Italy, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Curto, J. J. D., 2002, Métodos e Técnicas Estatísticas, Notebook of support of the Doctoral Program in Management, Specialty: Accounting, ISCTE.

Deloitte Touche Tohmatsu, International, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Department of Foreign Affairs and Trade, **DFAT**, 1999, "Trade outcomes and objectives statements", Canberra.

East African Coffe Plantations, **EACP** – Australia, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Eastern Produce Kenya, **EPK**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Ernst & Young – International, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

European Commission, **EC**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

F Hoffmann-La Roche – Switzerland, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Federación Argentina de Consejos Profesionales de Ciencias Económicas, **FACPCE**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Federation of Swiss Industrial Holding Companies, **FSIHC**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Ferreira, P. L., 2000, Estatística Multivariada Aplicada, Notebook of support, Faculty of Economy, University of Coimbra.

Föreningen Auktoriserade Revisorer, **FAR** – Sweden, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Fiji Institute of Accountants, **FIA**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Group of 100, **G100**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Hair, J. F.; R. E., **Anderson**; R. L., **Tatham**; W. C. **Black**, 1995, *Multivariate Data Analysis with Readings* (Fourth Edition, Englewood Cliffs, New Jersey).

Hill, M.M.; A., **Hill**, 2002, *Investigação por Questionário* (Segunda Edição Revista e Corrigida, Edições Sílabo, Lisboa, Abril).

Illovo Sugar – South Africa, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Indian Institute of Management Calcutta, **IIMC** – India – Asish k. Bhattacharyya, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institut der Wirtschaftsprüfer, **IDW** – Germany, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institute of Certified Public Accountants of Kenya, **ICPAK**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institute of Chartered Accountants in Australia, **ICAA**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institute of Chartered Accountants in Englad & Wales, **ICAEW** – UK, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institute of Chartered Accountants of New Zealand, **ICANZ**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institute of Chartered Accountants of Zimbabwe, **ICAZ**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institute of Cost and Management Accountants of Pakistan, **ICMAP**, 1999, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Institute of Management Accountants, **IMA** – USA, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Instituto de Auditores-Censores Jurados de Cuentas de España, **IACJCE** – Spain, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Instituto Mexicano de Contadores Públicos, **IMCP** – Mexico, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Instituto Nacional de Estatística, **INE**, 2004, *Estatísticas Agrícolas*, (INE Portugal, Agricultura, Produção Animal, Sivicultura e Pesca).

International Accounting Standards Committee, **IASC**, 1999, Proposed International Accounting Standard Agriculture, *Exposure Draft E65,* "Agriculture", July, London: IASC.

———, **IASC**, 2000, *International Accounting Standard, IAS 41,* "Agriculture", December, London, tradução Portuguesa publicada pela Ordem dos Revisores Oficiais de Contas, com a permissão do IASCF, 2003.

International Actuarial Association, **IAA**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

International Association of Financial Executives Institutes, **IAFEI**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Japanese Institute of Certified Public Accountants, **JICPA**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Johns N.; D. **Lee-Ross**, 1998, *Research Methods in Service Industry Management* (CASSELL, London and New York).

Lessard-Hébert, M.; G. **Goyette**; G. **Boutin**, 1990, *Investigação Qualitativa: Fundamentos e Práticas* (Epistemology and Society, Institute Piaget, Lisbon).

Malaysian Accounting Standards Board, **MASB**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Malaysian Institute of Accountants, **MIA**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Maroco, J., 2003, *Análise Estatística – com utilização do SPSS* (Editions Sílabo, 2nd Edition, Lisbon).

National Board of Accountants and Auditors, **NBAA** – Tanzania, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Nestlé – Swetzerland, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Nutreco – Netherlands, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Ordem dos Revisores Oficiais de Contas, **OROC**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Pestana, M. H.; J. N. **Gageiro**, 2003, *Análise de Dados para Ciências Sociais: A Complementaridade do SPSS* (Editions Sílabo, 3rd revised edition and increased, Lisbon, March).

Raad voor de Jaarverslaggeving, **RJ** – Council for Annual Reporting – Netherlands, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Siegel, S., 1975, *Estatística não paramétrica – para as ciências do comportamento* (McGraw-Hill, Inc., Brasil, (1ª Ed., NonParametric Statistics for the Behavioral Sciences, 1916)).

