Theses for doctoral dissertation (PhD)

ANALYSIS OF THE INFORMATION CONTENT OF THE NOTES FROM THE STAKEHOLDERS' PERSPECTIVE

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Debrecen, 2023

1. RESEARCH BACKGROUND, GOALS AND HYPOTHESES OF THE DISSERTATION

1.1. Research background

The topic of my doctoral dissertation is the analysis of the information content of the Notes presented in the accounting report from the perspective of the decision support. Nowadays, in the more and more competitive business environment the role of the information flow and the access to information is ever-increasing. Only those companies can meet the challenges of the business environment and the market conditions that possess the necessary information and are able to convert this information into organizational knowledge. A unified information system is needed to provide access to the information, to adequate knowledge, and to evaluate the competitors. In Hungary this unified system is granted by the Accounting Act and the primary information source in the decision support related to the business partners is the published accounting report. Besides the balance sheet and the income statement, which contains quantitative values about the financial position of the firm, the Notes support the companies in their decisions regarding their partner companies. The role of the Notes in supporting business decisions is that it provides the textual interpretation of the quantitative data included in the balance sheet and the income statement to provide information needed to present the fair and reliable financial position of the firm. Previous research suggests that the Notes is not able to fulfil its role entirely, therefore several criticisms were published about its content and quality.

My interest in the Notes presented as a part of the annual accounting report dates to 2017. Since then, I was the author and co-author of several publications related to this topic. I presented the results of my research in 15 Hungarian and international conferences. In the Controlling section of the National Scientific Student Conference of 2019 my paper investigating the role of Notes was awarded with the first prize. This paper was the pilot research of my doctoral dissertation's questionnaire survey. In this year the Council of the National Scientific Conference awarded me with the 'Pro Scientia Golden Medal' as an acknowledgment of my research achievements.

1.2. Main objectives of the research

1. Examining the compliance of Notes with the accounting rules in case of enterprises belonging to the national economic branch of the ‘Manufacturing industry’ ("C") and ‘Professional, scientific, technical activity’ ("M").
2. Examining the importance of Notes in the support of decision-making process.
3. Performing the comparative analysis of the information content of the Notes based on the users’ needs for support the decision making and in the actual usability of the information provided by the statements.

1.3. Hypotheses of the research

H1: The Notes presented as part of the accounting reports comply with the accounting regulation in the case of the examined companies.

H2: The compliance of the Notes with the law is influenced by audit obligation, and the type of the annual accounting report in case of the examined companies.

H3: Companies can be classified into well distinguishable groups based on the Notes from the perspective of decision-making and decision support.

H4: There is a difference between the actual and required information content of the partner companies’ Notes.

H5: The difference between the required and actual data and information content of the partner companies’ Notes is influenced by

H5a: the companies’ main field of activity,

H5b: the amount of revenue,

H5c: the type of the annual accounting report.

H6: The obligatory disclosures that must be presented in the Notes can be classified into well-differentiated groups based on the users’ needs in the decision-making process or their usability.

To make the research structure more transparent I created a table (***Table 1***) which summarizes the research goals, the related hypotheses, and the analysis methods used during the research.

Table 1. The structure of the research goals, the related hypotheses, and the applied methods

GOALS	HYPOTHESES	METHODS
G1: Examining the compliance of Notes with the accounting rules in case of enterprises belonging to the national economic branch of the 'Manufacturing industry' ("C") and 'Professional, scientific, technical activity' ("M").	H1: The Notes presented as part of the accounting reports comply with the accounting regulation in the case of the examined companies.	text mining, frequency analysis
	H2: The compliance of the Notes with the law is influenced by audit obligation, and the type of the annual accounting report in case of the examined companies.	text mining, Chi-square test
G2: Examining the importance of Notes in the support of decision-making process.	H3: Companies can be classified into well distinguishable groups based on the Notes from the perspective of decision-making and decision support.	clustering
G3: Performing the comparative analysis of the information content of the Notes based on the users' needs for support the decision making and in the actual usability of the information provided by the statements.	H4: There is a difference between the actual and required information content of the partner companies' Notes.	rank correlation – Wilcoxon signed rank test
	H5: The difference between the required and actual data and information content of the partner companies' Notes is influenced by H5a: the companies' main field of activity, H5b: the amount of revenue, H5c: the type of the annual accounting report.	Kruskal-Wallis test, Dunn test
	H6: The obligatory disclosures that must be presented in the Notes can be classified into well-differentiated groups based on the users' needs in the decision-making process or their usability.	principal component analysis

Source: Own compilation (2023)

2. DATABASE AND THE INTRODUCTION OF THE APPLIED METHODS

In my research I conducted primary and secondary research as well. The research analysis can be separated into two well-distinguished parts:

- the first part, which is the analysis of the compliance of companies' Notes with the Hungarian Accounting Act in the 'Manufacturing industry' („C") and in the 'Professional, scientific, technical activity' („M") national economic branches with text mining;
- the second part, examining the opinions of stakeholders on the comments and explanations extracted from the Notes of their partner companies with regards to their needs of information in the decision-making and the usability of the disclosures using a questionnaire survey.

2.1. Introduction of the database development created from secondary and primary data

The collection and analysis of secondary data is an essential part of the research, as the information they provide helps to understand the environmental context of the problem and facilitates the better collection and processing of primary data (MALHOTRA, 2008). I started my research with the literature review. In this section I analysed the domestic and international regulatory environment of accounting (Hungarian, IFRS, V4 countries including Czech Republic, Slovakia, and Poland), furthermore I reviewed the relevant sources discussing the importance and the quality requirements of the financial reports. This helped to gain a more precise and in-depth knowledge of the topic, to define the expressions and key words to be searched for in the Notes during the secondary research, and it provided the fundamentals to the adequate specification of the questionnaire survey.

The **secondary research** focused on the examination of the legal compliance of the Notes. The database of the research consists of the Notes of the companies registered in Hungary in the national economic branches of "C" 'Manufacturing industry' and "M" 'Professional, scientific, technical activity'. From the two national economic branches giving the foundation of the research those companies were selected, which presented the Notes as a part of their annual accounting report. In addition, only companies with an annual net

turnover exceeding HUF 10 million were selected. One further selection criterion was the average statistical number of employees. The companies belonging in the two selected sectors were divided into 5 groups based on the number of employees. The categories were created according to the classification of the Hungarian Central Statistical Office (0 employee, 1 - 4 employees, 5 - 9 employees, 10 - 50 employees and employees over 50). The groups thus obtained were then sorted by turnover and divided into 4 quartiles. One fourth of the original selection number was selected from the upper range of each quartile. The secondary database consisting of the Notes presented as a part of the annual accounting report were obtained from OPTEN Informatics LTD. for the financial years 2017 and 2019.

