Analysis of the Notes to the Financial Statement Related to Balance Sheet in Case of Hungarian Information-Technology Service Companies

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Abstract

The main aim of the study to examine the extent to which the companies of a specific Hungarian sector fulfil their obligation to provide information in their notes to the financial statements as stipulated by the Accounting Act. Accordingly, it should be examined whether the notes to financial statements contains the required data regarding the balance sheets of companies investigated. For the analyses, it was used the notes to the financial statement of 8,226 companies with Hungarian headquarters, which are regulated by the Hungarian Accounting Act and which have information-technology services as the main business activity. It was investigated 95.78% of the financial reports containing the notes. The analysis was performed using text mining method, utilizing every available notes to the financial statement of the sector. Findings of the study reveal that the amount of published information shows greater and lesser differences and in many cases, the quantity of published data does not fulfil even the minimal obligations stipulated legally.

Keywords: notes to the financial statements; balance sheet related items; equity and liability related items; text mining.

JEL classification: M41; C18.

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1. INTRODUCTION

To get acquainted with the notes to the financial statements is essential to understand better the figures included in the financial statements what should be evident for all business professionals. However, the following questions may arise relating to notes to the financial statements on the part of the various stakeholders:

− Whether the notes to financial statements include the information prescribed in the legislation law and/or in the accounting standards and/or what need for the stakeholders?

− The extent to which the notes to the financial statements help to understand the first three parts of the financial statement may be raised the question?

We have researched to examine what kind of answers we can give to the previous questions based on the analyses of notes to the financial statements of the selected Hungarian sector. Taking all of these into account, our goal was to analyze all notes to the financial statements of the selected sector in a given year (2017), and we will try to answer the following hypotheses with the results obtained:

1. Information-technology service companies follow from their activities take seriously the information providing to their stakeholders.

2. The information provided by the investigated companies in notes to the financial statements conforms with law requirements at least.

3. The content of the information disclosure is independent of the type of the company and the financial report.

We believe that corporate executives can make well-founded decisions only when the necessary information is available to them. Peter Drucker (1986) writes in his book that management is a synonym of the decision-making, which means that the manager is continuously in the either of phases of the decision-making process during his or her work. Managers are taking the risk during their decision-making process because they usually do not have the information required for the decision, or/and the information available is inherently insecure. Increasing the amount of information and organizational knowledge can contribute to more effective decision-making and risk reduction too. Adequate professional knowledge is an essential requirement for successful corporate operations. Only companies having the necessary information and which can convert information rapidly into their organizational knowledge can meet to the economic challenges. In the ever-increasing globalized economic competition, companies cannot afford strategic mistakes resulting from the weak flow of information. Decision making increasingly involves uncertainty, misinterpretation, and complexity. Amongst the conditions of market economy, organizational success mostly depends on the ability of management to understand and apply the most recent management principles, methods, and techniques (Socea, 2012).

Achieving adequate organizational knowledge requires a reliable and unified information system, which able to provide data and information towards the enterprise and its environment (Probst, 2005). The financial reporting system is an essential part of the information-flow between companies and their external environment. In Hungary, the accounting system of companies is regulated by the Act C in 2000 on Accounting. According to (Łęgowik-Świącik, 2015), corporate information systems mostly provide all information, which is necessary for decision-making and the execution of activities. Information systems must help companies to respond rapidly to the changes in their environment (Sutopo *et al.*, 2018).

2. LITERATURE REVIEW

The Accounting Act defines bookkeeping and reporting obligations of entities and how they should apply rules of bookkeeping, mandatory principles to be enforced during the assembly of their annual accounts, and provisions regarding publication, disclosure, and auditing. These principles guarantee that the prepared statement is reliable for market participants and reflects a realistic image about the property, financial and profitability position, assets and liabilities of the company and their changes (Musinszki, 2016). It can be established that the annual accounting statement is an essential source of information in business relations between companies to avoid the negative consequences of financial crises. However, it should be noted that due to their aggregate nature, the necessary information and the required knowledge are only obtainable from the first two fundamental parts of the financial statements if the third part of the statement contains that information what contribute to a more extensive interpretation relative to their two other parts. The objective of the notes to the financial statement (hereinafter: notes) is to present the general, informative data of the enterprise, and to complete and explain the items of the balance sheet and the income statement together with which the assets, financial and profitability position of the company can become clearly judge for external stakeholders. The utilization of notes having non-adequate information might hinder and moderate the effective application of the balance sheet and income statement (Ormos, 2013).

