

SEGMENT REPORTING UNDERLYING  
IAS 14 AND ITS APPLICATION IN TURKEY

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UMS 14 KAPSAMINDA BÖLÜMLERE GÖRE RAPORLAMA  
ESASLARI VE TÜRKİYE'DEKİ UYGULAMASI

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- 1) Segment reporting
- 2) Primary and secondary segments
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- 5) International Accounting Standard 14 (IAS 14), Turkish Accounting Standard 14 (TAS 14)

## **ABSTRACT**

In this thesis, using an evaluation form consisting of the items that shall be disclosed according to International Accounting Standard 14 (IAS 14), Segment Reporting, the companies in Istanbul Stock Exchange (ISE) -National 30 and 30 major companies from London Stock Exchange (LSE) are evaluated by constructing a statistical model. Our findings suggest that none of the segment reporting disclosures of the firms in ISE are fully in accordance with IAS 14.

## **ÖZET**

Bu tezde, bir deęerleme formuyla, Istanbul Menkul Kıymetler Borsası – Ulusal 30 firmaları ve Londra Menkul Kıymetler Borsası'nın en büyük firmalarından 30 tanesi, Uluslararası Muhasebe Standardı 14 (UMS 14), Bölümlere Göre Raporlama kapsamında açıklanması gereken maddelere göre istatistiksel bir model oluşturularak deęerlendirilmiştir. Bunun sonucunda IMKB'deki firmaların yaptığı bölümlere göre raporlama bilgilendirmesinin UMS 14'le tamamen uyumlu olmadığı tespit edilmiştir.

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## **1. INTRODUCTION**

Most large businesses engage in different types of activities which will involve the supply of several products and services. This diversity causes different levels of profitability, growth and thus risk. The financial statements give the users a general, overall view of the position and performance of the company and using these statements, it is hard to make analysis with the aggregate figures of different types of businesses.

Similar kinds of problems arise when a business operates in different geographical markets. The economic conditions of a country such as the inflation rate, exchange rates, the political environment, or the regulations will create different risk, profitability and growth levels associated with them.

To be able to make a meaningful analysis, it is very important to break down the financial information into segmental (business and/or geographic) parts.

Segment reporting, the disclosure of financial information related with business and geographic segments, is a relatively recent development in financial reporting. Although controversial and conflicting arguments have been made about its advantages and disadvantages, it is obvious that segment reporting is both useful to managers in improving the efficiency of their business and to shareholders and third parties in making better evaluation on the basis of more detailed financial information.

In practice, companies do not like the idea of revealing competitive data and their inner workings. Therefore, some of them try to avoid segment reporting by attempting to classify all of their product lines in a single industry/business line or all of their operational areas into one geographical segment. For this reason, the extent to which the companies carry out the rules and regulations about segment reporting is an issue of interest.

The main objective of this thesis is to find out whether the companies in Turkey that are open to public do report their financial information by segments in accordance with International Accounting Standard 14 (IAS 14) or not.

The thesis is organized as follows; in section 1 we introduce our thesis and approach . In section 2, we have the literature review on the Standard. In the 3rd section, the boards and organizations in Turkey that govern the rules and the principles on reporting standards are examined. Section 4 explains the statistical analysis to evaluate the firms in Istanbul Stock Exchange (ISE) and compare them with a benchmark, that is London Stock Exchange (LSE) and interpret the results of the analysis. The last part, section 5, is the conclusion of this thesis.

## **2. SEGMENT REPORTING UNDERLYING IAS 14**

### **2.1 Definition of Segment Reporting**

International Accounting Standard 14 (IAS 14), Segment Reporting, is about the principles for reporting the financial information by segment, to help users of the financial statements. It is the disclosure of information related to an entity's products and services, its geographic areas and its major customers.

Segment Reporting was necessitated by the continued growth of complex entities operating in different, various industries or geographical markets, making financial statements less useful, unless more detailed information is provided. The disclosure of sensitive competitive data and the additional effort to prepare segment information were met with opposition at first; however it became clear that the needs of users of financial information, which would affect their investment decision making, were far more important. Statement of Financial Accounting Standard (SFAS) 14 was issued in 1976, which established specific requirements under US GAAP for the disclosure of segment information. The first international standard, IAS 14, issued in 1981, was closely

modelled on the US standard and it was revised in 1998 by changing the method of determining reportable segments. (Wiley, IAS 2003)

In contrast to the current US standard, SFAS 131, which affects only the financial statements of publicly held companies, the international standard IAS 14 is applicable to both publicly held companies and other economically significant entities.

## **2.2 Objectives of Segment Reporting**

The objective of International Accounting Standard 14 is to establish principles for reporting financial information by segment, information about the different types of products and services an entity produces and the different geographical areas in which it operates.

Rates of profitability, opportunities for growth and risks vary significantly from one industrial sector to another and from one geographical area to another.

Empirical studies have proved that disaggregated data published together with the financial statements enables analysts, investors and other user groups of company reports to understand better the situation of a company and to make predictions regarding the company's future profitability with greater accuracy and greater confidence. (Haller and Park, 1994)

The entity's past performance and the entity's risks and returns can be better assessed by segment reporting, as it would be very difficult to analyze the financial performance and position of a company that operates in different business lines or geographic areas using aggregated figures. Using the detailed segmental information, it is also easier to make more informed judgements about the entity as a whole. (Greuning, 2005)

As mentioned in Wiley GAAP 2004, a major benefit of segment reporting is the release of hidden data from consolidated financial information. Different segments may have different levels of growth, profitability and risks, which can be merged in the consolidated amounts. In addition, assessing future cash flows and their associated risks can be more easily determined by segment reporting.

Segment reporting is also an answer to the demands of the users of financial statements. Investors, creditors and other parties require more and more disaggregated information every day. Therefore, segment reporting can be regarded as necessary to meet the needs of them.

### **2.3 Scope of the Standard**

According to IAS 14, segment reporting shall be applied in complete sets of published financial statements that comply with International Financial Reporting Standards, including balance sheet, income statement, cash flow statement and a statement showing changes in equity. The standard shall be applied by entities whose equity or debt securities are publicly traded and by entities which are in the process of issuing them in public securities markets. If the securities of an entity are not publicly traded but the entity chooses to prepare financial statements in accordance with International Financial Reporting Standards (IFRS), then the entity can disclose segment information voluntarily.

According to Paragraph 7 of the Standard, if a single financial report contains the consolidated financial statements of an entity whose securities are publicly traded and the separate financial statements of the parent or one or more subsidiaries, then segment information need to be disclosed only on the basis of the consolidated financial statements. On the other hand, if a single financial report contains the consolidated financial statements of an entity whose securities are publicly traded and the separate financial statements of an equity

method associate or joint venture, then segment information need to be disclosed only on the basis of the entity's financial statements.

## **2.4 Definitions**

### **2.4.1 Defining Business and Geographical Segments**

According to the Standard;

A *business segment*, is a distinguishable component of an entity that is engaged in providing an individual product or service or a group of related products or services and that is subject to risks and returns that are different from those of other business segments. There are several factors that should be considered in determining whether products and services are related:

- The nature of the products or services
- The nature and technology of the production processes
- The types of markets in which the products or services are sold
- The types or classes of customers
- The methods for distributing products or providing the services
- If applicable, the nature of regulatory environment, for example, banking, insurance or public utilities. (IAS 14, Paragraph 9)

A *geographical segment* is a distinguishable component of an entity that is engaged in providing products or services within a particular economic environment and that is subject to risks and returns that are different from those of components operating in other economic environments. Factors that shall be considered in identifying geographical segments are:

- The similarity of economic and political conditions
- The relationships between operations in different geographical areas
- The special risks associated with operations in a particular areas
- The proximity of operations
- Exchange control regulations
- The underlying currency risks. (IAS 14, Paragraph 9)

Understanding what is meant by a business or a geographical segment has been an important issue for the users and preparers of financial statements.

*A reportable segment* is a business or a geographical segment where the majority of sales, which is more than 50%, are earned externally and the segment revenue, segment result or segment assets are equal to or greater than 10% of the relevant total amount for all segments. (IAS 14, Paragraphs 34-43)

#### **2.4.2 Other Definitions from the Standard**

*Segment revenue* is defined in the Standard as “the revenue reported in the entity’s income statement which is directly attributable to a segment and the relevant portion of entity revenue which can be allocated to a segment on a reasonable basis.” Segment revenue does not include interest or dividend income and gains on sales of investments or gains on extinguishment of debt unless the segment primarily operates in a business of financial nature.

According to IAS 14, segment revenue includes an entity’s share of profits or losses of associates, joint ventures, or other investments accounted for under the equity method only if those items are included in consolidated or total entity revenue. Segment revenue also includes a joint venture’s share of the revenue of a jointly controlled entity that is accounted for by proportionate consolidation in accordance with IAS 31, Interests in Joint Ventures.

*Segment expense* is the expense reported in the entity’s income statement resulting from the operating activities which is directly attributable to a segment and the relevant portion of an expense which can be allocated to a segment on a reasonable basis. Segment expense does not include interest and losses on sales of investments or losses on extinguishment of debt unless the segment primarily operates in a business of financial nature. An entity’s share of losses of

associates, joint ventures or other investments accounted for under the equity method and the income tax expense are also not regarded as segment expenses. General administrative expenses, head-office expenses and the expenses that arise at the entity level are not included in the expenses of a segment, unless they are on behalf of a particular segment. These are considered to be segment expenses if they can be directly allocated to a segment on a reasonable basis. (IAS 14, Paragraph 16)

*Segment result* is the difference between segment revenues and segment expenses. It is a measure of operating profit before head-office expenses, interest income or expense and investment gains or losses (except for financial segments), and minority interest deduction.

*Segment assets* are the operating assets that can be attributable to a segment or can be allocated to a segment on a reasonable basis. Examples of segment assets include current assets used in the operating activities of the company, fixed assets such as property, plant and equipment, intangible assets and assets that are the subjects of financial leases. If the depreciation (or amortization) of an asset is included in the segment expenses, then the related asset has to take place in the segment assets. The assets, that are used generally in the entity or are shared by more than one segment, must not be included in any segmental classification unless reasonable allocation to segments is possible. If segment assets are revalued after the acquisition in accordance with IAS 16, then measurements of segment assets will also include the revaluations. (IAS 14, Paragraph 16)

*Segment liabilities* are the operating liabilities that can be directly attributable to a segment or can be allocated to a segment on a reasonable basis. Paragraph 20 of IAS 14 states that segment liabilities include trade and other payables, customer advances, accrued liabilities, product warranty provisions and other claims related with the provision of goods and services. If interest of a liability is included in the segment expenses, then the related interest-bearing liability has to take place in the segment liabilities. (IAS 14, Paragraph 16)

If a segment does not have financial activities as a primary business, then segment liabilities must not include borrowings and similar liabilities. As debt is mostly issued at the entity level, it is often not possible to allocate it to the segments on a reasonable basis.

If a segment result includes interest expense, interest income or dividend income, then the segment assets shall include related receivables, loans, investments and the segment liabilities include related interest-bearing liabilities. Income tax assets and liabilities are never the parts of segment assets and liabilities.

When there is a consolidation process, segment revenue, segment expense, segment assets and segment liabilities are determined before intragroup balances and transactions are eliminated unless they are between group entities in a single segment.

One main problem related with the items to be disclosed is the allocation of assets and liabilities to the reportable segments. According to the Standard, it is stated that assets and liabilities that are directly attributable or that can be allocated to a segment on a reasonable basis can be classified as segment assets and liabilities. However, there are no explanations and any criteria in the Standard on how to allocate the assets and liabilities.

Although the carrying amount of the assets of the reportable segments are to be disclosed, the Standard also requires the disclosure of capital expenditure that is the cost of property, plant and equipment, and intangible assets acquired during that period to be used more than one period. Problems for the allocation of capital expenditure to the segments are similar to the assets and liabilities in terms of not having a clear basis.

## **2.5 Identifying Reportable Segments**

The major step for determining reportable segments is to identify the primary and secondary reporting formats. The entity should determine whether business or geographical segments will be used for its primary segment reporting format.