Table 2 presents the distribution of the companies in the definitive database after data cleansing based on the number of employees. This database includes 92% of the Notes which were obtained originally. Those companies were eliminated from the database, which were terminated by 2019 or published the annual accounting report without presenting the Notes.

One further problem was the file format of the Notes, as there were documents that the software could not read or manage. The software identified these documents as image files and not as pdf document. These incorrect Notes were eliminated from the database.

Table 2. The breakdown of the secondary database for the national economic branches of "C" and "M" industries based on the average statistical number of employees (measured in the number of companies)

Industry	0 employee	1-4 employees	5-9 employees	10-49 employees	50- employees	Total
„C" – Manufacturing industry	317	1238	697	993	382	**3627**
„M" –Professional, scientific, and technical activity	864	2062	538	360	51	**3875**

Source: Own compilation (2023)

The primary research consisted of a questionnaire survey, where I examined the opinions of business professionals and managers on the information contained in their partners' Notes. According to BONCZ (2015) one of the most frequently used primary research and data collection technique is the questionnaire survey, which helps in answering descriptive, explanatory, and exploratory questions. The questionnaire survey was carried out online

with total anonymity. In the introductory text of the questionnaire, I assured the respondents about their anonymity. The question type most used in the survey was the closed-end question using the measurement of the Likert scale. According to GÖB et al. (2007) and JAMIESON (2004) this question type is widely used to measure attitudes, and the most popular are the five- and seven-step versions. The period for completing the questionnaire was between 3 December 2020 and 26 March 2021. The survey was sent online to potential respondents due to the COVID pandemic. I sent out the questionnaire using the EvaSys software via e-mail enquiries. I targeted business professionals of the companies included in the database of the University of Debrecen, and I also used the help of the Chamber of Hungarian Auditors in distributing the questionnaire. The questionnaire was sent to almost 7200 e-mail addresses, of which 492 questionnaires were processed and made up the database.

2.2. Introduction of the methods used in the primary and secondary research

In the literature review I used the Google Scholar, Matarka (Hungarian Periodicals Table of Contents Database), and Scopus search databases to access and explore the Hungarian and international scientific journals' articles, studies, analyses, legislations. Following the literature review, in the **secondary research** I put the emphasis on the exploration of requirements imposed by the Accounting Act on the content of the Notes and how well the Notes meet these requirements. ***Figure 1*** illustrates the design of the database and the methods used to examine the compliance of the Notes with the Accounting Act.

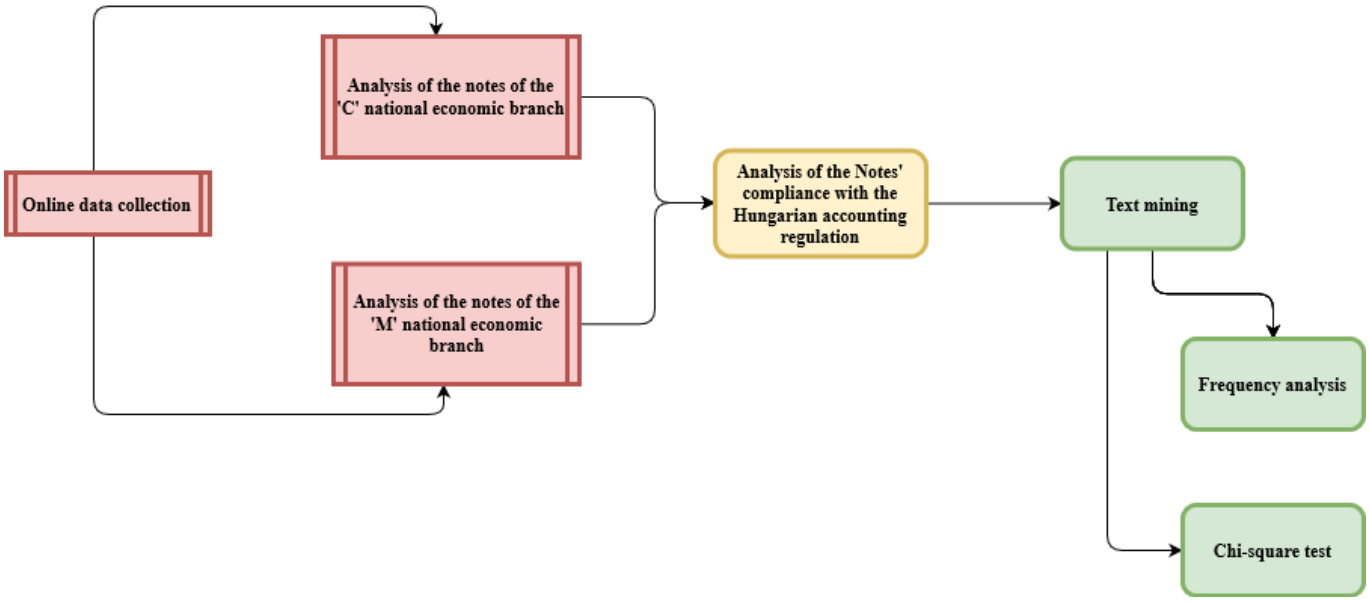


Figure 1. The database of the secondary research and the applied methods
Source: Own compilation (2023)

Following the acquisition of the secondary research database from OPTEN Informatics Ltd., the data was cleansed, and the database was properly developed. Only the Notes of companies whose Notes were presented in the annual accounting reports and were usable for both the 2017 and 2019 financial years remained in the database. This screening and the analysis itself were conducted using the Microsoft Excel, the packages of the R statistics and the Portable Document Format (PDF, which is the format designed for storing documents). In the analysis of the Notes of the companies belonging to the national economic branches of "C" and "M", I used text mining to find 110 expressions (expressions related to mandatory information defined in the Accounting Act) using Microsoft Excel and PDF. Text mining is a relatively new research method used to extract information from structured or unstructured texts. Over the past two decades, text mining has attracted increasing attention in both scientific fields and business intelligence applications. Text mining creates the ability to acquire such novel and useful knowledge that helps in the processing of large volumes of unstructured texts in order to process vast amounts of data (WELBERS et al., 2017). According to another definition, text mining is a processing technique that allows us to gain appropriate insights into the text (KWARTLER, 2017).

More and more textual databases are being created in formats that are readable by the computer and require fast processing. Text mining is interdisciplinary research filed incorporating and utilizing tools of computer sciences, linguistics, and statistics (FEINERER, 2008). All quantitative research, such as business science, uses statistical methods that require structured information collection (IACUS, 2015).