Data included by the first three parts of financial statements must be completed with textual explanations, information not only according to the stipulations of the Hungarian Accounting Act but in the case of others as well. For instance, IFRS specifies that principles of elaborating financial reports and the applied accounting policy have to be presented in the notes, and additional information provisioned by IFRS, which are not included in the financial reports must be published as well (Cheung and Lau, 2016). The notes must also include such relevant information, which is not presented in any other parts of the financial statements but are relevant regarding understanding their data (Lakatos *et al.*, 2018).

In Hungary, Act C of 2000 on Accounting specifies that business entities should create a financial statement from their operations, wealth, financial, and profitability situation following the end of the financial year. The form of the financial statements can differ depending on the value of given business characteristics. The type of financial statements depends on the value of two characteristics from the followings: the balance sheet total, annual net revenue and the average number of employees during the business year. From among the different statement types, the annual statement, the consolidated annual statement and the annual financial statements in simplified form should contain the notes to the financial statement (Fridrich and Simon, 2018).

The Accounting Act prescribes that the notes to the financial statement shall include the numerical data and textual information that

  − are provisioned by the Accounting Act,

  − are required – beyond the information included by the balance sheet and income statement – for the reliable and realistic picture of the wealth and financial situation of the enterprise, and its operating profit.

The Accounting Act defines information that should be included in notes to the financial statement, but it does not group them. Information regarding the data content related to individual parts of the notes is only loosely listed in the act. As for the structure of

the notes, the Accounting Act only prescribes that the order of presentation must follow the structure of the balance sheet and the income statement (Fridrich and Simon, 2018).

However, it is advisable to divide this information into three major parts for practical reasons in case of the financial statements. Accordingly, the following distinction can be desirable:

− a general part that supports a better understanding of the information contained in the financial statements;

− a unique part, in which the information relates to the numerical data included in the balance sheet and the income statement and presents their details as well as provides explanations to them;

− an informative part, which can be linked to the actual operations of the enterprises and which facilitates a detailed understanding of the company situation; it is only indirectly related to the balance sheet and income statements (Kántor, 2016) which belong to the financial statements.

In his study, Kántor (2016) finds out that there are still businesses which do not present certain values of the balance sheet and income statement in an adequately way (if they do at all) in the notes. Therefore, the management and the expert(s) carrying out bookkeeping tasks should be devoted sufficient time and energy to work out and make public them.. It is also to be pointed out that decision-making based on inadequate knowledge further increases economic risks that are already high.

In economically developed countries, the scale of information published by companies is increasing, and they provide much more information about themselves than before. By the help of this increasing amount of data, companies – beyond financial information – present the main features of their corporate strategy, their opportunities, risks, and abilities too (Matthies and Corners, 2015). The tasks of the corporate disclosure include the management of relations with stakeholders and the assurance of legitimacy (Aureli, 2017) and the awareness of the company within society (Grabara *et al.*, 2016).

During the study of the literature, we did not find any analysis in which the notes to the financial statements of such a large number of companies would have been examined. Analyses of the financial statements in recent years had been connected to XBRL (eXtensible Business Reporting Language). We have met the following analyses. XBRL has created the opportunity to rapidly obtain financial information in a standardized form (Tarmidi and Abdul Roni, 2014). XBRL is a search-supporting software technology and methodology which improves the processibility of financial statements (Panizzolo *et al.*, 2017). XBRL stores information in a format, which is legible for computers, enabling data to be processed and analysed in a better way (Debreceny *et al.*, 2005).

Kaya (2014) examined 51 US-listed firms in 2008, and there was empirically investigate the impact of several company-specific characteristics on the size of the disclosure. The results show that there is significantly and positively relation between the firm size and the size of disclosures.