### **2.5.1 Primary and Secondary Segments**

The decision for determining the primary and secondary segments must be made on the basis of the factors affecting the nature of risks and returns. Paragraphs 26 and 27 of the Standard states that if the risks and returns are related predominantly to the types of products and services the company produces, then the primary format must be business segments with secondary information reported geographically, whereas if they are related predominantly to the fact that the company operates in different countries or geographical areas, then the primary format must be geographical segments with secondary information reported for different groups of products and services. Disclosure requirements of secondary segments are relatively less detailed when compared to the primary segments.

According to IAS 14, an entity's internal organizational and management structure and its system of internal financial reporting to the board of directors and the chief executive officer shall normally be the basis for identifying the predominant source and nature of risks and differing rates of return facing the entity and for determining which reporting format is primary and which is secondary, except as provided below:

- If an entity's risks and returns are strongly affected both by differences in the products and services produced and by the differences in the geographical areas of its operations, then the entity shall use business segments as its primary reporting format and geographical segments as its secondary reporting format, provided that the company has a matrix approach in management and reporting

is made internally to the board of directors and chief executive officer. A matrix presentation, in which both business and geographical segments are disclosed on the basis of primary segment reporting formats, is not prohibited by the Standard, but it is not a requirement forced by it.

- If an entity's internal management and organizational structure, the system of financial reporting to the board of directors and the chief executive officer are based neither on products and services nor on geographical areas, then the management of the company shall decide whether business segments or geographical segments will be the primary reporting format, with the other as the secondary reporting format.

Except some rare occasions, normally a company should report segmental information on the same basis with which it reports to its top management in the company. This is because the organizational structure and management of the company is set up according to the sources of risks and returns, which are the reasons for segment reporting.

### **2.5.2 Reportable Segments**

According to the Standard, if two or more internally reported business segments or geographical segments are similar, then they can be combined and reported as a single segment. The segments can be accepted as similar when their long term financial performances are similar and the factors mentioned previously in defining these segments are all similar, such as the types of customers, regulatory environments and the risks and returns associated with the segments.

As to Paragraph 35 of IAS 14, a business segment or a geographical segment can be identified as reportable if the majority of its revenue is earned from external customers. In addition, the revenue earned from external customers and from inter-segment transactions must be at least 10% of the total external and

internal revenue, or the segment result (profit or loss) must be at least 10% of the total profit or loss of all segments in absolute value, or the assets of the segment must be at least 10% of the total assets.

10% thresholds are only used for determining reportable segments and are not guides for determining materiality for financial reporting.

An internally reported segment can be defined as reportable although its size is not in accordance with the specifications mentioned in Paragraph 35 of the Standard. If it is not separately designated as a reportable segment, it can be combined with one or more similar segments. If it is neither combined nor reported separately, then it must be included as an unallocated reconciling item.

If the total revenue from external customers for all reportable segments combined is less than 75% of the total consolidated or entity revenue, additional reportable segments should be identified until 75% level is reached (Greuning, 2005).

When a segment is determined as reportable in one period, although its revenue, segment result and assets do not exceed the relevant 10% thresholds in the next period, the management may continue to accept the significance of the segment.

Vertically integrated segments, which earn a great majority of their revenues from inter-segment transactions, may be but need not to be classified as reportable segments. However, in the standard, current practice of some industries are given as example. For instance, many international oil companies report their exploration and production (upstream) activities and their refining and marketing (downstream) activities as separate business segments, even if most of or all the upstream product is transferred internally to the entity's refining operation. If vertically integrated activities are not reported separately,

then the selling segment shall be combined into buying segment in identifying externally reportable business segments. (IAS 14, Paragraphs 39-41)

## **2.6 Segment Accounting Policies**

Segment accounting policies shall be in conformity with the accounting policies used in the preparation and presentation of financial statements of the entity or the consolidated group. The management of the companies are assumed to choose the most appropriate policies that will also be used for segment reporting purposes. Though, this does not mean that these policies can be applied to reportable segments as if the segments are separate entities. For instance, if entity-wide calculations have been done by applying a certain accounting policy, then these can be allocated to the reportable segments when there is a reasonable basis for allocation.

The Standard, Paragraph 46, does not prohibit the disclosure of additional information related with the segments prepared on another basis rather than the accounting policies applied in the financial statements, if it is provided that:

- Segment information, for the purposes of performance evaluation of segments and the decision-making for the allocation of resources to segments, being internally reported to the board of directors and the chief executive officer.
  
- The basis for the measurement of the additional segment information should be clearly defined for the users of financial statements.

The allocation of assets is another issue defined in the Standard. If assets are used by two or more segments, then they shall be allocated to the segments provided that their related revenues and expenses are also allocated to these segments.

The allocation of assets, liabilities, revenues and expenses to the reportable segments depend on the nature of the items, the activities of the segments and the autonomy of the segments in relation to each other.

It may not be possible to reach a standard allocation method for all of the entities. However, if there is only one basis for making the allocation and if it is arbitrary and difficult to understand, then the allocation for the assets, liabilities, revenues and expenses, that belong to more than one segment, is not forced. By definition, the terms; assets, liabilities, revenues and expenses are related with each other and therefore the allocations should be consistent taking into consideration their being interrelated. For instance, an asset can be included in segment assets if, and only if, its related revenues and expenses, such as depreciation expense, are also included in the calculation of segment result and are parts of the disclosure about the reportable segments. (IAS 14, Paragraph 48)

## **2.7 Presentation and Disclosure**

IAS 14 has detailed guidance about what shall be disclosed related with the reportable segments and the entities are encouraged to present more detailed information for primary segments when compared to secondary segments.

### **2.7.1 Primary Reporting Format**

After the identification of the primary and secondary segments, the most important issue is the type of information to be disclosed under the reporting formats.

An entity shall disclose segment revenue for each and every reportable segment including both the revenues from external customers and from inter-segment transactions, but these revenues shall be presented separately.

An entity shall also disclose segment result for its reportable segments provided that the result from continued and discontinued operations can be identified separately. In addition to the segment result, if it is possible to calculate net income/loss or some other measures of segment profitability, then the disclosure of such information is encouraged by the Standard, but this is not an obligatory disclosure. Examples of other measures can be the gross margin, the profit/loss from ordinary activities or net profit/loss. (IAS 14 Paragraphs 53-54)

In case the additional information disclosed is prepared on a basis other than the policies used in the financial statements, then the entity shall also disclose a detailed description about the basis for the measurement.

The segment assets and liabilities shall be disclosed for each reportable segment. In addition, according to Paragraph 57 of IAS 14, related with the acquisition of assets, such as machinery, equipment, plant...etc, that will be used more than one period, the total cost that incur during each period shall be disclosed for the segments. This can be referred as capital expenditure and its measurement shall be on accrual basis, not on cash basis.

The depreciation and amortization expenses included in the calculation of segment results shall be disclosed separately for reportable segments. If present, significant non-cash expenses that are taken into account in the calculation of segment result, other than depreciation and amortization shall be also disclosed.

An entity is not required to disclose the nature and amount of any items of segment revenues or expenses that are of such size, nature or incidence that their disclosure is relevant to explain the performance of each reportable segment for the period. However, the segment revenue and expense items can be disclosed voluntarily. (IAS 14 Paragraph 59)

IAS 7, International Accounting Standard about Cash Flow Statements, requires that an entity shall present its cash flow statement (cash flows from operating, investing and financing activities) and states that segmental cash flows are necessary to understand the financial position of the entity better. Similarly, IAS 14 also encourages the disclosure of cash flows for reportable segments, but this is not also forced by the Standard .

IAS 14, Paragraph 64 states that the aggregate of an entity's share of the profit/loss of associates, joint ventures or other investments accounted for under the equity method shall be disclosed for each reportable segment if all of those associates' are within that segment and if these are disclosed, then the aggregate investments in the joint ventures and associates shall also be disclosed by the reportable segments.

Finally, an entity shall present reconciliation between the aggregate information of financial statements and the disclosed reportable segment data. For instance, the entity shall reconcile segment revenue to entity revenue, segment result to entity result, segment assets and liabilities to entity assets and liabilities.

### **2.7.2 Secondary Segment Information**

According to Paragraph 69 of IAS 14, when an entity's primary reporting format is business segment, then the entity shall also disclose the following geographical information:

- Segment revenue for each geographical segment having 10% or more of the total sales to external customers.
- The carrying amount for assets of geographical segments whose assets are 10% or more of the total geographical assets.
- The total cost incurred during the period related with the acquisition of the assets that are planned to be used more than one period, by geographical location

where each segment has at least 10% of the total geographical assets. This can be also referred as the capital expenditure for the geographical segment.

According to Paragraph 70 of IAS 14, when an entity's primary reporting format is geographical segment, then the entity shall also disclose the following business information if each segment has at least 10% of the total assets or 10% of the revenue from external customers:

- Segment revenue from external customers
- The carrying amount for assets of business segments.
- The total cost incurred during the period related with the acquisition of the assets that are planned to be used more than one period.

According to Paragraph 71 of the Standard, if an entity's primary reporting format is geographical which is based on the location of assets and the location of the assets of the entity is different than the location of the customers, the entity shall disclose revenue from external customers for each customer-based geographical segment provided that each segment has at least 10% of the total entity revenue from external customers.

If an entity's primary reporting format is geographical which is based on the location of customers and if the location of customers is different than the location of the assets of the entity, then entity shall disclose the total carrying amount of segment assets by geographical location of the assets and the costs incurred to acquire the assets during the period, provided that each segment has at least 10% of the total entity revenue from external customers or 10% of the total assets of the entity. (IAS 14, Paragraph 72)

## **2.8 Summary of Disclosures**

According to IAS 14, there are compulsory and voluntary segmental information to be disclosed by the companies.

The compulsory information to be presented can be summarized as follows:

**Table 1: Summary of Disclosures**

<b>PRIMARY FORMAT : BUSINESS SEGMENT</b>
1-Segment Revenue by business segment
* From external customers
* From inter-segment transactions
2-Segment Result by business segment
* From continuing operations
* From discontinued operations
3-Segment assets by business segment
4-Segment liabilities by business segment
5-Costs to acquire assets by business segment (capital expenditure)
6-Depreciation and amortization expense by business segment
7-Other non-cash expenses by business segment
8-Entity's share of profit/loss of associates, joint ventures or other investments accounted for under the equity method
9-Reconciliation between the aggregated information and disclosed reportable segment data
<b>SECONDARY FORMAT : GEOGRAPHICAL SEGMENT</b>
1-Segment Revenue for geographical segments
2-Carrying amount of assets for geographical segments
3-Costs to acquire assets by geographical segments
<b>PRIMARY FORMAT : GEOGRAPHICAL SEGMENT</b>
1-Segment Revenue by location of assets or customers
* From external customers
* From inter-segment transactions
2-Segment Result by location of assets or customers
* From continuing operations
* From discontinued operations
3-Segment assets by location of assets or customers
4-Segment liabilities by location of assets or customers
5-Costs to acquire assets by location of assets or customers(capital expenditure)
6-Depreciation and amortization expense by location of assets or customers
7-Other non-cash expenses by location of assets or customers
8-Entity's share of profit/loss of associates, joint ventures or other

investments accounted for under the equity method
9-Reconciliation between the aggregated information and disclosed reportable segment data

<b>SECONDARY FORMAT : BUSINESS SEGMENT</b>
1-Segment Revenue from external customers
2-Carrying amount of assets for business segments
3-Costs to acquire assets by business segments

According to the Standard, there is no order of priority between the compulsory items to be disclosed. All of them has equal weights and must be definitely disclosed by the companies.

On the other hand, there are voluntary segmental data that are only encouraged by IAS 14 for disclosure. The statement does not restrict segment reporting to only financial information. The methods, assumptions used for the determination of the segments and the reportable segments can also be described by the company (Wiley GAAP 2004).