The "tm" package of R statistics provides such an infrastructure that enables to efficient work with texts and the related metadata. Furthermore, this package facilitates the conversions of the texts into such structured representations on which the required statistical methods become applicable. This program package enables the processing of texts in different formats (txt, doc, pdf, csv, stb.), which is a useful feature in case of the present research, as there are no legal requirements for the format of the Notes to be published.

The purpose of the text mining and subsequent analysis was to examine the extent to which the Notes presented in the accounting reports provide the information that would be essential for a proper interpretation and evaluation of the balance sheet and income statement. For this purpose, the frequencies of the expressions extracted by text mining were presented

with partition ratios in the breakdown of the categories of companies that were created based on the number of employees. The frequencies of the expressions were compared based on different variables such as the company is obliged to audit, and the type of the annual accounting report. In the comparison I used the Chi-square test.

The primary objective of statistics is to explore and quantify the relationship of different variables and factors. Statistical tests can be used to test discrete variables. We can distinguish parametric and non-parametric statistical tests (LUMLEY, 2010). Chi-square test is a non-parametric test examining whether the distribution of variables is identical. The Chi-square test enables to investigate the relationship of variables measured on a nominal scale. To implement the test such frequency tables (cross-tables or contingency tables) are required which are the result of a combined classification according to two criteria. The test uses the relative scales instead of the actual numerical values (FALISSARD, 2012). The use of Chi-square test is popular because, in addition to being a method for testing discrete probability variables, there are no other conditions for the distribution of variables. During the calculation of the test values, we assume that our data are presented in a bivariate frequency table by category. The null hypothesis (H0) of the test is that the two variables are independent, in other words there is no relationship between them. The alternate hypothesis (H1) is the opposite of the H0. The relationship of the variables was tested with Pearson's Chi-square test. If the test value was less than 0.05 (5%) then we reject the null hypothesis, in other words there is a relationship between the two variables, and they are not independent. Conversely, we accept the null hypothesis because the two variables are independent (BILDER – LOUGHIN, 2015; HUNYADI et al., 2001).

In the **primary research** I made a questionnaire survey. ***Figure 2*** presents the processing of the survey and the related methodology.

I used the IBM SPSS Statistics 27 program and Microsoft Excel's R statistics system's different packages to process the survey data.

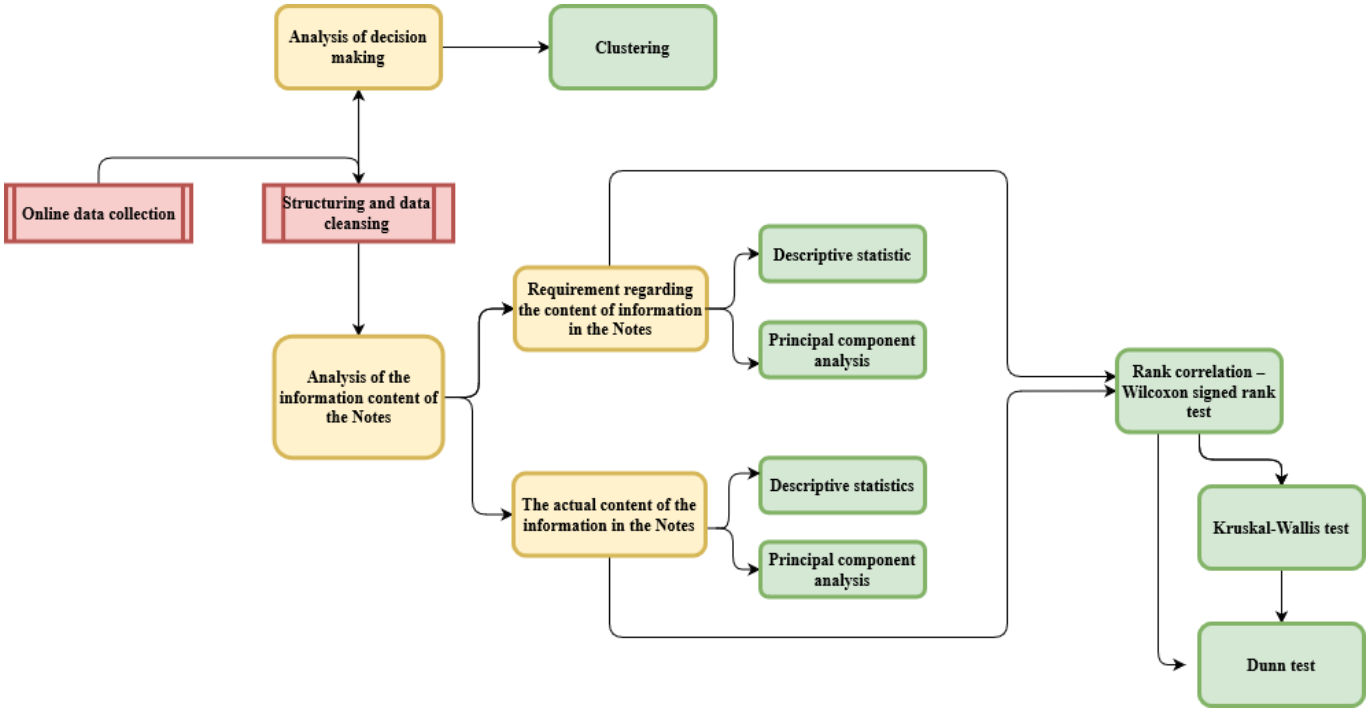


Figure 2. The methodology of the questionnaire survey's processing

Source: Own compilation (2023)

As a first step of the analysis of the questionnaire survey, I made clustering based on the questions connected to the decision support. In clustering we group the data; we classify the data into homogeneous subgroups on the basis of to the pre-determined critical values of the respondents. The members of the clustered groups have similar characteristics, this way we can create subgroups that are logical and meaningful from a practical point of view (SIMON, 2006).

In the second part of the survey's analysis I examined the content of the Notes based on the role of disclosures in the support of decisions (requirement) and their occurrence in the partner companies' Notes (reality). First, I analysed the responses about the disclosures measured on a Likert scale using descriptive statistics (mean, median, standard deviation, skewness, and kurtosis).