Felo *et al.* (2018) examined a sample with 4,627 filings which were from 1,907 firms. They used regression and time series analyses and investigated whether detail-tagged footnote information enhances the analysts' information environment. Their findings reveal that detail-tagged footnote information decreases the forecast error and dispersion.

The aims of Avallone *et al.* (2016) study were to assess the effects of XBRL mandatory extension to notes to financial statements of unlisted companies in the Italian

context. They collected data by conducting 13 semi-structured interviews with a set of chartered accountants involved in financial statement preparation. Processing the interviews, they found out that the major advantage of the extension is increasing comparability between firms.

Freadeani *et al.* (2016) examined the impact of the taxonomy on financial reporting quality of the unlisted Italian companies. Focusing on the notes to the financial statements, they observed that when dividing the parts of the notes to textual blocks and tables, they found a significant difference for the textual blocks.

The primary purpose of our research was, to investigate the extent to which the notes to the financial statement had references to corporate financial reports, and whether they contain the required and prescribed information. In this paper, toward achieving our purpose, using text mining and statistical analysis, we examine how extent the companies provide information about the balance sheet in their notes to financial statement. There were analyzed 8,226 corporate notes to perform our research objectives.

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Research data

For the analyses, we used the notes to the financial statement of companies with Hungarian headquarters, which are regulated by the Accounting Act and which have information-technology services as their primary business activity. Choosing the information technology service sector the reason was that the collecting, storing, processing and transmitting information can play an essential role in their activity. We want to investigate how much attention the companies attend whose business activity is closely related to dealing with information to provide information for their stakeholders. The notes analyzed of the selected sector have from the Opten firm information service company. In conformity with the above, the database included financial reports of 11,476 (100%) companies. We were able to analyze only 8,226 (71.68%) companies in the framework of the research because there were 2,888 (25.17%) financial statements which did not contain notes, and there were 362 (3.15%) notes with the not suitable format. We could have investigated 95.78% of the financial reports containing the notes during the analysis. The 25.17% of the companies whose financial statements did not include notes were not obliged to prepare financial statement because they are mainly micro-enterprises, and the notes are not relevant in their case. Moreover, few companies did not prepare notes to the financial statement.

In Hungary, the notes to the financial statements prepared until 2014 had to be uploaded in pdf format. Processing of these notes was problematic because the pdf file was created in an image format in case of some companies. Accordingly, we used pdf files in our analysis. The notes have to be made in an interactive form since the financial reports prepared for 2016, and the application was prepared with HTML language. This new development will likely facilitate the analysis of the notes to the financial statements. A better solution would be to introduce the XBRL methodology, what is still not work in Hungary.

3.2 Text mining

We have chosen the text mining method because the notes contain quantitative and qualitative free-format information connected with financial statements. Moreover, there are no exact directions for the clarity or conciseness of the descriptions used in notes to the financial statements (Chakraborty and Vasarhelyi, 2017).

The analyses were performed using various packages of the R statistical system. We used the R statistical system because it is a free software environment and includes all the data processing, computing, and representation capabilities what we needed. The text mining method was chosen to process a large number of notes. Utilizing text mining method, we analyzed the extent to which the notes to the financial statement provide the necessary information that would be indispensable for the proper interpretation of the balance sheet and the income statement. Text mining is a relatively new method by which we can extract information from structured or unstructured texts. By contrast, this the most data-mining applications work only structured information. The data must be prepared in a particular way before the methods can be applied.

The data must be prepared in a very special way before the methods can be applied (Welbers *et al.*, 2017). The presentations of data in case of data mining and text mining are entirely different. Over the past two decades, text mining has gained more and more interest in both academic areas and business intelligence applications. Text mining means the ability to acquire useful and novel knowledge, which could help process a large amount of mass data by processing large amounts of unstructured text. There is another definition, according to which, text mining is a processing procedure in the course of which a suitable insight into the text can be obtained (Kwartler, 2017).