South African Institute of Chartered Accountants, **SAICA**, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Sulzer – Switzerland, 2000, *Comments on E65,* "Agriculture", In International Accounting Standards Board (Online) available at: http://www.iasb.org.uk, November, 02.

Table 1 – Legal Form

Legal Form	Sample (1)		Population (2)		(1)/(2)%
	Nº Comp.	%	Nº Comp.	%	
Entrepreneur Company	2	2	2	1	100
Partnership Company	21	26	97	38	21
Limited Liability Company	22	27	48	19	45
Wine Produces Association	36	44	108	42	33
Total	**81**	**100**	**255**	**100**	32

Table 2 – List of Variables

Abbreviate	Variable
X1	Knowledge of the IAS 41
X2	Experience in the application of other IAS
X3	Easy adaptation to change
X4	Being part of international groups
X5	They will be seen as an "example" inside the sector
X6	Qualified personnel available
X7	The competitors have already done it
X8	Management decision
X9	Being theoretically prepared
X10	Carry out free revaluations
X11	Carry out legal revaluation
X12	Confidences in the applicability of the IAS
X13	Confidence in the obtained results with the application of IAS
X14	Capability of measuring the fair value accurately
X15	Improving the levels of accounting information
X16	Agreement with the acknowledgement of loss and profit of fair value adjustments
X17	Agreement with the distinction between consumable biological assets and of production
X18	Agreement with the distinction between mature or adult biological assets and immature or young
X19	Agreement of the standard to be applied only at the time of harvesting for agricultural produce
X20	Agreeing with the distinction between conditioned and non conditioned governmental grants
X21	Improve the levels of information for management
X22	Improve the comparison between companies of the sector
X23	Being pioneers within the sector
X24	Supervision of the accounting demands
X25	Interest in innovation

Table 3 – Sign Test 2002

Frequencies

		N
J_V_02 - V_Cont_02	Negative Differences (a)	6
	Positive Differences (b)	22
	Ties (c)	3
	Total	31

a) J_V_02 < V_Cont_02
b) J_V_02 > V_Cont_02
c) J_V_02 = V_Cont_02

Test Statistics(a)

	J_V_02 - V_Cont_02
Z	-2,835
Asymp. Sig. (2-tailed)	0,005

a) Sign Test

Table 4 – Sign Test 2003

Frequencies

		N
J_V_03 - V_Cont_03	Negative Differences (a)	7
	Positive Differences (b)	22
	Ties (c)	2
	Total	31

a) J_V_03 < V_Cont_03
b) J_V_03 > V_Cont_03
c) J_V_03 = V_Cont_03

Test Statistics(a)

	J_V_03 - V_Cont_03
Z	-2,600
Asymp. Sig. (2-tailed)	0,009

a) Sign Test

Table 5 – Sign Test to the Variations of the Fair Value

Frequencies

		N
J_V_03 - J_V_02	Negative Differences (a)	8
	Positive Differences (b)	23
	Ties (c)	0
	Total	31

a) J_V_03 < J_V_02
b) J_V_03 > J_V_02
c) J_V_03 = J_V_02

Test Statistics(a)

	J_V_03 - J_V_02
Z	-2,514
Asymp. Sig. (2-tailed)	0,012

a) Sign Test

Table 6 – *Wilcoxon* Test to the Variations of the Fair Value

Ranks

		N	Mean Rank	Sum of Ranks
J_V_03 - J_V_02	Negative Ranks	8(a)	15,31	122,50
	Positive Ranks	23(b)	16,24	373,50
	Ties	0(c)		
	Total	31		

a) J_V_03 < J_V_02
b) J_V_03 > J_V_02
c) J_V_03 = J_V_02

Test Statistics(b)