Furthermore, using principal component analysis, I grouped the disclosures of Notes according to the required and actual information content. To compare the structure of the questions I made principal component analysis (PCA). The analysis often requires the examination of multiple variables to solve a problem. The measurement of multiple variables in case of a large sample leads to a large database that we must handle as a single unit, which is a complex task. Exploring the relationships between variables involves analysing the relationships between several variables that may be interdependent. In such

cases the analysis and the interpretation of the results requires the application of multivariate methods (BARNA – SZÉKELYI, 2002). One such method is principal component analysis, which can be used to reduce the dimensions of the large database. One goal of applying principal component analysis is to describe the covariance structure estimated from the sample of original variables with as few linear combinations of variables as possible, so that total explanatory power decreases the least. Principal component analysis reduces the number of variables of a database with high dimensionality (multiple variables) into a limited and mostly well interpretated variables, hence the most important role of PCA is the data-reduction (FIELD, 2013). To decide whether the sample is suitable for the principal component analysis I used the KAISER-RICE (1970) type Kaiser-Meier-Olkin (KMO) test. This test gives a value between 0 and 1; the closer it is to 1, the more different and reliable factors the principal component (or factor) analysis gives. Furthermore, I made Bartlett's sphericity test (BARTLETT, 1951). This test investigates whether there is a significant difference between a given correlation matrix and a unit matrix (the test statistic follows a $\chi 2$ distribution). In the principal component analysis, I used varimax rotation. To measure the internal consistency of the blocks of questions I used the Cronbach α parameter (CRONBACH, 1951).

Finally, to compare the question blocks (requirement and reality) I used Rank correlation, more particularly Wilcoxon's signed rank test, because the measurement scale is ordinal and the distribution of the values is not a normal distribution (WILCOXON, 1992; FIELD, 2013). Similarly, to the traditional t-tests this method can be used to compare two independent groups based on a variable. The test examines whether the distribution of the variable is identical for the two groups. Besides the traditional values (test statistics, p-value) I determined the difference median and the effect size:

$$\text{effect size} = (|Z|)/\sqrt{n}$$

'Z' follows standard normal distribution, 'n' is the number of observations. This statistic has a value between 0 and 1; the effect size is medium between 0.3-0.5, above 0.5 the effect size is large or strong (TOMCZAK – TOMCZAK, 2014; ALBOUKADEL, 2021). In case of those disclosures which had a large effect size I examined their relationship with the companies' main field of activity, revenue, and the type of the accounting report using Kruskal-Wallis test. This is a non-parametric statistical test that measures the differences

between three or more independent groups based on one variable with non-normal and continuous distribution. The non-normal distribution data (like ordinal or rank data) are suitable for the Kruskal-Wallis test (KRUSKAL – WALLIS, 1952). The test in itself does not show the source of the stochastic dominance or that in how many different group-pairs does this difference occur. The Dunn test is applicable to explore these factors. The Dunn test makes pairwise comparisons for the independent groups. The test shows which groups differ with statistical significance on a given α level (DUNN, 1964). The z-statistic of the difference between two groups calculated the following way:

$$zi = yi / \sigma i,$$

where 'I' is one out of the '1–m' comparisons, yi =WA – WB (where WA is the average of the sum of the 'i' group's rankings),

$$\sigma i = \sqrt{((N(N+1)/12) – (\Sigma T3s – Ts/(12(N-1)) / ((1/nA)+(1/nB))} ,$$

where N is the total number of observations in all groups, 'r' is the fixed number of ranks, and 'Ts' is the number of observations connected to the 's' fixed value (DUNN, 1964).

3. MAIN FINDINGS OF THE DISSERTATION

The goal of my research is to investigate the compliance of the Notes presented as part of the accounting report with the legal requirements and stakeholders' requirements. Furthermore, I examine the role of the information from the Notes in decision support.

A large body of international literature has addressed the importance, relevance, and quality of accounting reports (AHMAD et al., 2020; BEEST et al., 2009; BIDDLE – CHOI, 2006; DZOMIRA, 2014; LI, 2008; LOMBARDI, 2018; NURLIS – YADIATI, 2017). It can be generally stated that good quality accounting statements should provide full and transparent information to give a fair and reliable picture about the financial position of the company and to precede the misinformation of the users.

In international context (BLOOMFIELD, 2002; DEFOND et al., 2015; LI, 2008; WALIA – KIRAN, 2012; ZHANG et al., 2015) the disclosures of the accounting reports and the Notes influence the stock prices, and the risk perception of the investors. The readability and the intelligibility of the accounting reports and the connected Notes affect the decisions of the external market participants. Furthermore, investment risk may be increased by the manipulation of adverse information about the future performance of firms, which can be easily avoided by better explanation and elaboration of the information and disclosures presented in the accounting reports.

Hungarian research suggests that the Notes should help in the better presentation of the reliable and fair picture of the financial position by putting more emphasis on the accounting principles, in particular the principles of authenticity, clarity, consistency, continuity and completeness. In prior research papers there have been several criticisms of the Notes published in Hungary, highlighting that the information they provide may be important to external parties, but do not comply with the requirements of the Accounting Act (BÖCSKEI – HÁGEN, 2017; FENYVES et al. 2019; FILYÓ, 2014; KARDOS, 2009; KÁNTOR, 2016;).

The research of the questionnaire survey was preceded by preliminary research that started in 2018, when I examined the information content of the Notes in the form of a pilot survey among managers and business professionals (KEREZSI et al., 2019b). As an antecedent to the current research on the content of Notes I examined sports enterprises and information

technology service providers (FENYVES et al., 2018a, FENYVES et al, 2018b; FENYVES et al., 2019).

Following the literature review I used text mining to examine the information content of the Notes for companies in the “C” and “M” national economic branches.

The analysis of the length of the Notes of companies belonging to manufacturing and professional, scientific, and technical companies shows that two thirds of these companies’ published Notes were less than 10 pages long in the examined years, while one third of the companies had Notes less than 5 pages. The remaining companies (1/3) presented a note that was between 11 and 50 pages long, while the number of Notes over 50 pages was less than 0.1% of the companies surveyed ***(Figure 3)***.