In the Standard, the examples for the financial information that can be voluntarily disclosed by the companies are given as follows:

**Table 1: Summary of Disclosures (Continued)**

<b>VOLUNTARILY DISCLOSED (ONLY ENCOURAGED)</b>
1-Gross Margin for the business and/or geographical segment
2-Profit or Loss From Ordinary Activities (Before or After Income Tax) of the business and/or geographical segment
3-Net Profit/Loss of the business and/or geographical segment
4-Items of Segment Revenues and Expenses
5-Cash Flow Statement (segmental cash flows) in accordance with IAS 7

## 2.9 An Example for Disclosure of Segmental Information

As an example, a firm with 8 segments has been assumed and created. The first step is the process of identifying reportable ones among these segments. According to IAS 14, a reportable segment shall satisfy one of the three (segment revenue, segment result or segment assets) quantitative 10% tests and they are to be conducted for both business and geographical segments. The primary and secondary reporting formats have not been assumed, as they won't affect the procedures applied to the example. The financial information that are not attributable to 8 segments listed below and which are not identified as reportable, has been classified under the item "Other".

**Table 2: Segments of the Example Firm**

Segment	Revenue from External Customers	Inter-segment Revenue	Total Revenue	Segment Result	Segment Assets
A	\$150	\$6	\$156	\$97	\$120
B	\$35	-	\$35	(\$12)	\$25
C	\$48	\$1	\$49	\$23	\$62
D	\$13	-	\$13	\$2	\$20
E	\$78	\$30	\$108	\$66	\$133
F	\$56	-	\$56	\$34	\$43
G	\$65	\$7	\$72	\$10	\$11
H	\$41	-	\$41	\$17	\$103
Other	\$10	-	\$10	\$3	\$7
<b>TOTAL</b>	<b>\$496</b>	<b>\$44</b>	<b>\$540</b>	<b>\$240</b>	<b>\$524</b>

After the identification of the segments, taking into consideration the associated risks and returns and the determination of primary reporting format as business or geographical, the company shall check whether the majority of the revenues of the segments are from external customers or not. If the majority of the revenue is from inter-segment transactions, then that segment cannot be considered as reportable.

The company shall calculate the weights of each segment in relation to total revenue, total segment result and total assets.

**Table 3: Percentages of Segment Revenue, Result and Assets**

Segment	Total Revenue Percentage	Segment Result Percentage	Segment Assets Percentage
A	<b>28.89%</b>	<b>40.42%</b>	<b>22.90%</b>
B	6.48%	-5.00%	4.77%
C	9.08%	9.58%	<b>11.83%</b>
D	2.41%	0.83%	3.82%
E	<b>20.00%</b>	<b>27.50%</b>	<b>25.38%</b>
F	<b>10.37%</b>	<b>14.17%</b>	8.21%
G	<b>13.33%</b>	4.17%	2.10%
H	7.59%	7.08%	<b>19.66%</b>
Other	1.85%	1.25%	1.33%
<b>TOTAL</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
<b>TOTAL (≥ 10%)</b>	<b>72.59%</b>	<b>82.09%</b>	<b>79.77%</b>

A reportable segment's percentage of segment revenue, segment result or segment assets shall be at least 10% and according to this rule with the given data, segments A, C, E, F, G, H are reportable segments whereas segments B, D and the segment "other" do not meet the requirements of the Standard.

After the 10% tests are completed, a 75% test related with the total revenue of the reportable segments shall be carried out. The company shall check whether the total of the revenues (both from external customers and inter-segment transactions) of the reportable segments, which are A, C, E, F, G and H, are equal to or greater than 75% of the total revenues of the company.

In this example, the company shall choose all the segments as reportable except B, D and the item "other". The revenues of these reportable segments constitute 89.26% of the company's total revenue that is in compliance with the Standard's 75% rule. In case where the chosen segments' revenues are not enough to cover the required percentage, then the company shall also disclose the segmental information of segments with lower percentages than 10% rule until 75% revenue total is reached.

After the reportable segments are determined, the next step is to disclose segmental information for both primary and secondary segments including all of the items listed in Section 2.8, Summary of Disclosures, as shown below:

**Table 4: Primary Format Segment Reporting for the Example Firm**

**Primary Format**

Segments	A	C	E	F	G	H	Other	Total
Net Sales	\$156	\$49	\$108	\$56	\$72	\$41	\$58	\$540
To external customers	\$150	\$48	\$78	\$56	\$65	\$41	\$58	\$496
From inter-segment transactions	\$6	\$1	\$30	-	\$7	-	-	\$44
Segment Result	\$97	\$23	\$66	\$34	\$10	\$17	(\$7)	\$240
From continuing operations	\$97	\$23	\$66	\$34	\$10	\$17	\$27	\$274
From discontinued operations	-	-	-	-	-	-	(\$34)	(\$34)
Depreciation and amortization expenses	\$15	\$6	\$14	\$3	\$1	\$12	\$6	\$55
Other non-cash expenses	\$8	\$5	\$7	\$2	\$1	\$7	\$4	\$34
Share of profit/loss of joint ventures and associates								\$56
Segment Assets	\$120	\$62	\$133	\$43	\$11	\$103	\$52	\$524
Segment Liabilities	\$70	\$41	\$102	\$21	\$6	\$65	\$33	\$338
Capital Expenditures	\$25	\$12	\$30	\$9	\$4	\$24	\$15	\$119

The column “Other” is a reconciling item. The figures that are not related with the reportable segments are to be disclosed as a total, as the Standard also requires reconciliation between the aggregate figures and the figures disclosed for the reportable segments.

To be able to demonstrate secondary format disclosures, 2 segments of X any Y are assumed with having more than 10% of the total revenue of the company. The financial information that are not attributable to these 2 segments, has been classified under the item “Other”.

**Table 5: Secondary Format Segment Reporting for the Example Firm**

**Secondary Format**

Segments	X	Y	Other	Total
Net Sales to external customers	\$242	\$235	\$19	\$496
Segment Assets	\$234	\$228	\$62	\$524
Capital Expenditures	\$45	\$56	\$18	\$119

The related total columns in primary and secondary format disclosures (such as total net sales to external customers) shall be equal to each other in both formats and also they shall be in conformity with the company's overall, aggregate financial statements such as Balance Sheet and Income Statement. For instance, in primary format, the total net sales to external customers is \$496 and this amount must be in conformity with the total figure in secondary format disclosure and the company's overall Income Statement.

Although, the financial information disclosed does not have any order or necessary format according to the Standard, in this example, Income Statement items and Balance Sheet items are preferred to be listed separately and consecutively. When the company also decides to report voluntary segmental information such as gross margin, net profit/loss or items of segment revenues and expenses, then these are generally listed together with the compulsory Income statement items.

### **3. SEGMENT REPORTING IN TURKEY**

#### **3.1 Capital Markets Board of Turkey**

Capital Markets Board of Turkey (CMB) is the regulatory and supervisory authority in charge of the securities markets in Turkey. Empowered by the Capital Markets Law (CML), which was enacted in 1981, the CMB has been making detailed regulations for organizing the markets and developing capital market instruments and institutions in Turkey.

Communiqué Serial XI, No:25 on Accounting Standards in the Capital Markets, published by CMB, came into force starting from January 1, 2005. Section 22 of the Communiqué is about reporting financial information by segments.

Communiqué Serial XI, No:25, Section 22 is not totally in accordance with International Accounting Standard 14 (IAS 14) and Turkish Accounting Standard 14 (TAS 14), but there are only a few minor differences in some sections. A company disclosing its segmental information on the basis of this Communiqué will also be in conformity with IAS 14.

### **3.2 Turkish Accounting Standards Board (TASB)**

Turkish Accounting Standards Board (TASB) was established in 2002. The Board has 9 members from different organizations such as Ministry of Finance, Turkish Treasury, Capital Markets Board of Turkey, Union of Chambers of Certified Public Accountants of Turkey.

Turkish Accounting Standard 14 (TAS 14) is about segment reporting. It is binding for the accounting periods after December 31, 2005 and it became into effect on March 3, 2006 by being published in the official gazette.

Turkish Accounting Standard 14 (TAS 14) is fully in accordance with International Accounting Standard 14 (IAS 14).

### **3.3 Banking Regulation and Supervision Agency (BRSA)**

Banking Regulation and Supervision Agency (BRSA) is an institution established to enhance banking sector efficiency and competitiveness, maintain confidence in the banking sector, minimize the potential risks to the economy from the banking sector and protect the rights of the depositors.

BRSA is currently working on draft of Communiqué No.20, related with the Regulation on Accounting Principles, enclosing the accounting standard for the disclosure of information in financial statements by segments.

Although the Draft is in accordance with IAS 14, it also includes additional information that are specifically related with the banking sector. Even the definitions in the draft are connected with the banks.

For instance, when identifying a geographic segment, the location and closeness of the branches of the banks, foreign exchange regulations and the current exchange rate risks shall be taken into account. Also, the segment assets of the banking sector are identified after all the related provisions are deducted. As in banking sector, provisions do take place in greater amounts when compared to other sectors, it is mentioned in the draft separately .

The Draft has been prepared in year 2005, but it will be in effect until being published in the official gazette.

#### **4. A CASE STUDY : EVALUATION OF ISTANBUL STOCK EXCHANGE (ISE) -NATIONAL 30 COMPANIES IN TERMS OF THEIR CONFORMITY WITH IAS 14 WITH RESPECT TO COMPANIES IN LONDON STOCK EXCHANGE (LSE)**

##### **4.1 Purpose of the Study**

Segment reporting is quite a new issue in financial reporting for all countries, and especially for Turkey. The purpose of this study is to analyse the conformity of segment information disclosures of the companies in Turkey with International Accounting Standard 14 (IAS 14) and to compare them with a benchmark.

## 4.2 Methodology

In order to measure the conformity of the Turkish companies with IAS 14, a quantitative research was conducted. The first step was to create an evaluation form including the compulsory and voluntary items to be disclosed (Table 1).

The next step was to identify the sample companies to be evaluated and to determine the benchmark to be able to make comparison with. The top 30 companies from Istanbul Stock Exchange (ISE) were selected, as the financial data and information of these companies are easily reachable and comparable. Another reason is that these companies which are open to public have to disclose their financial information and as they are the largest firms in Turkey, it is assumed that the financial statements of these 30 companies are more suitable for segment reporting.

The companies from ISE were categorized according to their sectors. On the basis of the sectoral dispersion of these companies in ISE, 30 major companies out of 50 companies, in the same sectors have been selected from London Stock Exchange (LSE) randomly.

LSE has been chosen as a benchmark, as it has an important influence in the finance world and is assumed to be reliable as to make comparison with. Another reason is that in England, segmental information is being disclosed by the companies for more than 15 years.

The evaluation form has 3 main parts. The first part of the form is about the sector of the company and the determination of the primary and secondary segments (whether primary reporting format is business or geographical segment). The last item in this part is about the geographical segment's basis, whether it is by location of assets or customers or there is no geographical segment reporting.

The second part consists of the items that must be disclosed related with primary and secondary segments. In this main part, the disclosures of both companies from ISE and LSE have been evaluated. A company that has disclosed an item from the evaluation form, has been given “1” as a point for that item and for not disclosing the item, the company has been given “0” as a point. In other words, disclosing an item contributes to the evaluation of the firm while not disclosing does not.

The last part is about the voluntary items that can be disclosed by the companies. Similar to the second part, the company is given either a point of “0” or “1” depending on whether the item is disclosed or not.

The results of the forms have been used in statistical analysis and ratings for the companies have been created to be able to make comparison between each other and to evaluate their conformity with IAS 14.

## **5. STATISTICAL ANALYSIS**

In order to evaluate the Turkish companies that are open to public as to their compliance with the requirements of International Accounting Standard 14, Segment Reporting, 30 firms that take place in ISE - National 30 are selected from Istanbul Stock Exchange (ISE) as the sample.

As a benchmark for the companies quoted in ISE, 30 major firms from London Stock Exchange (LSE) are selected randomly, but only from the sectors in which the selected Turkish companies are operating to make a fair comparison.