More and more text-like databases are created in computer-readable formats that require rapid processing. Text mining is an interdisciplinary research field that utilizes various tools of computer science, linguistics, and statistics (Feinerer, 2008). Every quantitative research, such as business science, uses statistical methods, which require the gathering of structured information (Iacus, 2015). The 'tm' software package of the R statistical system provides an infrastructure that allows users to work efficiently with texts, the related metadata, and to transform texts into structured representations where the necessary statistical methods can finally be applied. The 'tm' package also allows users to process texts of different formats (txt, doc, pdf, csv, etc.). Analysis of the texts intended for examination requires the execution of tasks that may influence the accuracy, validity, and findings of the text analysis procedure, as well as the techniques used for the analysis (Welbers *et al.*, 2017).

Utilizing text mining method, we analyzed the extent to which the notes to the financial statement provide the necessary information that would be indispensable for the proper interpretation of the balance sheet and the income statement.

3.3 Statistical analysis

The results of text mining were analyzed by statistical methods. The basic task of statistical analysis is to reveal and to quantify the relationships between variables or factors. Statistical tests can be used to test discrete variables. We can distinguish between parametric and non-parametric statistical tests (Lumley, 2010). Non-parametric probes include the χ^2

test, which can be used to perform an independence test. Independence test allows testing the relationship between categorical (nominal) variables. To perform the test, we can use a frequency (combination or contingency) tables that are generated as a result of the combined classification according to the two criteria. The test takes into account the relative order of magnitude instead of numeric values (Falissard, 2012). The use of the χ^2 test is popular because, besides being a method for testing discrete random variables, there is no other condition for distributing variables. For the calculation of the test value, we assume that our data are in a two-variable frequency table in the category by category. The null hypothesis of the test (H_0) is that the two variables tested are independent of each other, i.e., there is no connection between them, and the alternative hypothesis (H_1) is the previous reversal. The Pearson's χ^2 test can be used to perform the test. If the result of the test is less than 0.05 (5%), then the null hypothesis is discarded, i.e., the two variables are independent of each other, and inversely accept the null hypothesis, i.e., the two variables are independent of each other (Bilder and Loughin, 2015). To calculate the χ^2 test value, we used the function "chisq.test" of the R statistical system.

4. EVALUATION OF NOTES TO THE FINANCIAL STATEMENT

Table no. 1 represents the distribution of processed notes to the financial statement by the type of company and annual statement types. According to the table, most of the enterprises operating within the sector are Ltds (70.86%), and the majority of the companies prepared annual statements simplified (78.19%). The type of statement was not indicated in the notes to the financial statement of 12.84% of the analyzed enterprises, while 2.37% did not provide information about their company type. There were 45 companies (0.55%), which did not indicate either their company type or the type of the annual statement. These deficiencies draw attention to the fact that there are companies that do not pay enough attention even to indicate the most fundamental data.

Table no. 1– Distribution of processed notes to the financial statement by the type of company and annual statement

| Company type	Type of financial statement							
	Not specified		Simplified annual statement		Annual statement		Total	
	pcs.	%	pcs.	%	pcs.	%	pcs.	%
Not specified	45	0.55%	128	1.57%	22	0.27%	195	2.37%
Lp.	271	3.29%	1696	20.62%	173	2.1%	2 140	26.02%
Ltd.	736	8.95%	4563	55.47%	530	6.44%	5 829	70.86%
Plc.	4	0.05%	45	0.55%	13	0.16%	62	0.75%
Total	1 056	12.84%	6 432	78.20%	738	8.98%	8 226	100.00%

Note: Lp. – Limited partnership; Ltd. – Limited company; Plc. – Public limited company
Source own calculation

In the first part of our research, we examined the notes concerning details and explanations of certain parts of the balance sheet. First of all, we have examined whether the

term "balance sheet" is included in the notes. The result of the investigation it was found that only 50.94% of the analyzed notes, what included the searched term and which are just over half of the analyzed documents. Whereas, according to the literature, the volume of information published by companies in developed countries is increasing; however, a significant part of the companies in the investigated sector do not fully comply with the legal provisions.