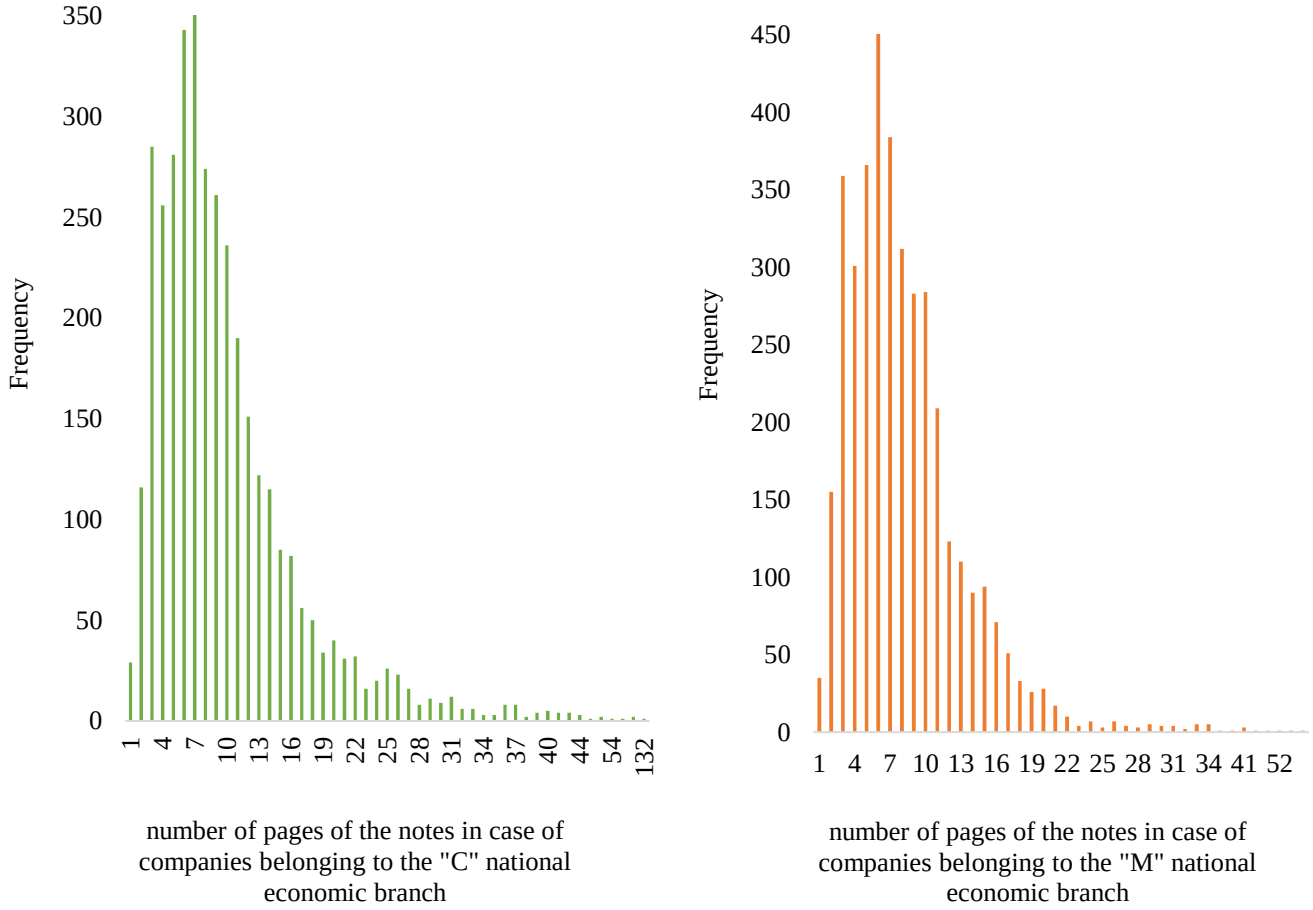


Figure 3. Length of the Notes of companies belonging to the manufacturing ('C') and professional, scientific, and technical ('M') economic branches (N=7502)
Source: Own compilation (2023)

Comparing the length of the Notes of 2017 and 2019 financial years, it can be concluded that the companies did not significantly change their practice of preparing the textual interpretations of their Notes. This confirms that there must be such companies that use

some type of program or template to create their Notes, hence they publish the minimum content or even less to present their fair financial position and they do not adequately detail their management and operations. The short length can signal that the quality of the examined Notes is not adequate in all cases.

The Accounting Act requires companies to provide a more comprehensive interpretation of the content presented in the financial statements by disclosing data, information, and textual explanations in the Notes. Consequently, in practice the Notes is divided into three main parts structurally, namely the general part, the specific part and the informative part. The conclusions drawn from the frequencies of the expressions in the Notes determined with text-mining method are **contradicting Hypothesis 1**, namely that in case of the examined companies the Notes presented as a part of the accounting reports comply with the accounting regulation .

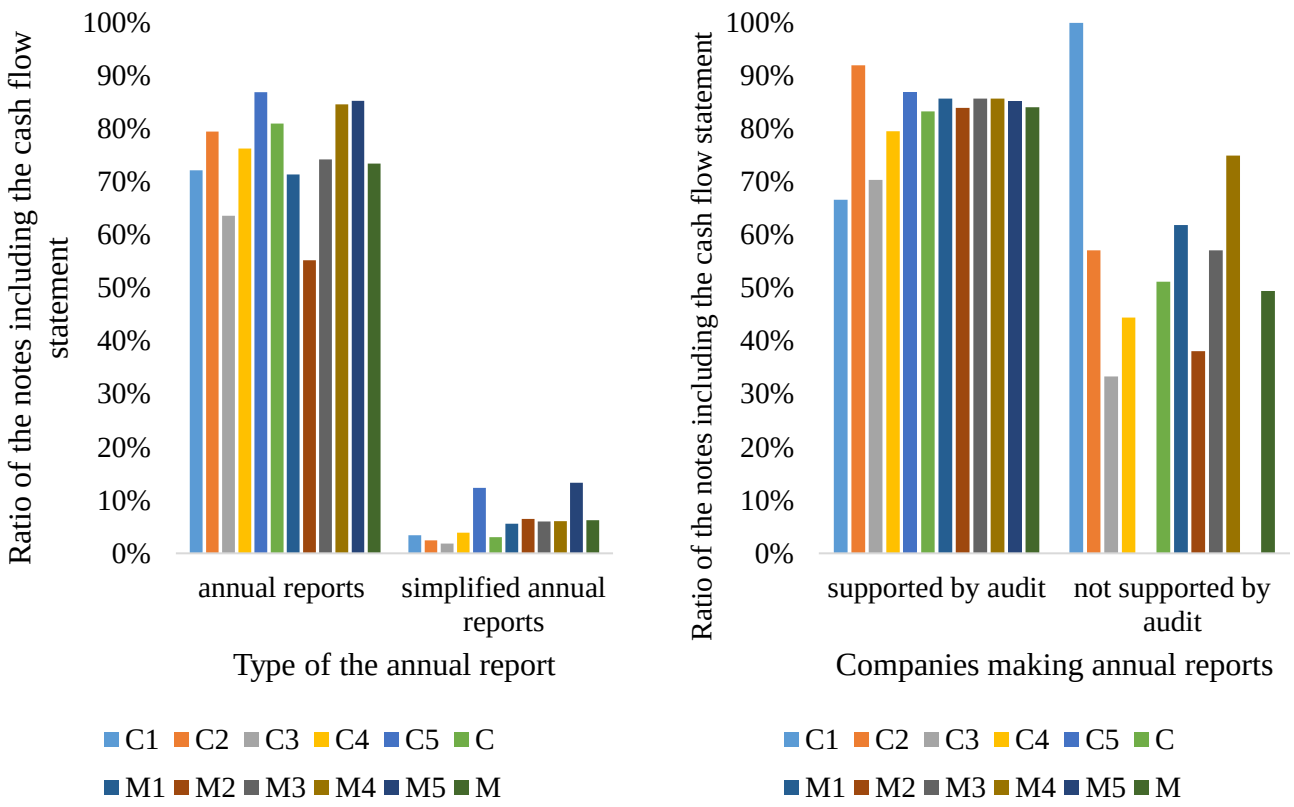
When analysing the expressions' frequencies determined by the text mining method, I did not find any significant difference between the legal compliance of the Notes of the companies belonging to the manufacturing industry and to the professional, scientific, and technical industry. However, regarding the information content of the general, specific, and informative parts of the Notes there were significant differences and significant deficiencies. Overall, within the specific section, disclosed information related to the balance sheet was the most frequently reported among the examined companies, while information related to the informative section was the least reported. Of the 110 items of information examined for disclosure the ones that appeared in the Notes with 80% frequency at least in each category are the following: head office, accounting policies, intangible assets, tangible assets, inventories, receivables, equity, earnings after taxation, liabilities, total costs, and depreciation. I concluded from the frequency of the disclosures that in general, companies gave information about their assets and liabilities and equity, but not in such details and with such additional information that satisfied the needs of the stakeholders. In addition, companies found information related to their capital structure slightly more important than information related to their asset structure, because they may fear the risks associated with liabilities more than the risks associated with assets. Based on the analysis of the information connected to the income statement I concluded that the frequency of disclosures related to