During the whole study, the financial information, the financial statements and the annual reports of these companies for the end of year 2005 are used, as the effective date for Communiqué Serial XI, No:25 of CMB is January 1, 2005. Before that date, the disclosure of financial information by segments were not obligatory. The financial data of the companies in the samples are all provided

from the official websites of ISE and LSE, but the names of the companies will not be mentioned in this thesis.

The sectoral dispersion of the samples for Istanbul and London Stock Exchanges are given in the following table:

**Table 6: Sectoral Dispersion of the Sample Companies in ISE and LSE**

Sector	Istanbul Stock Exchange (ISE)	London Stock Exchange (LSE)
	Number of Companies	Number of Companies
1 - Banks, Financial Services and Insurance	8	5
2 - Holding companies	5	4
3 - Industrial & Manufacturing	3	3
4 – Publishing & Media	1	3
5 – Consumer & Retail Products	2	2
6 - Food Manufacturing & Products	4	3
7 - Oil, Gas & Energy	3	3
8 – Telecommunications	1	1
9 – Real Estate	1	2
10 – Transportation	1	2
11 – Automotive	1	2
Total	30	30

A form has been designed using the summary of the disclosures in Section 2.8, for the evaluation of the companies in both ISE and LSE. The items in the evaluation form are given in the following table:

**Table 7: Items of the Evaluation Form**

SECTORS AND PRIMARY/SECONDARY SEGMENT INFORMATION	
Item 1	Sector (1 to 11)
Item 2	Primary format: <b>0</b> :No segment reporting <b>1</b> :Business <b>2</b> :Geographical
Item 3	Geographical segment by location of <b>1</b> :assets <b>2</b> :customers ( <b>0</b> :no geographical seg. rep.)
PRIMARY SEGMENT DISCLOSURES	
Item 4	Segment Revenue from external customers
Item 5	Segment Revenue from inter-segment transactions
Item 6	Segment Result from continuing operations
Item 7	Segment Result from discontinued operations
Item 8	Segment assets

Item 9	Segment liabilities
Item 10	Costs to acquire assets by segment
Item 11	Depreciation and amortization expense by segment
Item 12	Other non-cash expenses by business segment
Item 13	Entity's share of profit/loss of associates, joint ventures or other investments accounted for under the equity method
Item 14	Reconciliation between the aggregated information and disclosed reportable segment data
	<b>SECONDARY SEGMENT DISCLOSURES</b>
Item 15	Segment Revenue from external customers
Item 16	Carrying amount of assets
Item 17	Costs to acquire assets by segment
	<b>VOLUNTARY DISCLOSURES</b>
Item 18	Gross Margin for the business and/or geographical segment
Item 19	Profit or Loss from Ordinary Activities (Before or After Income Tax) or the business and/or geographical segment
Item 20	Net Profit/Loss of the business and/or geographical segment
Item 21	Items of Segment Revenues and Expenses
Item 22	Cash Flow Statement (segmental cash flows) in accordance with IAS 7

In the first part of the form, the sector, the primary and secondary format bases are determined and these first three items are not for evaluating the companies, but for having general information on their segment reporting applications. The following 3 parts consist of 14 primary and secondary segment items that are compulsory for disclosure and 5 voluntary items. Each company receives a “0” for not disclosing and a “1” for disclosing an item. The evaluation forms have been filled in for all of the 60 sample companies in ISE and LSE.

The frequencies of the results for the companies in ISE and LSE related with each item are given in table 8:

**Table 8: Frequencies of the items for ISE and LSE**

Istanbul Stock Exchange (ISE)			London Stock Exchange (LSE)		
	0-Not Disclosed	1-Disclosed		0-Not Disclosed	1-Disclosed
Item 4	23	7	Item 4	13	17
Item 5	23	7	Item 5	15	15
Item 6	29	1	Item 6	20	10
Item 7	30	0	Item 7	24	6
Item 8	21	9	Item 8	13	17
Item 9	23	7	Item 9	20	10
Item 10	23	7	Item 10	19	11

Istanbul Stock Exchange (ISE)			London Stock Exchange (LSE)		
	0-Not Disclosed	1-Disclosed		0-Not Disclosed	1-Disclosed
Item 11	22	8	Item 11	19	11
Item 12	26	4	Item 12	24	6
Item 13	26	4	Item 13	24	6
Item 14	22	8	Item 14	20	10
Item 15	26	4	Item 15	19	11
Item 16	26	4	Item 16	22	8
Item 17	26	4	Item 17	23	7
Item 18	23	7	Item 18	29	1
Item 19	22	8	Item 19	25	5
Item 20	26	4	Item 20	28	2
Item 21	30	0	Item 21	30	0
Item 22	30	0	Item 22	30	0

According to the frequencies of the disclosures in Table 8, it is easily seen that companies in LSE have disclosed most of the items more than the companies in ISE. Only the items 18, 19 and 20, which are voluntary, are disclosed by more companies in ISE when compared to LSE. Voluntary items 21 and 22 about the segment revenues, expenses and the cash flow statement have been disclosed by the companies in neither ISE nor LSE.

**Table 9: Percentages of Disclosing Items for ISE and LSE**

	ISE	LSE
Item 4	23.33%	56.67%
Item 5	23.33%	50.00%
Item 6	3.33%	33.33%
Item 7	0.00%	20.00%
Item 8	30.00%	56.67%
Item 9	23.33%	33.33%
Item 10	23.33%	36.67%
Item 11	26.67%	36.67%
Item 12	13.33%	20.00%
Item 13	13.33%	20.00%
Item 14	26.67%	33.33%
Item 15	13.33%	36.67%
Item 16	13.33%	26.67%
Item 17	13.33%	23.33%
Item 18	23.33%	3.33%
Item 19	26.67%	16.67%
Item 20	13.33%	6.67%
Item 21	0.00%	0.00%
Item 22	0.00%	0.00%

When the percentages related with the disclosed items are calculated, it is realized that only 23.33% of the companies in ISE have disclosed items 4 and 5, whereas at least 50% of the companies in LSE have reported their segment revenues from external customers and inter-segment transactions. Similarly, except for items 19 and 20, LSE companies have disclosed segmental information more in average when compared to the ones in ISE.

In this thesis, it is examined whether the underlying population of any of the samples (ISE or LSE) is likely to have a lower or a higher mean than the other one. As the sample sizes are small, it is appropriate to use t-test as a parametric test. The result of the test will show whether segment reporting disclosures in two different stock exchanges are similar to each other or which one has a larger mean than the other one in terms of the disclosures. Each item in ISE and LSE is analyzed to find out any diversification.

In order to determine whether the mean of the parent population of one sample is greater or less than the other, the null and alternative hypotheses are constructed as follows:

$\mu_{ISE}$  : population mean of ISE

$\mu_{LSE}$  : population mean of LSE

$H_0 = \mu_{ISE} \geq \mu_{LSE}$  (Null Hypothesis)

$H_1 = \mu_{ISE} < \mu_{LSE}$  (Alternative Hypothesis)

The null hypothesis states that the population mean of Istanbul Stock Exchange (ISE) is equal to or greater than the population mean of London Stock Exchange (LSE) implying that the companies in ISE have disclosed the segment reporting items in average at least as much as or greater than the companies in LSE.

While doing the t-tests for the hypotheses, as the variances of the populations are unknown, both assumptions of equal and unequal variances have been taken into account and their results have been calculated separately.

For the equal variance assumption, the following formula has been used:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}, \quad s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

For the unequal variance assumption, the following formula has been used:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where

$\bar{x}_1$  is the sample mean of ISE

$\bar{x}_2$  is the sample mean of LSE

$s$  is the standard deviation ( $s_1$  for ISE and  $s_2$  for LSE)

$n_1$  is the number of companies in the sample ISE ( $n_2$  is for LSE)

The one-sided t-tests in Table 10 has been calculated by the functions in Excel.

**Table 10: One-sided t-tests for the Disclosed Items of ISE and LSE**

	Assumption: Unequal Variances  p-values	Assumption: Equal Variances  p-values
Item 4	0.0039	0.0039
Item 5	0.0162	0.0162
Item 6	0.0014	0.0011
Item 7	0.0058	0.0046

	Assumption: Unequal Variances	Assumption: Equal Variances
	p-values	p-values
Item 8	0.0188	0.0188
Item 9	0.1994	0.1993
Item 10	0.1337	0.1337
Item 11	0.2069	0.2068
Item 12	0.2484	0.2484
Item 13	0.2484	0.2484
Item 14	0.2904	0.2904
Item 15	0.0189	0.0187
Item 16	0.1017	0.1016
Item 17	0.1627	0.1626
Item 18	0.0121	0.0113
Item 19	0.1779	0.1778
Item 20	0.1992	0.1990
Item 21	-	-
Item 22	-	-

The results of t-tests are quite similar under both assumptions of equal and unequal variances. Items 4, 5, 6, 7 and 8 are statistically significant, except item 7 under unequal variance assumption since its probability values are strictly smaller than the accepted significance level which is 5%. So we can reject the null hypothesis of  $H_0$  and conclude that the mean of the population LSE is higher than mean of ISE in terms of segment information disclosure.

For items 9, 10, 11, 12, 13 and 14, although the percentages of disclosing items in LSE is higher than percentages of ISE, the p-values under both assumptions are greater than 0.05. Therefore, we fail to reject the null hypothesis at 5% significance level.

From Table 11, it can be seen that the variances of these items in ISE and LSE are not very different from each other which show their deviations from their means. When the variability in variances are considered, it is obvious that the expected trends will not be very far from each other in terms of the two stock exchanges.

**Table 11: Variances of the Disclosed Items of ISE and LSE**

	ISE	LSE
Item 4	0.1851	0.2540
Item 5	0.1851	0.2586
Item 6	0.0333	0.2299
Item 7	0.0000	0.1655
Item 8	0.2172	0.2540
Item 9	0.1851	0.2299
Item 10	0.1851	0.2402
Item 11	0.2023	0.2402
Item 12	0.1195	0.1655
Item 13	0.1195	0.1655
Item 14	0.2023	0.2299
Item 15	0.1195	0.2402
Item 16	0.1195	0.2023
Item 17	0.1195	0.1851
Item 18	0.1851	0.0333
Item 19	0.2023	0.1437
Item 20	0.1195	0.0644
Item 21	0.0000	0.0000
Item 22	0.0000	0.0000

The null hypothesis can be rejected at 5% significance level for item 15. The mean of LSE is higher than mean of ISE for this item and the variance of the item also creates a difference in terms of the company being quoted in ISE or LSE.

The p-values of items 16 and 17 show that  $H_0$  cannot be rejected, but the result is not statistically significant at even 10% significance level.

Out of the voluntary items 18, 19, 20, 21 and 22, only item 18 is significant. According to items 19 and 20, population mean and the disclosure percentages of ISE is higher than LSE, but they are not significant at 5% and 10% significance levels. Items 21 and 22 are not presented by any companies in ISE and LSE.

In order to determine a rating and make comparison between the firms in Istanbul Stock Exchange (ISE) and London Stock Exchange (LSE), weights were set for each item in the evaluation form. Weights of the items have been calculated on the basis of 4 different methods supported with various assumptions.

### 5.1 Equal Weight Assumption

The first method is to give equal weights for any firm disclosing one specific item. Each item's weight is 1 for disclosing and 0 for the companies that haven't made any disclosures. Under this method, any firm disclosing 10 items out of 19, will receive a score of 10 regardless of which item is disclosed, as all of the items are equal in weight.

In addition to the overall scores, each company's score for all items excluding voluntary ones, only voluntary items, only items related with primary segments and only items related with secondary segments are computed. The following tables show scores for both ISE and LSE companies under equal weight assumptions respectively.