Analysis of the information in the notes concerning the balance sheet has been completed in two phases. Results related to the first part of the investigation concerning the assets are shown in Figure no. 1 and Table no. 2.
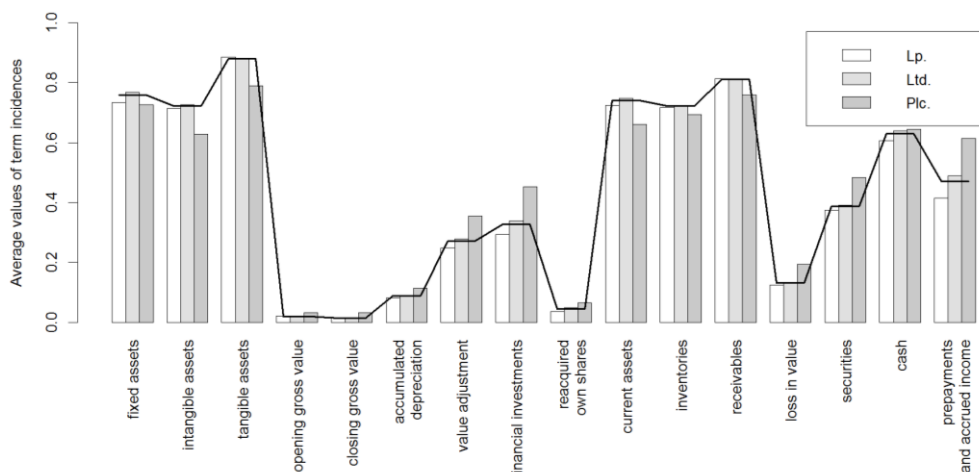
Note: Lp. – Limited partnership; Ltd. – Limited company; Plc. – Public limited company

Figure no. 1 – Average values of frequencies of items related to the balance-sheet-asset-side by company type

Column diagrams in Figure no. 1 show the proportion of occurrence of information related to different balance-sheet-asset-side items by company type in the notes. The figure also shows that six significant items reach an occurrence frequency of 70-90% (fixed assets, intangible assets, tangible assets, current assets, inventories, and receivables). The average incidence of all the balance sheet items examined is 44.25%, which varies significantly from one item to another (min .: 1.41%, max: 88.02%). One of the balance-sheet-asset-side items possessing high occurrence frequency is the tangible assets (88.02%). The settlement of depreciation is closely linked to tangible assets, but its occurrence is less than 10% among the items of the notes, that means the companies do not put on the due importance for depreciation. However, the depreciation is a cost that will not be become as payment but will be shown as cash when the revenue is realized. Legal provisions concerning this item stipulate – as a necessary item – the introduction of the assets analysis, which assumes the indication of the opening and closing gross amount of tangible assets. However, the results of present study show serious deficiencies considering the asset analysis, since occurrence proportion of these two items is very low (opening gross amount - 1.93%; closing gross amount - 1.41%), which means that companies do not give so much detailed information about tangible assets what the stakeholders would require. However, there are certain items with low incidence because they are not relevant in the case of certain companies (for

instance reacquired own shares, value adjustment, securities). In Figure no. 1, the continuous line in the section of column graphs indicates the average frequency of given item within the total sample. The average of the total sample shows the difference between the individual values of company types. Frequencies of occurrence by company type shown in Figure no. 1 it represents that the most important balance sheet items have a high rate of incidence, namely companies focus on these items during publication.

Comparison of the frequencies of terms obtained using text mining by company type was tested by χ2-test and t-test, the results of which are shown in Table no. 2 concerning the assets side of the balance sheets. It can be seen in Table no. 2 that in the case of eight characteristics (items 2, 4-6, 11-14) independence can be established, namely the frequency of occurrence of these characteristics is independent of the company type. In the case of the rest of the entries, at the significance level of at least 10%, the frequency of occurrence depends on the company type.