costs and expenses is higher than the information related to revenues, which can also be explained by the risks.

The Notes examined did not entirely meet their goal set out in the Accounting Act, which is the presentation of the fair and reliable financial, wealth, and profitability position of the company, as the indicators of the financial position were presented only in around 40-50% of the examined Notes. Furthermore, I concluded, that there is a significant difference between the compliance with the Accounting Act amongst the groups created based on the number of employees and revenues. Larger-scale companies (in terms of employees, total assets, equity, revenues, earnings before interest and taxes) compliance with the requirements of the Accounting Act is better compared to the smaller-scale companies.

The results of the Chi-square test examining the relationship of variables support that statement of **Hypothesis 2** that the legal compliance of the Notes is affected by the audit obligation. The audit process, which is the supervision of the accounting reports has improved the quality of the Notes, but even companies with audited accounting reports do not always comply entirely with the Accounting Act regarding the information content of the Notes. Most of the firms obliged to audit (around 85%-90%) presented in their Notes that their accounting report was supported by the the auditor's report, but there were companies in all categories („C1"-„C5" and „M1"-„M5"), which did not present this information in their Notes.

The conclusion connected to **Hypothesis 2** is, that there is a significant difference between the information content of the Notes based on the type of the annual report.



Note: C1-C5 and M1-M5 shows the groups according to the number of employees in the economic branches.

Figure 4. The frequency of the occurrence of the cash flow statement in the Notes in companies belonging to the manufacturing industry and the professional, scientific and technical industry

Source: Own compilation (2023)

The companies making annual reports presented more detailed Notes compared to the companies making simplified annual reports. This conclusion is basically evident and cannot be considered as new and novel result. However, amongst the companies making annual report 20% belonging to the manufacturing industry and 27% belonging to the professional, scientific, and technical industry did not present the cash flow statement in the Notes, even though it is a mandatory element of the annual report according to the Accounting Act. Those companies that made annual reports but were not obliged to audit (41 firms in "C" and 85 firms in "M" industry) satisfied the legal requirements in 50% in average, so around 50% of these companies presented the cash flow statement in the Notes (***Figure 4***).

Following the examination of the compliance of the Notes with the Accounting Act, the opinion of the business professionals was examined regarding the importance of the information in the Notes in decision support and whether the disclosures included in the partners' Notes are sufficiently detailed.

The results presented in **Table 3** support **Hypothesis 3**. The companies can be classified into well-distinguished groups based on the role of Notes in decision support and decision-making process.

Table 3. Characteristics of the clusters (N=396)

Cluster	Cluster 2		Cluster 1		Importance *
Size	67.9% (269)		32.1% (127)		
Name	Most typical answer	%	Most typical answer	%	
Importance of the information presented in the Notes	2 – (important)	56.10	4 – (less important)	48.00	1.00
Decision support of the information presented in the Notes	2 – (rather supportive)	59.10	3 – (less supportive)	52.00	0.99
Considering the information presented in the accounting report	1 – (yes)	97.80	2 – (no)	56.70	0.92
Considering the information presented in the Notes	1 (yes)	98.90	1 – (yes)	63.00	0.58
Activity	5 – (other services)	23.80	2 – (commerce)	20.50	0.31
Type of annual report	1 – (annual report)	45.00	1 – (annual report)	31.50	0.31
Total revenues	8 – (above 18,000,000)	23.00	6 – (700,001 – 3,500,000)	22.00	0.09

*The importance coefficient shows the estimated importance based on the clustering (value between 0 and 1).

Source: Own compilation (2023)

I concluded that the companies can be classified into well-distinguished groups based on the role of the Notes in decision support and decision-making process. Not all the stakeholders take into consideration and use the information presented in the accounting reports. Companies belonging to cluster 1 do not take into consideration the information included in the accounting reports during the decision-making process (57%), hence the textual interpretations of the Notes are less important for them (48%), therefore it is less supportive in their decision-making process (52%). On the other hand, the other group (cluster 2) consists of those companies, which build on the information of their partner companies' accounting reports in decision-making (98%), so the disclosures of the Notes is important for them (59%), therefore the information included in their partner companies' Notes is also important according to them (56%). I concluded that, overall, businesses use the information from the accounting report to support their decisions (68%).

Hypothesis 4 was supported by the results of the questionnaire survey, as the required and actual information and data content of the disclosures presented in the partner companies' Notes are different. This means that the Wilcoxon's signed rank test did not show a significant difference only in 4 textual interpretations out of the 40 mandatory information disclosures required from the Notes. They were the following:

- The most important factors of the accounting policy and their changes (p-value: 0.060).
- Applied evaluation methods (p-value: 0.880).
- Audit obligation (p-value: 0.060).
- Name and address of each person authorised to represent the enterprise who is required to sign the annual report (p-value: 0.060).