**Table 12: Scores of the Companies in ISE under Equal Weight Assumption**

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm ISE1	0	0	0	0	0
Firm ISE2	13	10	3	7	3
Firm ISE3	3	3	0	0	3
Firm ISE4	0	0	0	0	0
Firm ISE5	10	8	2	8	0
Firm ISE6	12	9	3	9	0
Firm ISE7	0	0	0	0	0
Firm ISE8	0	0	0	0	0
Firm ISE9	0	0	0	0	0
Firm ISE10	0	0	0	0	0
Firm ISE11	0	0	0	0	0

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. items
Firm ISE12	5	2	3	2	0
Firm ISE13	0	0	0	0	0
Firm ISE14	0	0	0	0	0
Firm ISE15	0	0	0	0	0
Firm ISE16	11	9	2	9	0
Firm ISE17	8	6	2	6	0
Firm ISE18	0	0	0	0	0
Firm ISE19	7	5	2	5	0
Firm ISE20	9	9	0	9	0
Firm ISE21	0	0	0	0	0
Firm ISE22	12	10	2	7	3
Firm ISE23	0	0	0	0	0
Firm ISE24	0	0	0	0	0
Firm ISE25	0	0	0	0	0
Firm ISE26	0	0	0	0	0
Firm ISE27	0	0	0	0	0
Firm ISE28	0	0	0	0	0
Firm ISE29	3	3	0	0	3
Firm ISE30	0	0	0	0	0
<b>Total</b>	<b>93</b>	<b>74</b>	<b>19</b>	<b>62</b>	<b>12</b>
<b>Maximum</b>	<b>570</b>	<b>420</b>	<b>150</b>	<b>330</b>	<b>90</b>

**Table 13: Scores of the Companies in LSE under Equal Weight Assumption**

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm LSE1	4	3	1	2	1
Firm LSE2	13	13	0	10	3
Firm LSE3	8	8	0	8	0
Firm LSE4	11	11	0	8	3
Firm LSE5	1	1	0	1	0
Firm LSE6	2	2	0	1	1
Firm LSE7	4	4	0	4	0
Firm LSE8	3	3	0	3	0
Firm LSE9	2	1	1	1	0
Firm LSE10	1	1	0	1	0
Firm LSE11	12	12	0	9	3
Firm LSE12	4	4	0	4	0

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm LSE13	0	0	0	0	0
Firm LSE14	0	0	0	0	0
Firm LSE15	8	7	1	5	2
Firm LSE16	0	0	0	0	0
Firm LSE17	0	0	0	0	0
Firm LSE18	0	0	0	0	0
Firm LSE19	10	10	0	7	3
Firm LSE20	12	11	1	10	1
Firm LSE21	0	0	0	0	0
Firm LSE22	0	0	0	0	0
Firm LSE23	5	5	0	5	0
Firm LSE24	0	0	0	0	0
Firm LSE25	15	13	2	10	3
Firm LSE26	9	8	1	8	0
Firm LSE27	3	3	0	3	0
Firm LSE28	13	13	0	10	3
Firm LSE29	13	12	1	9	3
Firm LSE30	0	0	0	0	0
<b>Total</b>	<b>153</b>	<b>145</b>	<b>8</b>	<b>119</b>	<b>26</b>
<b>Maximum</b>	<b>570</b>	<b>420</b>	<b>150</b>	<b>330</b>	<b>90</b>

When the overall scores are compared, companies in LSE have a total of 153 points, whereas companies in ISE have only a total of 93 points. It is also observed that in ISE, there are quite a lot of companies that have received 0 for all of the items and so have not fulfilled any of the requirements of the Standard.

Although LSE is quite better than ISE with a score of 153, it is surprising that the total scores of the companies in LSE can only constitute about 27% of the maximum score of 570.

When voluntary items are not taken into account, LSE companies have disclosed compulsory items nearly twice as much as the ones in ISE. ISE companies are better than LSE companies only in voluntary items. Surprisingly, companies quoted in ISE have presented voluntary segmental information much

more frequently receiving a total score of 19. LSE companies have only collected 8 points for the voluntary items.

## 5.2 Weights Based on the Frequency of the Items

To have a more accurate understanding of the segment reporting disclosures in two different stock exchanges, the methods employed are not only based on equal weights. The second way to determine the weights of the items is related with the frequency of these items. The ones with higher frequencies are assumed to be more important than the others and are given higher weights. The less frequent items that are assumed to be relatively less important and receive lower weights. For simplicity, the frequencies of the items are used as their weights. Table 14 summarizes the frequencies and the relative weights for all items.

**Table 14: Weights Based on the Frequency of the Items**

	Frequency (out of 60)	Weight
Item 4	24	24
Item 5	22	22
Item 6	11	11
Item 7	6	6
Item 8	26	26
Item 9	17	17
Item 10	18	18
Item 11	19	19
Item 12	10	10
Item 13	10	10
Item 14	18	18
Item 15	15	15
Item 16	12	12
Item 17	11	11
Item 18	8	8
Item 19	13	13
Item 20	6	6
Item 21	0	0
Item 22	0	0
<b>Total</b>	<b>246</b>	<b>246</b>

In table 14, only items 21 and 22 have a weight of zero, as none of the companies have made any disclosure about them. Using these weights, the scores of each company in both of the stock exchange markets have been calculated by multiplying the weights with either “0” or “1” in the evaluation form showing whether the item is disclosed or not.

For example, if one item is disclosed by 25 companies out of 60 companies, then the companies that have disclosed this item will receive 25 points each, while the others will receive zero for that item. The maximum score that a company disclosing all the items will receive is 246. Table 15 and 16 show the scores of the companies in ISE and LSE based on the weights computed by the frequencies of the items.

**Table 15: Scores of the Companies in ISE Based on the Frequency of the Items**

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm ISE1	0	0	0	0	0
Firm ISE2	201	174	27	136	38
Firm ISE3	38	38	0	0	38
Firm ISE4	0	0	0	0	0
Firm ISE5	168	147	21	147	0
Firm ISE6	191	164	27	164	0
Firm ISE7	0	0	0	0	0
Firm ISE8	0	0	0	0	0
Firm ISE9	0	0	0	0	0
Firm ISE10	0	0	0	0	0
Firm ISE11	0	0	0	0	0
Firm ISE12	70	43	27	43	0
Firm ISE13	0	0	0	0	0
Firm ISE14	0	0	0	0	0
Firm ISE15	0	0	0	0	0
Firm ISE16	185	164	21	164	0
Firm ISE17	148	127	21	127	0
Firm ISE18	0	0	0	0	0

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm ISE19	119	98	21	98	0
Firm ISE20	165	165	0	165	0
Firm ISE21	0	0	0	0	0
Firm ISE22	201	182	19	144	38
Firm ISE23	0	0	0	0	0
Firm ISE24	0	0	0	0	0
Firm ISE25	0	0	0	0	0
Firm ISE26	0	0	0	0	0
Firm ISE27	0	0	0	0	0
Firm ISE28	0	0	0	0	0
Firm ISE29	38	38	0	0	38
Firm ISE30	0	0	0	0	0
<b>Total</b>	<b>1,524</b>	<b>1,340</b>	<b>184</b>	<b>1,188</b>	<b>152</b>

**Table 16: Scores of the Companies in LSE Based on the Frequency of the Items**

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm LSE1	74	61	13	46	15
Firm LSE2	213	213	0	175	38
Firm LSE3	154	154	0	154	0
Firm LSE4	192	192	0	154	38
Firm LSE5	26	26	0	26	0
Firm LSE6	41	41	0	26	15
Firm LSE7	53	53	0	53	0
Firm LSE8	43	43	0	43	0
Firm LSE9	32	24	8	24	0
Firm LSE10	24	24	0	24	0
Firm LSE11	199	199	0	161	38
Firm LSE12	63	63	0	63	0
Firm LSE13	0	0	0	0	0
Firm LSE14	0	0	0	0	0
Firm LSE15	140	127	13	100	27
Firm LSE16	0	0	0	0	0
Firm LSE17	0	0	0	0	0
Firm LSE18	0	0	0	0	0

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm LSE19	174	174	0	136	38
Firm LSE20	196	190	6	175	15
Firm LSE21	0	0	0	0	0
Firm LSE22	0	0	0	0	0
Firm LSE23	109	109	0	109	0
Firm LSE24	0	0	0	0	0
Firm LSE25	232	213	19	175	38
Firm LSE26	168	155	13	155	0
Firm LSE27	72	72	0	72	0
Firm LSE28	209	209	0	171	38
Firm LSE29	212	199	13	161	38
Firm LSE30	0	0	0	0	0
<b>Total</b>	<b>2,626</b>	<b>2,541</b>	<b>85</b>	<b>2,203</b>	<b>338</b>

**Table 17: Maximum Scores that can be Received Based on the Frequency of the Items**

Maximum Points	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
1 Company	246	219	27	181	38
30 Companies	7,380	6,570	810	5,430	1,140

When the scores based on the frequencies are examined, the results seem similar to the first method with equal weights. Except the voluntary items, companies in LSE have received total scores twice as high to the scores of the companies in ISE. The difference between the companies in two stock exchange markets is more clear and sharp in this method.

In table 17, the maximum points related with this method are calculated. A company disclosing all of the compulsory and voluntary items is to receive 246 points as its score. When the maximum scores are compared with the scores of ISE and LSE, it can be observed that not only the firms in ISE, but also the firms

in LSE, that is the benchmark for this study, are quite far away from what should have been disclosed in accordance with IAS 14.

### 5.3 Normalization Method

On giving weights to different items, it may be logical to take into consideration, the likelihood of the companies to perform the item in the form. It may therefore be argued that if an item is very likely to be reported, companies that have not reported it should be penalized more, in scores, than they would be if the item in the form is not as common.

On the other hand, if many companies report the item, companies that have done so should get less bonus than they would if the item in the form is seldom reported in any case. Therefore, as a third method, for every item in the evaluation form, a special weight may be given to companies, depending on whether they have done the disclosure or not.

All normally distributed variables, due to the shape of their probability distribution functions, can be normalized to yield standard normal values. This fact implies that all normally distributed variables can be converted one to another.

Moreover, normally distributed variables can be added to yield yet another normally distributed variable. The basic method for doing the normalization is to subtract the mean from the variable's actual value and divide it to the standard deviation of the variable.

$$\frac{X_i - \bar{X}}{S}$$

where  $X_i$  is the variable's actual value,  $S$  is the standard deviation and

$\bar{X}$  is the mean.

This indeed gives the relative position of the observed variable with respect to the mean of the population it is coming from, taking into consideration how likely the values are, to fluctuate. Therefore standardized values for the distribution are comparable one to another.

According to the central limit theorem, on the other hand, all distributions may converge to the normal distribution asymptotically.

Inspired by the standardization procedure for the normal distribution, in this method, we have first decided to take the averages (by adding up the number of times the selected item is observed which is the frequency and divided through the number of companies) and standard deviation for each of the items. These values in return were used, through moment-matching, to estimate the actual mean and the standard deviation.

Finally, for each item in each company, the value of the frequency, or the average value is subtracted from the value the report may take (1 or 0), and this is divided into the standard deviation. This final weight in return is added up for each of the items in the company to yield a score for the company.

Duly, if a company has not reported an item that is widely reported, its value would be farther from the mean than it would be if the item is not as widely reported. The company would hence get a value further on the negative side, and highly penalized.

On the other hand if the company has reported an item that is widely reported in any case, it would be closer to the mean and hence receives fewer bonuses.