Table no. 2– Results of statistical tests related to the terms concerning the assets side of the balance sheet and their distribution by company type

No.	Searched term	χ²-test	t-test Ltd. - Lp.	t-test Plc. - Lp.	t-test Plc. - Ltd.
1.	fixed assets	**	** (+)		
2.	intangible assets				
3.	tangible assets	•		• (-)	• (-)
4.	opening gross value				
5.	closing gross value				
6.	accumulated depreciation				
7.	value adjustment	**	** (+)	• (+)	
8.	financial investments	***	*** (+)	* (+)	• (+)
9.	reacquired own shares	*	** (+)		
10.	current assets	*	* (+)		
11.	inventories				
12.	receivables				
13.	loss in value				
14.	securities			• (+)	
15.	cash	*	* (+)		
16.	prepayments and accrued income	***	*** (+)	** (+)	• (+)

*Note: Lp. – Limited partnership; Ltd. – Limited company; Plc. – Public limited company; significance levels: *** - 0.1%, ** - 1%, * - 5%, •- 10%; (+) upon calculation of difference, the value of the 1ˢᵗ item is higher; (-) upon calculation of difference, the value of the 2ⁿᵈ item is higher*

Source own calculation

The last three columns of Table no. 2 show the results of t-test in the course of which we analyzed – through applying pairwise t-test – which company types are different regarding the frequency of disclosures and we indicated which type of companies have the higher values. According to the table, it is clear that the results of the χ2-test and t-test are synchronous with each other, and it can be established that the deviation is significant on a level of at least 5% between Ltds and the Lps, for the benefit of Ltds, where the respective level of significance can be found in the χ2-test. The differences between Plcs and Lps as well as Plcs and Ltds are most significant at a level of 10%. It can also be stated that differences – except for two – are in favour of "higher level" business types.

Figure no. 2 shows the company type-specific frequency values of terms concerning the equity and liabilities side of the balance sheet; it shows that the frequency values are higher than what we experienced in the case of the examination of the assets side (Figure no. 1).
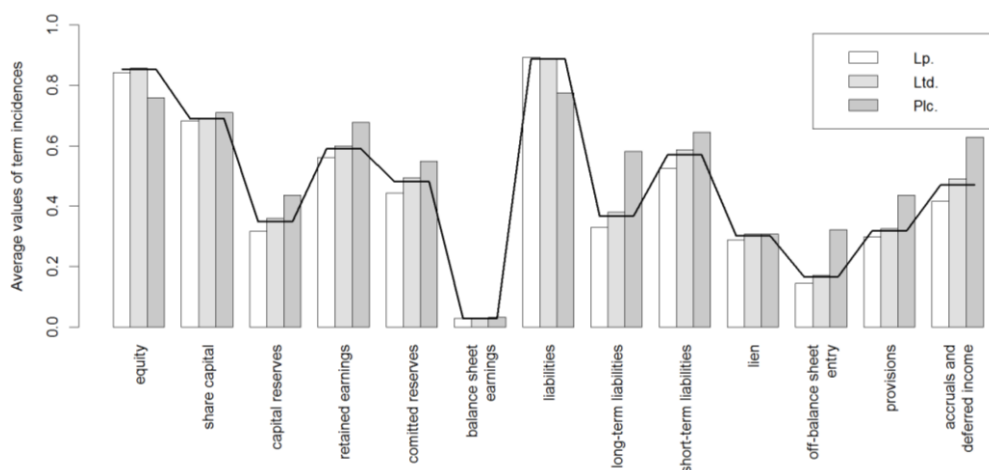
Note: Lp. – Limited partnership; Ltd. – Limited company; Plc. – Public limited company

Figure no. 2 – Average values of frequencies of items related to the balance-sheet-equity and liability-side by company type

Table no. 3– Results of statistical tests related to the terms concerning the equity and liabilities side of the balance sheet and their distribution by company type

No.	Searched term	χ²-test	t-test		
			Ltd. - Lp.	**Plc. - Lp.**	**Plc. - Ltd.**
1.	equity	*	• (+)		• (-)
2.	share capital				
3.	capital reserves	***	*** (+)	• (+)	
4.	retained earnings	**	** (+)	• (+)	
5.	comitted reserves	***	*** (+)		
6.	balance sheet earnings				
7.	liabilities	*		* (-)	* (-)
8.	long-term liabilities	***	*** (+)	*** (+)	** (+)
9.	short-term liabilities	***	*** (+)	• (+)	
10.	lien		• (+)		
11.	off-balance sheet entry	***	** (+)	** (+)	* (+)
12.	provisions	*	* (+)	* (+)	• (+)
13.	accruals and deferred income	***	*** (+)	** (+)	* (+)