Among the disclosures that were significant in two cases there were negative differences in the respondents answer suggesting, that the respondents associated a higher value to the given disclosures' occurrence in the Notes than to their importance. In conclusion, I found that the disclosures mostly presented in the partners' Notes but based on the respondents' assessment do not influence their decisions - therefore they are considered to be less important - are the methods of depreciation accounting and its frequency set out in the accounting policy and the presentation of the head office of the company.

Based on my results, I found that 8 information disclosures were significantly different with an effect size above 0.5, which is considered to be a strong effect size. This suggests that for the companies it would be important to include these textual explanations in their partners' Notes, but at the same time they rated the actual occurrence of these disclosures in a usable form significantly lower. These disclosures are the following:

- data and explanations connected to the balance sheet (W: 36492.5, p: 0.00, effect size: 0.55, difference parameter: 1.5);
- transactions made with related partners (W: 46367.00, p: 0.00, effect size: 0.62, difference parameter: 2.00);
- the breakdown of total revenues according to the main activities (W: 40817.00, p: 0.00, effect size: 0.53, difference parameter: 2.00);

- the total amount of liabilities with maturity that is more than 5 years (W: 37859.00, p: 0.00, effect size: 0.52, difference parameter: 1.50);
- the total amount of liabilities secured by a lien or similar right (W: 45766.00, p: 0.00, effect size: 0.57, difference parameter: 2.00);
- the total amount of financial liabilities that are relevant for the assessment of the financial position but not included in the balance sheet (W: 46663.00, p: 0.00, effect size: 0.57, difference parameter: 2.00);
- off-balance sheet items and off-balance sheet arrangements (W: 54432.50, p: 0.00, effect size: 0.62, difference parameter: 2.50);
- subsidies (presented among the liabilities) received in a reimbursable financial support scheme (W: 40957.50, p: 0.00, effect size: 0.51, difference parameter: 1.50).

Based on the results of the Kruskall-Wallis test and the Dunn test used to examine **Hypothesis 5** I concluded, that the information in the Notes is considered important by financial institutions, but this information is typically not included in the partners' Notes. Accordingly, by the type of the annual report, companies reporting as financial institutions rated the information disclosures of the Notes significantly higher. In other words, there was a difference in the required and actual information disclosure of the partners' Notes regarding the decision support in case of the companies reporting as financial institutions. Based on the comparison of the groups of companies classified by the revenues I concluded, that in case of the companies with high revenues the partner companies' Notes typically did not include the information needed to support decisions, as was the case for companies with lower revenues.

Table 4. The divergence of differences of information disclosures by the main field of activity (N=492)

Disclosure	Test statistic	Degree of freedom	P-value	Group
10	**36.34**	**6.00**	**0.00**	**Main activity**
11	**20.40**	**6.00**	**0.00**	**Main activity**
12	11.94	6.00	0.06	Main activity
13	11.61	6.00	0.07	Main activity
14	4.47	6.00	0.61	Main activity
15	3.38	6.00	0.76	Main activity
26	10.28	6.00	0.11	Main activity
28	**17.19**	**6.00**	**0.01**	**Main activity**

Source: Own compilation (2023)

- For balance sheet data and explanations, the rating of financial institutions was significantly higher in all cases, the p was between 0.00 and 0.02 depending on the comparison. Among all other activities there was a significant difference in case of financial institutions between the requirements connected to the data and explanations presented in their partners' Notes about their balance sheet and the actual information disclosed in the Notes.
- For transactions with related parties, there were no differences in all of the cases between the views of the different groups of enterprises by different activities. For this disclosure the rating of financial institutions was significantly higher in all cases once again (p was between 0.00 and 0.01). There was a difference between manufacturing enterprises and financial institutions, between commercial enterprises and financial institutions, and between audit enterprises and financial institutions on the assessment of information on related party transactions.
- For subsidies (presented among the liabilities) received in a reimbursable financial support scheme once again the rating of financial institutions was significantly higher (p was between 0.00 and 0.01). There was a difference between enterprises engaged in production activities and financial institutions, and between enterprises engaged in audit activities and financial institutions, and in the presentation of the subsidies from a reimbursable financial support scheme. In both cases the financial institutions gave a higher rating to the item measured on a Likert scale.

Table 5. The divergence of differences of information disclosures by the annual revenues of the previous year (N=492)

Disclosure	Test statistic	Degree of freedom	P-value	Group
10	**23.39**	**7.00**	**0.00**	**Revenue**
11	**15.02**	**7.00**	**0.04**	**Revenue**
12	11.39	7.00	0.12	Revenue
13	12.31	7.00	0.09	Revenue
14	10.26	7.00	0.17	Revenue
15	11.35	7.00	0.12	Revenue
26	**19.33**	**7.00**	**0.01**	**Revenue**
28	**18.25**	**7.00**	**0.01**	**Revenue**

Source: Own compilation (2023)

- In the data and explanations related to the balance sheet, there was a difference between the group of companies with revenues between HUF 50-100 million and

HUF 300-700 million (p=0.01), where the group of companies with lesser revenues had a higher rating. Furthermore, the test showed a difference between companies with revenues between HUF 300-700 million and those with revenues above HUF 18 billion, where the ratings of companies with revenues of at least HUF 20 billion were higher (p=0.01).

- In case of the information disclosures connected to the transactions with related parties the adjusted p-value of the paired sample test was not significant, even though the Kruskal-Wallis test showed a significant difference. Consequently, there are no differences in the ratings based on the revenue categories.
- If we breakdown the revenues according the the main activities, then there is a difference between the opinion on the disclosures if the activities and the services are significantly different in case of the group of companies below HUF 20 million and above HUF 18 billion revenues and the group with revenues between HUF 700-3,500 million and above 18 billion (p=0.01). Both cases the rating of companies with higher revenues were significantly higher.
- For subsidies (presented among the liabilities) received in a reimbursable financial support scheme the rating of the companies with revenues higher than HUF 18 billion was significantly higher (p=0.01) than the rating of firms with revenues between HUF 300-700 million regarding the data and information disclosure.

Table 6. The divergence of differences of information disclosures by the type of the accounting report (N=492)

Disclosure	Test statistic	Degree of freedom	P-value	Group
10	**24.30**	**6.00**	**0.00**	**Type of report**
11	**26.09**	**6.00**	**0.00**	**Type of report**
12	**18.43**	**6.00**	**0.01**	**Type of report**
13	**25.63**	**6.00**	**0.00**	**Type of report**
14	**20.12**	**6.00**	**0.00**	**Type of report**
15	11.24	6.00	0.08	Type of report
26	10.73	6.00	0.10	Type of report
28	**22.84**	**6.00**	**0.00**	**Type of report**

Source: Own compilation (2023)

- For data and explanatory text disclosures in the Notes connected to the balance sheet, the rating of companies reporting as financial institutions was significantly (p = 0.00)

higher than the rating of companies publishing annual, simplified annual, and simplified annual micro-entity reports.