**Table 18: Scores of the Companies in ISE Under Normalization Method**

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm ISE1	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE2	21.71	14.32	7.39	8.52	5.79
Firm ISE3	-2.16	-0.92	-1.24	-6.72	5.79
Firm ISE4	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE5	13.69	9.61	4.08	11.15	-1.54
Firm ISE6	19.20	11.81	7.39	13.35	-1.54
Firm ISE7	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE8	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE9	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE10	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE11	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE12	3.34	-4.05	7.39	-2.51	-1.54
Firm ISE13	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE14	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE15	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE16	15.89	11.81	4.08	13.35	-1.54
Firm ISE17	8.37	4.29	4.08	5.83	-1.54
Firm ISE18	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE19	6.49	2.41	4.08	3.95	-1.54
Firm ISE20	10.47	11.71	-1.24	13.25	-1.54
Firm ISE21	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE22	18.29	13.82	4.47	8.03	5.79
Firm ISE23	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE24	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE25	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE26	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE27	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE28	-9.49	-8.25	-1.24	-6.72	-1.54
Firm ISE29	-2.16	-0.92	-1.24	-6.72	5.79
Firm ISE30	-9.49	-8.25	-1.24	-6.72	-1.54
<b>Total</b>	<b>-67.27</b>	<b>-82.93</b>	<b>15.67</b>	<b>-66.12</b>	<b>-16.82</b>

**Table 19: Scores of the Companies in LSE Under Normalization Method**

	All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. Items
Firm LSE1	-0.72	-1.88	1.17	-2.63	0.75
Firm LSE2	20.46	21.71	-1.24	15.91	5.79
Firm LSE3	7.91	9.15	-1.24	10.69	-1.54
Firm LSE4	15.24	16.48	-1.24	10.69	5.79
Firm LSE5	-7.49	-6.25	-1.24	-4.71	-1.54
Firm LSE6	-5.20	-3.96	-1.24	-4.71	0.75
Firm LSE7	1.04	2.28	-1.24	3.81	-1.54
Firm LSE8	-1.63	-0.38	-1.24	1.15	-1.54
Firm LSE9	-4.55	-6.23	1.68	-4.69	-1.54
Firm LSE10	-7.47	-6.23	-1.24	-4.69	-1.54
Firm LSE11	18.45	19.69	-1.24	13.90	5.79
Firm LSE12	0.46	1.70	-1.24	3.23	-1.54
Firm LSE13	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE14	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE15	8.59	7.42	1.17	4.19	3.23
Firm LSE16	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE17	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE18	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE19	13.08	14.32	-1.24	8.52	5.79
Firm LSE20	18.73	16.66	2.06	15.91	0.75
Firm LSE21	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE22	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE23	0.88	2.12	-1.24	3.66	-1.54
Firm LSE24	-9.49	-8.25	-1.24	-6.72	-1.54
Firm LSE25	26.18	21.71	4.47	15.91	5.79
Firm LSE26	10.22	9.05	1.17	10.59	-1.54
Firm LSE27	-3.41	-2.17	-1.24	-0.63	-1.54
Firm LSE28	21.11	22.35	-1.24	16.56	5.79
Firm LSE29	20.86	19.69	1.17	13.90	5.79
Firm LSE30	-9.49	-8.25	-1.24	-6.72	-1.54
<b>Total</b>	<b>67.27</b>	<b>82.93</b>	<b>-15.67</b>	<b>66.12</b>	<b>16.82</b>

According to the normalization method, the firms that are below the average for the items receive a negative score, whereas the ones above average receive

positive scores. The numerical values of the scores increase as the companies move further from the mean in both negative (left) and positive (right) directions.

In ISE, there are only a few companies receiving positive scores for all items, implying that only a few of them are above the average disclosure. The total scores of the companies in ISE are all negative, except the scores of the voluntary items. According to all three methods, ISE firms are better than the ones in LSE in terms of presenting voluntary segment reporting items. Conversely, more firms in LSE have positive scores. Only the total score for voluntary items are negative and the other total scores are all positive.

**Table 20: Summary of the Results of the First Three Methods**

Method		All items	Voluntary items excluded	Only voluntary items	Only primary seg. items	Only secondary seg. items
Equal Weights	ISE	93	74	19	62	12
	LSE	153	145	8	119	26
	Maximum	570	420	150	330	90
Frequency	ISE	1,524	1,340	184	1,188	152
	LSE	2,626	2,541	85	2,203	338
	Maximum	7,380	6,570	810	5,430	1,140
Normalization	ISE	-67.27	-82.93	15.67	-66.12	-16.82
	LSE	67.27	82.93	-15.67	66.12	16.82

When the three methods are analyzed, similar results are achieved. In every method, LSE has scores about twice of the total scores of the companies in ISE, except the voluntary items. However, the companies quoted in both exchange markets are far away from the maximum points that can be reached by disclosing the full set of items stated in the Standard.

## 5.4 Maximization Method

When confronted with a situation where there are items of no predefined cardinality, data envelopment analysis may be useful. In our case, every company has a different combination of items reported. Therefore, the way the weights are assigned to different items may cause one company to be favourable in one and unfavourable in another.

One could argue that there is an optimal combination of weights for each of the companies. However, for some of these companies, even under the weighing scheme which proves to be optimal for them, since many others will get higher scores also, they will not be able to avoid being overshadowed by other companies.

This may be compared to the case where, in an exam, there will be students who, even in the absence of pre-defined grading scheme, will never be able to get A's, since even when the weights for the questions are assigned so as to maximize theirs, so will the grades for others be maximized, hence lowering their rank. These cases may therefore be considered as losers, no matter what the grading scheme might be.

In our analysis as a fourth method, for each company, we tried to minimize the sum of the weighted averages of all cases, while keeping the weighted average for the company in question at a fixed amount, 1.

The sum of the weighted averages for the remaining companies on the other hand is taken as to be the score for the company in question. Obviously, the higher the score for the company, the more likely will it be that it will be considered as a loser.

For companies that failed to report any of the items, the score automatically becomes 59 (since all other companies will be better than or at least equal to this

one), through a dummy item that is one for each of them. More formally expressed, the following maximization has been carried out for each company denoted by the indice  $k$ ,  $x_{ij}$  being 1 or 0 depending on whether company  $j$  has reported item  $i$  or not and  $w_i$  showing the weight assigned to item  $i$ .  $z_k$  shows the score for the company  $k$ .

$$\begin{aligned} \min z_k &= \sum_j \sum_i w_{ik} \cdot x_{ij} \\ \text{s.t. } \sum_i w_{ik} \cdot x_{ik} &= 1 \\ \forall w_i &\geq 0 \quad \forall i \\ &\text{done for all } k \end{aligned}$$

Having found these scores for all 60 companies, we have tried to see whether the distribution and expectation of scores differ between ISE and LSE, using t-tests.

**Table 21: Scores of the Companies Under Maximization Method**

	ISE	LSE
Firm1	59	13
Firm2	6	10
Firm3	11	10
Firm4	59	10
Firm5	8	26
Firm6	6	15
Firm7	59	6
Firm8	59	6
Firm9	59	8
Firm10	59	24
Firm11	59	6
Firm12	6	6
Firm13	59	59
Firm14	59	59
Firm15	59	10
Firm16	8	59
Firm17	8	59
Firm18	59	59
Firm19	8	10
Firm20	10	6
Firm21	59	59

	ISE	LSE
Firm22	6	59
Firm23	59	18
Firm24	59	59
Firm25	59	6
Firm26	59	11
Firm27	59	22
Firm28	59	6
Firm29	11	6
Firm30	59	59

In ISE, there are 19 firms with the score 59, implying that there are at least 59 firms in equal position or in better position than any of the firms with a score of 59. As there are 60 companies in total, the score 59 is the worst position among all of the companies. In LSE, there are only 9 companies with a score of 59.

**Table 22: Counts of the Companies Under Maximization Method**

Score	ISE Count	LSE Count
6	4	8
8	4	1
10	1	5
11	2	1
13	-	1
15	-	1
18	-	1
22	-	1
24	-	1
26	-	1
59	19	9
<b>Total</b>	<b>30</b>	<b>30</b>

In ISE, there are 11 firms that can be accepted to be in good position and 19 firms in the worst position. On the other hand, there is a more symmetric distribution of the scores in LSE. 9 of the firms can be accepted to be in good position and 9 of them are in the worst position with the scores of 59. The remaining 12 firms in LSE have more or less average scores.

**Table 23: P-Values and Averages of ISE and LSE Under Maximization Method**

	unequal var.	equal var.
p-value	0.0102	0.0102

  

	ISE	LSE
Average	40.30	25.53

The average of the scores in ISE is higher than the average of the scores of LSE. This is unfavourable for the companies in ISE, as in this method the higher scores are for the companies with less or no disclosures related with segment reporting. We fail to reject the null hypothesis at 5% significance level as the p-values are 0.0102 under both assumptions of unequal and equal variances, above in Table 23.

All of the four methods have reached similar results with quite different assumptions. The main idea behind implementing four methods was for preventing any coincidental results and for the protection from any incorrect assumptions.

## 5.5 ANOVA

**Table 24: Anova: Two-Factor With Replication**

ITEM NUMBER	ISE	LSE	TOTAL
<i>1</i>			
Count	30	30	60
Sum	17	7	24
Average	0.56667	0.23333	0.4
Variance	0.25402	0.18506	0.24407
<i>2</i>			
Count	30	30	60
Sum	15	7	22
Average	0.5	0.23333	0.36667
Variance	0.25862	0.18506	0.23616

3

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Count	30	30	60
Sum	10	1	11
Average	0.33333	0.03333	0.18333
Variance	0.22989	0.03333	0.15226

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4

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Count	30	30	60
Sum	6	0	6
Average	0.2	0	0.1
Variance	0.16552	0	0.09153

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5

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Count	30	30	60
Sum	17	9	26
Average	0.56667	0.3	0.43333
Variance	0.25402	0.21724	0.24972

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6

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Count	30	30	60
Sum	10	7	17
Average	0.33333	0.23333	0.28333
Variance	0.22989	0.18506	0.2065

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7

---

Count	30	30	60
Sum	11	7	18
Average	0.36667	0.23333	0.3
Variance	0.24023	0.18506	0.21356

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8

---

Count	30	30	60
Sum	11	8	19
Average	0.36667	0.26667	0.31667
Variance	0.24023	0.2023	0.22006

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9

---

Count	30	30	60
Sum	6	4	10
Average	0.2	0.13333	0.16667
Variance	0.16552	0.11954	0.14124

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10

---

Count	30	30	60
Sum	6	4	10
Average	0.2	0.13333	0.16667
Variance	0.16552	0.11954	0.14124

---

11

---

Count	30	30	60
Sum	10	8	18
Average	0.33333	0.26667	0.3
Variance	0.22989	0.2023	0.21356

---

12

---

Count	30	30	60
Sum	11	4	15
Average	0.36667	0.13333	0.25
Variance	0.24023	0.11954	0.19068

---

13

---

Count	30	30	60
Sum	8	4	12
Average	0.26667	0.13333	0.2
Variance	0.2023	0.11954	0.16271

---

14

---

Count	30	30	60
Sum	7	4	11
Average	0.23333	0.13333	0.18333
Variance	0.18506	0.11954	0.15226

---

15

---

Count	30	30	60
Sum	1	7	8
Average	0.03333	0.23333	0.13333
Variance	0.03333	0.18506	0.11751

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16

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Count	30	30	60
Sum	5	8	13
Average	0.16667	0.26667	0.21667
Variance	0.14368	0.2023	0.1726

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<i>17</i>			
Count	30	30	60
Sum	2	4	6
Average	0.06667	0.13333	0.1
Variance	0.06437	0.11954	0.09153

<i>18</i>			
Count	30	30	60
Sum	0	0	0
Average	0	0	0
Variance	0	0	0

<i>19</i>			
Count	30	30	60
Sum	0	0	0
Average	0	0	0
Variance	0	0	0

<i>Total</i>			
Count	570	570	
Sum	153	93	
Average	0.26842	0.16316	
Variance	0.19672	0.13678	

**Table 25: Analysis of Variance (ANOVA)**

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Sample	16.0825	18	0.89347	5.85145	1.3E-13	1.61322
Columns	3.15789	1	3.15789	20.6815	6E-06	3.84992
Interaction	5.40877	18	0.30049	1.96793	0.00914	1.61322
Within	168.267	1102	0.15269			
Total	192.916	1139				

In this analysis, it is assumed that there are mainly two factors affecting the differentiation of segment reporting disclosures of the companies. The first factor is the item to be disclosed, that is the “sample” part of the Anova in Table

25. The second factor is the company's being quoted in ISE or LSE and that is denoted by the "columns" in Anova table.

"Interaction" is the product of these two factors and all the remaining factors are regarded as the error term. The purpose of the analysis is to find out the reason behind the variation in the firm's disclosures in two stock exchange markets.