*Note: Lp. – Limited partnership; Ltd. – Limited company; Plc. – Public limited company; significance levels: *** - 0.1%, ** - 1%, * - 5%, •- 10%; (+) upon calculation of difference, the value of the 1st item is higher; (-) upon calculation of difference, the value of the 2nd item is higher*

Source own calculation

Based on the results shown in Figure no. 2, we can conclude that companies in the sector consider it more important to disclose information about their capital structure than about their asset structure. This disclosure might be explained by the fact that companies are much more afraid of risks related to liabilities (financial leverage) than asset-related ones (operating leverage), and therefore they are more likely to focus on disclosing and explaining data concerning the equity and liabilities side of the balance sheet. However, it would be important for them to know that problems related to liabilities are mostly the results of wrong decisions affecting the assets side. It is also important to note that problems occurring on the equity and liabilities side can mostly be solved through the assets side of the balance sheet.

Table no. 3 shows that the occurrence of most of the information published concerning the equity and liabilities side of the balance sheet depends on the company type. It can be seen in the table that based on the χ2-test, there are three characteristics (share capital, balance sheet profit, lien), the frequency of incidence of which is independent of the company type. After a more detailed examination of the data, it can be stated that there is no difference in the disclosure of the balance sheet earnings because a tiny proportion (2.87%) of the companies have included it in in their notes to the financial statement. However, in contrast, the reason there is no difference regarding shared capital is probably since more than two-thirds of the companies (68.58%) included it. Values of the pairwise t-test also confirm the results of the χ2-test. It can also be established based on the table, that differences amongst company types occur in favour of 'higher level' business types. Compared to the assets side (Table no. 2), disclosures concerning liabilities are much significantly different regarding business type. This means that, for example, Ltds and Plcs have included the analysed characteristics in their notes on the accounts in higher proportions than Lps. The difference between Plcs and Ltds is less significant concerning both sides of the balance sheet, but there are detectable differences between these two company types as well.

5. CONCLUSIONS

Well-founded corporate decision-making requires that we have adequate information about partner companies. The balance sheet and the income statement do not always provide sufficient information. The correct use of the information content of the balance sheet and the income statement may often require the explanations included in notes to the financial statements.

Based on the investigation it can be stated that companies in the sector concerned do not pay sufficient attention to the information to be provided in notes to financial statements. This is the case even though the activities of the investigated companies are closely related to the processing of information.

It can be concluded that the amount of information provided in notes to the financial statements differs by type of the company. Differences of the company by type are greater in the equity and liabilities side of the balance sheet. The amount of information provided is also greater on the equity and liabilities side. Companies are likely to believe that information of equity and liabilities side is more critical to external stakeholders than asset-side information.

From the results of the investigation, it can be stated that there are significant differences between the limited and the limited partnership companies. The differences are due to the fact that the majority of the companies under investigation (70.86%) are limited companies, and the size of the limited partnerships is smaller and therefore they provide less information.

Comparing to the asset side, there are bigger differences amongst the company types on the equity and liabilities side. There are most significant differences between limited and limited partnership companies at the equity and liability side too. The difference between the two sides of the balance is that the equity and liabilities side shows much more significant differences amongst all types of companies.

It can be stated based on the results, that a significant part of the companies investigated does not devote to complete the parts of the notes to the financial statements adequately. However, this statement concern only those companies that are in the investigated industry.

This research has some limitations what we should take account of. First of all, it is complicated to create a perfect taxonomy, so the number of counted phrases may not be accurate. There were some notes to the financial statements that we could not be processed due to the inappropriate format, but their number (7.13% of the total number of companies which have notes to the financial statements) is small compared to the total population. The results of the analysis concern only one sector and cannot be generalized. Since we did not find any similar analysis in the literature, we cannot make comparisons.

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