	J_V_03 - J_V_02
Z	-2,470(a)
Asymp. Sig. (2-tailed)	0,014
Exact Sig. (2-tailed)	0,012
Exact Sig. (1-tailed)	0,006
Point Probability	0,000

a) Based on negative ranks.
b) Wilcoxon Signed Ranks Test

Table 7 - Descriptive Statistics

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25
N	Valid	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
	Missing	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Mean		4,98	4,84	5,07	4,85	4,68	5,38	4,33	5,40	5,19	4,42	4,28	5,05	5,28	5,52	5,15	5,15	4,80	4,73	4,89	4,84	4,84	4,83	4,54	5,31	5,17
Trimmed Mean at 5%		5,04	4,91	5,14	4,90	4,73	5,45	4,34	5,41	5,26	4,44	4,30	5,14	5,40	5,60	5,16	5,22	4,85	4,77	4,99	4,92	4,88	4,88	4,56	5,34	5,26
Std. Error of Mean		,137	,131	,118	,146	,134	,124	,151	,087	,136	,105	,097	,124	,117	,117	,098	,128	,128	,134	,111	,113	,117	,129	,117	,112	,115
Variation Coefficient		24,80	24,32	20,87	27,09	25,68	20,69	31,41	14,54	23,62	21,43	20,30	22,12	19,92	19,02	17,13	22,37	24,08	25,45	20,45	21,03	21,78	24,02	23,11	18,98	20,00
Median		5,00	5,00	5,00	5,00	5,00	5,00	4,00	5,00	5,00	4,00	4,00	5,00	6,00	6,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
Mode		5	5	5	4	5	6	4	5	6	4	4	5(a)	6	6	5	5	5	5	5	5	5	5	4	6	5
Std. Deviation		1,235	1,177	1,058	1,314	1,202	1,113	1,360	,785	1,226	,947	,869	1,117	1,052	1,050	,882	1,152	1,156	1,204	1,000	1,018	1,054	1,160	1,049	1,008	1,034
Variance		1,524	1,386	1,119	1,728	1,446	1,239	1,850	,617	1,503	,897	,756	1,248	1,106	1,103	,778	1,328	1,335	1,450	1,000	1,036	1,111	1,345	1,101	1,016	1,070
Skewness		-1,219	-1,046	-1,060	-,295	-,722	-,812	-,204	-,516	-,948	-,307	-,241	-1,148	-1,523	-1,445	-,522	-,649	-,748	-,689	-1,156	-1,054	-,523	-,590	-,117	-,358	-1,399
Std. Error of Skewness		,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267	,267
Skewness Coefficient		-4,57	-3,92	-3,97	-1,10	-2,70	-3,04	-0,76	-1,93	-3,55	-1,15	-0,90	-4,30	-5,70	-5,41	-1,96	-2,43	-2,80	-2,58	-4,33	-3,95	-1,96	-2,21	-0,44	-1,34	-5,24
Kurtosis		1,731	1,582	2,003	,273	,816	,989	-,035	1,012	1,222	1,808	1,772	1,379	2,621	2,917	1,702	1,163	,523	,217	1,559	1,757	,663	,319	,705	-,229	2,819
Std. Error of Kurtosis		,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529	,529
Kurtosis Coefficient		3,27	2,99	3,79	,52	1,54	1,87	-,07	1,91	2,31	3,42	3,35	2,61	4,95	5,51	3,22	2,20	,99	,41	2,95	3,32	1,25	,60	1,33	-,43	5,33
Range		6	6	5	6	6	5	6	4	6	5	5	5	5	5	5	5	5	5	4	5	5	5	5	4	5
Interquartile Range		1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	2	1	1	1
Minimum		1	1	2	1	1	2	1	3	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2
Maximum		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	7	7	7	7
Sum		403	392	411	393	379	436	351	437	420	358	347	409	428	447	417	417	389	383	396	392	392	391	368	430	419
Percentiles	25	5,00	4,00	5,00	4,00	4,00	5,00	4,00	5,00	5,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00
	50	5,00	5,00	5,00	5,00	5,00	5,00	4,00	5,00	5,00	4,00	4,00	5,00	6,00	6,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
	75	6,00	6,00	6,00	6,00	5,00	6,00	5,00	6,00	6,00	5,00	5,00	6,00	6,00	6,00	6,00	6,00	5,50	5,00	6,00	5,00	5,50	6,00	5,00	6,00	6,00