The p-values of the sample and columns are very low, so two of the factors are statistically significant even at 1% significance level. Both the items in the evaluation form and the stock exchange market that the company has been quoted have separately effect on the variance between the scores of the firms in ISE and LSE.

The p-value of the interaction of two factors is also significant at 1% level of significance implying that the factors together have a combined effect on the scores of the companies.

Using the items and the stock exchange markets in which the companies are quoted, a regression has been constructed.

In this regression, items of the evaluation form are the independent variables (Xs) and the company's being quoted in ISE or LSE having the values of "0" for ISE and "1" for LSE is the dependent, binary variable (Y).

The purpose of the analysis is to determine whether the items disclosed can help to find out the stock exchange market where the company operates or cannot. For instance, can it be possible to estimate the company's stock exchange market (ISE or LSE) if the company has disclosed the items 4, 7, 9, 11 and 14.

## 5.6 Regression

**Table 26: Summary Output of Regression**

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.718369
R Square	0.516053
Adjusted R Square	0.335980
Standard Error	0.410875
Observations	60

  

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	16	7.740800	0.483800	2.865798	0.003055
Residual	43	7.259200	0.168819		
Total	59		15		

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.307807	0.075406	4.082024	0.000190	0.155738	0.459877	0.155738	0.459877
X Variable 1 (Item 4)	0.946636	0.337463	2.805154	0.007522	0.266077	1.627196	0.266077	1.627196
X Variable 2 (Item 5)	-0.760071	0.434369	-1.749831	0.087281	-1.636059	0.115916	-1.636059	0.115916
X Variable 3 (Item 6)	0.329421	0.311022	1.059156	0.295442	-0.297815	0.956657	-0.297815	0.956657
X Variable 4 (Item 7)	0.247788	0.315568	0.785210	0.436636	-0.388617	0.884192	-0.388617	0.884192
X Variable 5 (Item 8)	0.419417	0.210504	1.992443	0.052695	-0.005105	0.843938	-0.005105	0.843938
X Variable 7 (Item 10)	0.211640	0.524048	0.403857	0.688319	-0.845203	1.268484	-0.845203	1.268484
X Variable 8 (Item 11)	-0.319174	0.712274	-0.448105	0.656327	-1.755612	1.117264	-1.755612	1.117264
X Variable 9 (Item 12)	0.478733	0.254138	1.883750	0.066372	-0.033786	0.991251	-0.033786	0.991251
X Variable 10 (Item 13)	-0.353284	0.252273	-1.400403	0.168567	-0.862042	0.155473	-0.862042	0.155473
X Variable 11 (Item 14)	-0.300896	0.358380	-0.839601	0.405776	-1.023639	0.421847	-1.023639	0.421847
X Variable 12 (Item 15)	0.330165	0.275325	1.199181	0.237024	-0.225081	0.885411	-0.225081	0.885411
X Variable 13 (Item 16)	0.358075	0.700749	0.510989	0.611972	-1.055120	1.771270	-1.055120	1.771270
X Variable 14 (Item 17)	-0.779485	0.727119	-1.072018	0.289692	-2.245859	0.686890	-2.245859	0.686890
X Variable 15 (Item 18)	-0.508888	0.322636	-1.577280	0.122061	-1.159545	0.141770	-1.159545	0.141770
X Variable 16 (Item 19)	0.052152	0.251942	0.206999	0.836988	-0.455937	0.560240	-0.455937	0.560240
X Variable 17 (Item 20)	-0.224471	0.249786	-0.898655	0.373841	-0.728212	0.279270	-0.728212	0.279270

The Significance level of F test in Table 26 can be interpreted as the regression being significant at even 1% level of significance. R square of 0.51 shows that 51% of the variances in Y (being in ISE or LSE) can be explained by independent variables which are segment reporting items.

In simple, the positive coefficients of the independent variables increase the probability of the company being in LSE, whereas negative coefficients increase the probability of the company being quoted in ISE. In that sense, a firm disclosing item 4 is more likely to be in LSE. On the contrary, a firm disclosing items 5 or 11 is more likely to be quoted in ISE.

However, as there are correlation (See the correlation tables in Appendix) and multicollinearity between the variables, in this analysis, it is not very easy and accurate to interpret the coefficients of the independent variables.

The correlation between Item 4 and 5 is significant at 1% level of significance and the correlation coefficient is 0.93189. The coefficient shows a positive relation between Item 4 and 5 and implies that probably a firm disclosing item 4 will also disclose item 5. As the correlation measures the strength of the linear association between variables, the coefficient's being close to 1 or -1 shows a stronger relationship which can be positive or negative depending on the sign of the coefficient. More importantly, the significance of the result, which is quite opposite to the correlation coefficient, should be checked. For example, there is a positive but weak relationship between Items 6 and 12 as the coefficient is 0.13484, but as it is not significant at even 10% significance level, it is not possible to end up with a certain interpretation of the coefficient.

From another perspective, the sectors of the companies may have affected their behaviour about the disclosures. The following tables are the total and average scores of the companies under the equally weighted method and are separated into the sectors:

## 5.7 Sectoral Dispersion of the Scores

**Table 27: Sectoral Dispersion of the Scores for ISE under Equal Weights**

**Method**

ISE	All Items		
Sector	Score	Count	Average Score
1	0	8	0.00
2	47	5	9.40
3	12	3	4.00
4	0	1	0.00
5	6	2	3.00
6	21	4	5.25
7	7	3	2.33
8	0	1	0.00
9	0	1	0.00
10	0	1	0.00
11	0	1	0.00
<b>Grand Total</b>	93	30	3.10

ISE	Only voluntary items		
Sector	Score	Count	Average Score
1	0	8	0.00
2	10	5	2.00
3	2	3	0.67
4	0	1	0.00
5	0	2	0.00
6	5	4	1.25
7	2	3	0.67
8	0	1	0.00
9	0	1	0.00
10	0	1	0.00
11	0	1	0.00
<b>Grand Total</b>	19	30	0.63

ISE	Voluntary items excluded		
Sector	Score	Count	Average Score
1	0	8	0.00
2	37	5	7.40
3	10	3	3.33
4	0	1	0.00
5	6	2	3.00
6	16	4	4.00
7	5	3	1.67
8	0	1	0.00
9	0	1	0.00
10	0	1	0.00
11	0	1	0.00
<b>Grand Total</b>	74	30	2.47

ISE	Only primary seg. Items		
Sector	Score	Count	Average Score
1	0	8	0.00
2	37	5	7.40
3	7	3	2.33
4	0	1	0.00
5	0	2	0.00
6	13	4	3.25
7	5	3	1.67
8	0	1	0.00
9	0	1	0.00
10	0	1	0.00
11	0	1	0.00
<b>Grand Total</b>	62	30	2.07

ISE	Only secondary seg. items		
Sector	Score	Count	Average Score
1	0	8	0.00
2	0	5	0.00
3	3	3	1.00
4	0	1	0.00
5	6	2	3.00
6	3	4	0.75
7	0	3	0.00
8	0	1	0.00
9	0	1	0.00
10	0	1	0.00
11	0	1	0.00
<b>Grand Total</b>	12	30	0.40

**Table 28: Sectoral Dispersion of the Scores for LSE under Equal Weights**

**Method**

LSE	All Items		
Sector	Score	Count	Average Score
1	34	5	6.80
2	24	4	6.00
3	4	3	1.33
4	22	3	7.33
5	3	2	1.50
6	10	3	3.33
7	8	3	2.67
8	5	1	5.00
9	0	2	0.00
10	26	2	13.00
11	17	2	8.50
<b>Grand Total</b>	153	30	5.10

LSE	Only voluntary items		
Sector	Score	Count	Average Score
1	32	5	6.40
2	22	4	5.50
3	4	3	1.33
4	21	3	7.00
5	3	2	1.50
6	10	3	3.33
7	7	3	2.33
8	5	1	5.00
9	0	2	0.00
10	25	2	12.50
11	16	2	8.00
<b>Grand Total</b>	145	30	4.83

LSE		Voluntary items excluded	
Sector	Score	Count	Average Score
1	2	5	0.40
2	2	4	0.50
3	0	3	0.00
4	1	3	0.33
5	0	2	0.00
6	0	3	0.00
7	1	3	0.33
8	0	1	0.00
9	0	2	0.00
10	1	2	0.50
11	1	2	0.50
<b>Grand Total</b>	8	30	0.27

LSE		Only primary seg. Items	
Sector	Score	Count	Average Score
1	26	5	5.20
2	19	4	4.75
3	4	3	1.33
4	17	3	5.67
5	2	2	1.00
6	10	3	3.33
7	5	3	1.67
8	5	1	5.00
9	0	2	0.00
10	19	2	9.50
11	12	2	6.00
<b>Grand Total</b>	119	30	3.97

LSE		Only secondary seg. items	
Sector	Score	Count	Average Score
1	6	5	1.20
2	3	4	0.75
3	0	3	0.00
4	4	3	1.33
5	1	2	0.50
6	0	3	0.00
7	2	3	0.67
8	0	1	0.00
9	0	2	0.00
10	6	2	3.00
11	4	2	2.00
<b>Grand Total</b>	26	30	0.87

When we examine the table of scores showing all of the items for ISE, we see that none of the firms in banking and finance sector (sector 1) have made disclosures. On the contrary, in LSE, sector 1 has a quite high score. Another remarkable point for this sector is that all of the firms in ISE have not even presented any statement about not making the disclosures. Firms in other sectors have sections about segment reporting having the disclosures or giving explanations on why the Standard was not applicable to their financial statements. The reason behind this situation is that the banks prepare their financial statements according to the Banking Law No.5411 and according to the rules and regulations of BRSA (Banking Regulation and Supervision Agency) rather than the rules and regulations of Capital Markets Board of Turkey. Although the banks in ISE are open to public, they are subject to BRSA and the agency has not yet put into effect the Communiqué on Segment Reporting.

## 6. CONCLUSION

This thesis aims to demonstrate the applications of Segment Reporting in Turkey and the extent to which the disclosures of the Turkish companies are in conformity with the International Accounting Standard 14 (IAS 14).

As a benchmark to the analysis of the companies in Istanbul Stock Exchange (ISE) – National 30, the major companies in London Stock Exchange (LSE) are chosen randomly but on the basis of their sectors. In order to make a better understanding of the applications, the companies are evaluated on the basis of a form consisting of the compulsory and voluntary items of the Standard and each of them are given scores by four methods under different assumptions.

The results of the four methods are quite similar in both equal and unequal variance assumptions. When compared to the firms in LSE, Turkish companies have disclosed fewer items in general. On the other hand, they have received better scores for the items that are voluntary and are only encouraged by the Standard. There are also several firms in ISE that haven't fulfilled any of the obligations in IAS 14 and consequently their financial reports are not in conformity with International Financial Reporting Standards (IFRS).

The sectoral scores of the companies in ISE show that none of the firms in banking sector have made disclosures about segment reporting and none of them have presented any explanation for not making disclosures. Firms in other sectors have argued that they had only one business and/or geographic segments and hence IAS 14 was not applicable to their firms. In fact, it does not seem reasonable to have only one business and geographical segment for these firms that are open to public, which are in National-30 and are of such great size. This issue can be the result of one major drawback of the Standard. The items that shall be disclosed are clearly defined in IAS 14, but the identification of the reportable segments is an important problem as it mainly depends on personal judgements.

The major criteria for identifying a reportable segment is the similarity of the factors affecting the nature of the risks and returns and this is determined by the managerial decisions that may not be objective. To be able to minimize the negative outcomes of the mentioned disadvantage, although it is not required in the Standard, it is recommended that the companies shall give detailed explanation on why they have only one segment and why the Standard is not applicable to their companies.

For instance, when banking sector is taken into account, it is hard to find out simply why the retail banking and the commercial/corporate banking are not identified as reportable segments having different services with different risks and returns. When the same sector companies in LSE are examined, it is seen that they have on average about 3 different business segments such as retail banking, corporate banking and insurance and investments. Banking Regulation and Supervision Agency (BRSA) has not published the Communiqué on Segment Reporting, but the banks and financial institutions that are open to public shall also take into account the regulations of Capital Markets Board of Turkey and in that sense, their financial disclosures are not in accordance with its Communiqué Serial XI, No:25 on Segment Reporting.