- For the information connected to the transactions with related parties, the opinion of companies reporting as financial institutions differed in case of the importance and occurrence of the disclosures in the Notes. The rating was significantly higher compared to all other types of reports (p=0.00 and 0.05).
- The rating of the companies reporting as financial institutions was significantly higher (p-value between 0.01 and 0.03) compared to all other options (except for the consolidated annual report and simplified report) liabilities presented in the balance sheet, which had a maturity above 5 years.
- The disclosures about the liabilities in the balance sheet that are secured by lien or similar rights, indicating the type and form of the collateral (disclosure 13) the entities reporting as financial institutions rated the information item significantly higher (p-value between 0.01 and 0.03) compared to all other reporting type except for the simplified reports.
- Companies reporting as financial institutions rated significantly higher (p-value between 0.02 and 0.03) the disclosures connected to the financial liabilities that are relevant in the presentation of the firms' financial position but are not recognised in the balance sheet (particularly the expected retirement payment, severance payment) and in case of the liabilities towards related companies compared to the simplified annual micro-entity reports and the budgetary reports. There is a difference between the required information disclosure connected to these liabilities and the presented information in case of the companies reporting as financial institutions.
- For subsidies (presented among the liabilities) received in a reimbursable financial support scheme once again the rating of financial institutions was significantly higher compared to almost all the other reporting types (p = 0.00)

Based on my results I had to reject **Hypothesis 6.** On the basis of the primary research the 40 mandatory textual interpretations, information items and disclosures that must be presented in the Notes according to the Accounting Act can be classified into well-distinguished groups from the perspective of the users needs in the decision support and of their usability. It can be concluded that the common characteristics of the disclosures

included in the principal components cannot be identified (or cannot be identified unambiguously), therefore I could not create uniform groups regarding what the decision maker would like to see and what they actually see in the Notes of their partner companies.

4. NEW AND NOVEL RESULTS OF THE DISSERTATION

1. I concluded that the Notes of the companies belonging to the ‘Manufacturing industry’ (“C”) and the “Professional, scientific, and technical activities” (“M”) do not comply with the requirements of the Accounting Act. Regarding the length of the examined and published Notes it can be concluded that two thirds of them is below 10 pages and one third is less than 5 pages long. I found that the textual interpretation of the Notes connected to the balance sheet comply with the Accounting Act the best, while the disclosures connected to the informative part are presented the least. Furthermore, the frequency of the disclosures connected to the risks (liabilities, costs, expenditures) was higher than the frequency of other information items.

2. The Notes of the companies presenting accounting reports supported by audit and the type of the annual accounting report are more detailed and their content is more in line with the requirements of the Accounting Act.

3. I concluded that not all the stakeholders take into consideration or use the disclosures of the Notes. I found that most textual explanations to be published are considered important by businesses when making decisions, but at the same time a smaller proportion of these disclosures appear in their partners’ Notes. I concluded that the most significant difference between the required and actual information content is in case of the liabilities. This can be explained by the risk considerations associated with the liabilities. At the same time most companies would like to see the transactions with related parties the breakdown of the revenues based on the main fields of activity, but in most cases, they are missing.

4. I found that there are different views on the importance and the existence and usefulness of the information in the partners' Notes based on the groups created by the main activity of the companies, the amount of their revenues, and the type of accounting statements. Based on the activity the financial institutions, based on the revenues the companies with high revenues, based on the type of reporting the companies reporting as financial institutions rated higher the disclosures of the Notes, but at the same time this information was missing from the partner companies’ Notes.

5. I concluded that the mandatory information presented in the Notes cannot be classified into well-distinguished categories based on the needs related to the decision support or based on the usability of the disclosures of the Notes.

5. PRACTICAL USE OF RESEARCH FINDINGS

The goal of my doctoral dissertation was to examine whether the Hungarian Notes meet the minimum requirements of the Accounting Act, furthermore, to evaluate the opinion of the business professionals regarding the information presented in the partners' Notes that could be the foundation of a database supporting their decisions. I examined whether they take this information into account and whether they consider it as an important factor from the perspective of the decision support and finally, whether they can find this information in their partners' Notes.

The primary research supported the notion that the quality of the Notes must be improved, as based on the opinion of the business professionals there is a need for the information disclosures of the Notes in the decision support, but typically this information do not appear in the published Notes of their partner companies, or either not with the required information content or in an adequately detailed version.

When I developed the database for the secondary research and defined the expressions to be searched using text mining, I encountered the problem, that not all the published Notes could be processed. This was partly due to the fact that a blank document was uploaded, or it was published in the wrong format (like as image file or scanned version of the Notes) or the content of the file uploaded as the Notes had a different content instead (minutes of the general meeting of owners, resolution on the earnings). To solve this problem, I suggest the implementation of the XBRL file (eXtensible Business Reporting Language). Based on the regulation of the European Securities and Markets Authority on the regulated stock exchanges of the European Union companies must present their annual report using XHTML since 2020 that enabled the use of inline XBRL (iXBRL), hence the data is available in a format that can be read and processed with computer.

A problem in processing the questionnaires during the secondary research was that the downloaded Notes differed significantly in structure. Although the Accounting Act does not regulate the exact structure explicitly, it requires that the explanations connected to the balance sheet and the income statement should be presented in such on order as they are presented in the balance sheet and the income statement. Based on this, my second proposal is to develop a standard template for the structure and content of the Notes. This could be

used by importing it into the appendix of the Accounting Act or into the accounting software, and this way the processing of the information could be faster and more accurate.

There was a significant difference between the need for information and the usability of the information regarding the content of the Notes. In the secondary research I found deficiencies in the information content of the Notes' disclosures in case of the companies belonging to the two examined national economic branches. Based on this the quality of the Notes could be improved either using a standard template or by the development of some kind of control system, like the measures taken by the State in recent years to improve the legal compliance of economic transactions or in the event of a supervision, with the sanctioning of inadequately published Notes.

Furthermore, I would like to draw the attention of the auditors to the fact that in my examination of the Notes for both branches of the economy, I found several documents with deficiencies in their content.

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Subject: PhD Publication List

Candidate: Dóra Kerezsi
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MTMT ID: 10060371

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Total IF of journals (all publications): 2,567
Total IF of journals (publications related to the dissertation): 0

The Candidate's publication data submitted to the iDEa Tudóstér have been validated by DEENK on the basis of the Journal Citation Report (Impact Factor) database.

11 April, 2023

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