a) Multiple modes exist. The smallest value is shown

Table 8 – Rank of the Variables

Abbreviate		Mean	Median	Mode
Level 1	X14	5,52	6,00	6
	X8	5,40	5,00	5
	X13	5,28	6,00	6
	X6	5,38	5,00	6
	X24	5,31	5,00	6
	X9	5,19	5,00	6
	X25	5,17	5,00	5
	X15	5,15	5,00	5
	X16	5,15	5,00	5
	X3	5,07	5,00	5
	X12	5,05	5,00	5
Level 2	X1	4,98	5,00	5
	X19	4,89	5,00	5
	X4	4,85	5,00	4
	X2	4,84	5,00	5
	X20	4,84	5,00	5
	X21	4,84	5,00	5
	X22	4,83	5,00	5
	X17	4,80	5,00	5
	X18	4,73	5,00	5
	X5	4,68	5,00	5
	X23	4,54	5,00	4
Level 3	X10	4,42	4,00	4
	X7	4,33	4,00	4
	X11	4,28	4,00	4

Table 9 – Teste KMO e Bartlett

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,810
Bartlett's Test of Sphericity	Approx. Chi-Square	2445,227
	df	300
	Sig.	,000

Table 10 – Factor Analysis: Principal Components Analysis

Components	Factors				
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
X1				0,561	
X2	0,728				
X3	0,619				
X4					0,719
X5					
X6	0,827				
X7	0,565				
X8					0,877
X9					0,562
X10	0,793				
X11	0,688				
X12	0,682				
X13	0,694				
X14		0,698			
X15		0,688			
X16		0,549			
X17				0,832	
X18				0,793	
X19		0,896			
X20		0,814			
X21			0,758		
X22			0,802		
X23			0,669		
X24	0,567				
X25			0,695		
Variance Explained	24,77	17,66	14,27	11,96	9,75
Variance Cumulative	24,77	42,43	56,70	68,65	78,40
Eigenvalues	6,192	4,415	3,567	2,989	2,436
Cronbach's Alpha	0,94	0,90	0,89	0,86	0,74

Table 11 – Factor Resulting from the Factorial Analysis

Factors	Variables by decreasing order associated to the factor	Sign	Interpretation of the factors
Factor 1	- Qualified personnel available; - Carry out free revaluations; - Experience in the application of other IAS; - Confidence in the obtained results with the application of IAS; - Carry out legal revaluation; - Confidences in the applicability of the IAS; - Easy adaptation to change; - Supervision of the accounting demands.	+ + + + + + + +	Preparation for innovation
Factor 2	- Agreement of the standard to be applied only at the time of harvesting for agricultural produce; - Agreeing with the distinction between conditioned and non conditioned governmental grants; - Capability of measuring the fair value accurately; - Improving the levels of accounting information; - Agreement with the acknowledgement of loss and profit of fair value adjustments.	+ + + + +	Agreement with aspects of the standard
Factor 3	- Improve the comparison between companies of the sector; - Improve the levels of information for management; - Interest in innovation; - Being pioneers within the sector.	+ + + +	Interest by the information in the sector and innovation
Factor 4	- Agreement with the distinction between consumable biological assets and of production; - Agreement with the distinction between mature or adult biological assets and immature or young; - Knowledge of the IAS 41.	+ + +	Knowledge for the standard relatively to the distinction of biological assets
Factor 5	- Management decision; - Being part of international groups; - Being theoretically prepared.	+ + +	Theoretical preparation

Table 12 – Means

Groups (*Clusters*)	Nº Companies	Means of the factors				
		Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
1	70	0,0823873	0,0896000	0,1356640	0,0743046	-0,0766535
2	6	-0,2703486	-1,7313944	-1,5422572	-1,5372751	0,1426769
3	3	1,1431854	0,2832940	0,4402007	1,4475960	1,4301745
4	2	-3,7872862	1,6332421	-0,7817687	-0,1602295	0,1095794

Table 13 – *Clusters* Analysis

Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
		X		
				X
X			X	
	X			

Table 14 - Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	8,490(a)	67,5	67,5	,946
2	2,583(a)	20,5	88,1	,849
3	1,497(a)	11,9	100,0	,774

a) First 3 canonical discriminant functions were used in the analysis.

Table 15 – Correct Classifications Randomly Obtained

	Clu1	**Clu2**	**Clu3**	**Clu4**	**Total**
	70	6	3	2	81
Probability *à priori*	**0,86**	0,07	0,04	0,03	1
Correct classifications	60,2	0,42	0,12	0,06	60,8