When the other sectors are examined, there are relatively more disclosures, but none of the firms' financial information in ISE are fully in conformity with IAS 14 and none of the firms have presented all the items that are compulsory for disclosure. For instance, the ISE firm in the transportation sector has disclosed none of the items of the Standard, but it does not seem reasonable to have only one segment for a firm having customers all around the world and giving services to several geographical regions with very similar risks and returns.

Holding companies have received high scores in both ISE and LSE, but their consolidated financial statements include the financial information of many different companies from different sectors. So, it is easier for holdings to present

segmental data on the basis of the firms in different sectors when compared to identifying reportable segments of a single company. Consequently, taking holding companies into consideration in an analysis may not be meaningful.

Although being a recent development in Turkey, Segment Reporting Standard is very important for the quality of financial information. Aggregate information can mislead the users of financial statements and hide some critical information from them. For instance, a company's one business segment out of five segments may be in great loss from its operations. On the other hand, the remaining four segments may have generated more income than the loss of that segment and as a result it will not be possible to identify this fact from the Income Statement of the company. This situation can be identified by the management due to the internal reporting mechanism of the company, but can be shared with the third parties by the help of the Standard, Segment Reporting.

Despite its contribution to the quality of financial information, there may be problems associated with gathering necessary information related with the reportable segments. In Turkey, accounting software systems of many companies are not designed to record and report the segment revenues, expenses, assets, liabilities...etc. separately, but they should be adjusted in a way to use financial information more effectively and efficiently and present the necessary disclosures according to IAS 14.

Another important drawback of segment reporting is related with the allocation of assets and liabilities to reportable segments. The Standard does not give the terms and the methods for the allocation, but it only states that it shall be done if there is a reasonable basis. The allocation basis of the companies which have made disclosures about segment assets and liabilities are unknown and thus the comparability of the financial information is uncertain. It is recommended that more detailed information and even examples on this subject shall be covered in the Standard, but this can be the subject of another study and is outside the scope of this thesis.

As a result, it is not possible to conclude that publicly held Turkish companies do present their financial information in conformity with International Accounting Standard 14, IAS 14. Segment reporting is a recent development in Turkey, but as it is obligatory since January 1, 2005 for the companies that are open to public and the companies shall disclose their financial information accordingly. Otherwise, the disclosures will be against the regulations of Capital Markets Board of Turkey and will not be in accordance with International Financial Reporting Standards.

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## APPENDIX

### Correlation Tables for Items between 4-20

Items		Items							
		4	5	6	7	8	9	10	11
4	Pearson Correlation	1	0.931891	0.404443	0.181444	0.659082	0.619084	0.727544	0.760605
	Sig. (2-tailed)		3.19E-27	0.00135	0.165308	1.03E-08	1.34E-07	4.56E-11	1.78E-12
5	Pearson Correlation	0.931891	1	0.443934	0.207514	0.730517	0.672859	0.784911	0.820325
	Sig. (2-tailed)	3.19E-27		0.000381	0.111619	3.48E-11	3.89E-09	1.15E-13	1.06E-15
6	Pearson Correlation	0.404443	0.443934	1	0.703526	0.454893	0.466782	0.441768	0.418221
	Sig. (2-tailed)	0.00135	0.000381		3.64E-10	0.000261	0.00017	0.00041	0.000884
7	Pearson Correlation	0.181444	0.207514	0.703526	1	0.269069	0.160274	0.145479	0.131372
	Sig. (2-tailed)	0.165308	0.111619	3.64E-10		0.03763	0.221221	0.267396	0.317049
8	Pearson Correlation	0.659082	0.730517	0.454893	0.269069	1	0.719023	0.748625	0.778462
	Sig. (2-tailed)	1.03E-08	3.48E-11	0.000261	0.03763		9.77E-11	6.11E-12	2.46E-13
9	Pearson Correlation	0.619084	0.672859	0.466782	0.160274	0.719023	1	0.799037	0.844135
	Sig. (2-tailed)	1.34E-07	3.89E-09	0.00017	0.221221	9.77E-11		1.99E-14	2.44E-17
10	Pearson Correlation	0.727544	0.784911	0.441768	0.145479	0.748625	0.799037	1	0.961671
	Sig. (2-tailed)	4.56E-11	1.15E-13	0.00041	0.267396	6.11E-12	1.99E-14		2.77E-34
11	Pearson Correlation	0.760605	0.820325	0.418221	0.131372	0.778462	0.844135	0.961671	1
	Sig. (2-tailed)	1.78E-12	1.06E-15	0.000884	0.317049	2.46E-13	2.44E-17	2.77E-34	
12	Pearson Correlation	0.547723	0.587754	0.13484	-0.14907	0.511408	0.612009	0.58554	0.656947
	Sig. (2-tailed)	5.92E-06	7.92E-07	0.304329	0.255632	2.97E-05	2.04E-07	8.91E-07	1.19E-08
13	Pearson Correlation	0.456435	0.494951	0.481571	0.149071	0.511408	0.41352	0.48795	0.46467
	Sig. (2-tailed)	0.000247	5.82E-05	9.8E-05	0.255632	2.97E-05	0.001023	7.66E-05	0.000184
14	Pearson Correlation	0.727544	0.784911	0.441768	0.145479	0.748625	0.799037	0.84127	0.883487
	Sig. (2-tailed)	4.56E-11	1.15E-13	0.00041	0.267396	6.11E-12	1.99E-14	3.96E-17	9.31E-21
15	Pearson Correlation	0.471405	0.51917	0.323287	0.19245	0.427205	0.491144	0.377964	0.4344
	Sig. (2-tailed)	0.000144	2.14E-05	0.01175	0.140707	0.000663	6.76E-05	0.002907	0.000524
16	Pearson Correlation	0.442269	0.4842	0.301511	0.25	0.403604	0.517809	0.400066	0.465773
	Sig. (2-tailed)	0.000403	8.86E-05	0.019225	0.054046	0.001385	2.26E-05	0.00154	0.000177
17	Pearson Correlation	0.404443	0.443934	0.332096	0.272796	0.367971	0.562369	0.441768	0.510816
	Sig. (2-tailed)	0.00135	0.000381	0.009533	0.034962	0.003821	2.92E-06	0.00041	3.04E-05
18	Pearson Correlation	0.280224	0.210267	-0.18584	-0.13074	0.349593	0.297398	0.278174	0.365383
	Sig. (2-tailed)	0.030113	0.106843	0.155126	0.319387	0.006182	0.021018	0.031391	0.004096
19	Pearson Correlation	0.478963	0.523297	0.064474	-0.04046	0.519776	0.477322	0.450236	0.511665
	Sig. (2-tailed)	0.000108	1.79E-05	0.624544	0.758918	2.08E-05	0.000115	0.000307	2.94E-05
20	Pearson Correlation	0.294846	0.3228	0.129219	-0.11111	0.381181	0.530137	0.266711	0.37023
	Sig. (2-tailed)	0.0222	0.011885	0.325113	0.398011	0.002657	1.32E-05	0.039403	0.003595

Items		Items								
		12	13	14	15	16	17	18	19	20
4	Pearson Correlation	0.54772	0.45644	0.72754	0.4714	0.44227	0.40444	0.28022	0.47896	0.29485
	Sig. (2-tailed)	5.9E-06	0.00025	4.6E-11	0.00014	0.0004	0.00135	0.03011	0.00011	0.0222
5	Pearson Correlation	0.58775	0.49495	0.78491	0.51917	0.4842	0.44393	0.21027	0.5233	0.3228
	Sig. (2-tailed)	7.9E-07	5.8E-05	1.2E-13	2.1E-05	8.9E-05	0.00038	0.10684	1.8E-05	0.01189
6	Pearson Correlation	0.13484	0.48157	0.44177	0.32329	0.30151	0.3321	-0.18584	0.06447	0.12922
	Sig. (2-tailed)	0.30433	9.8E-05	0.00041	0.01175	0.01923	0.00953	0.15513	0.62454	0.32511
7	Pearson Correlation	-0.14907	0.14907	0.14548	0.19245	0.25	0.2728	-0.13074	-0.04046	-0.11111
	Sig. (2-tailed)	0.25563	0.25563	0.2674	0.14071	0.05405	0.03496	0.31939	0.75892	0.39801
8	Pearson Correlation	0.51141	0.51141	0.74863	0.4272	0.4036	0.36797	0.34959	0.51978	0.38118
	Sig. (2-tailed)	3E-05	3E-05	6.1E-12	0.00066	0.00139	0.00382	0.00618	2.1E-05	0.00266
9	Pearson Correlation	0.61201	0.41352	0.79904	0.49114	0.51781	0.56237	0.2974	0.47732	0.53014
	Sig. (2-tailed)	2E-07	0.00102	2E-14	6.8E-05	2.3E-05	2.9E-06	0.02102	0.00012	1.3E-05
10	Pearson Correlation	0.58554	0.48795	0.84127	0.37796	0.40007	0.44177	0.27817	0.45024	0.26671
	Sig. (2-tailed)	8.9E-07	7.7E-05	4E-17	0.00291	0.00154	0.00041	0.03139	0.00031	0.0394
11	Pearson Correlation	0.65695	0.46467	0.88349	0.4344	0.46577	0.51082	0.36538	0.51166	0.37023
	Sig. (2-tailed)	1.2E-08	0.00018	9.3E-21	0.00052	0.00018	3E-05	0.0041	2.9E-05	0.00359
12	Pearson Correlation	1	0.52	0.58554	0.36148	0.33541	0.36599	0.35082	0.30757	0.44721
	Sig. (2-tailed)		2.1E-05	8.9E-07	0.00454	0.0088	0.00403	0.00599	0.01682	0.00034
13	Pearson Correlation	0.52	1	0.58554	0.2582	0.22361	0.13484	0.21926	0.30757	0.29814
	Sig. (2-tailed)	2.1E-05		8.9E-07	0.04639	0.0859	0.30433	0.09233	0.01682	0.02068
14	Pearson Correlation	0.58554	0.58554	1	0.46196	0.49099	0.44177	0.38516	0.6268	0.38794
	Sig. (2-tailed)	8.9E-07	8.9E-07		0.0002	6.8E-05	0.00041	0.00237	8.4E-08	0.00219
15	Pearson Correlation	0.36148	0.2582	0.46196	1	0.86603	0.82065	-0.11323	0.25693	0.32075
	Sig. (2-tailed)	0.00454	0.04639	0.0002		4.2E-19	1E-15	0.38903	0.04751	0.01247
16	Pearson Correlation	0.33541	0.22361	0.49099	0.86603	1	0.94761	-0.07354	0.24273	0.25
	Sig. (2-tailed)	0.0088	0.0859	6.8E-05	4.2E-19		2E-30	0.57654	0.06166	0.05405
17	Pearson Correlation	0.36599	0.13484	0.44177	0.82065	0.94761	1	-0.05913	0.16903	0.2728
	Sig. (2-tailed)	0.00403	0.30433	0.00041	1E-15	2E-30		0.65359	0.19669	0.03496
18	Pearson Correlation	0.35082	0.21926	0.38516	-0.11323	-0.07354	-0.05913	1	0.62679	0.35955
	Sig. (2-tailed)	0.00599	0.09233	0.00237	0.38903	0.57654	0.65359		8.4E-08	0.00478
19	Pearson Correlation	0.30757	0.30757	0.6268	0.25693	0.24273	0.16903	0.62679	1	0.49895
	Sig. (2-tailed)	0.01682	0.01682	8.4E-08	0.04751	0.06166	0.19669	8.4E-08		5E-05
20	Pearson Correlation	0.44721	0.29814	0.38794	0.32075	0.25	0.2728	0.35955	0.49895	1
	Sig. (2-tailed)	0.00034	0.02068	0.00219	0.01247	0.05405	0.03496	0.00478	5E-05	