

Financial Reporting Quality and Operational Efficiency in the Coastal Region of Romania

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Abstract

Working with large databases and selecting indicators for economic analysis purposes raises several challenges and concerns. This paper provides insights on how the choice of indicators in an analysis of reported financial statements may significantly influence the interpretation of the results. The study investigates a sample that includes indicators reported by a large number of companies in the coastal region of Romania. The rigor and compliance of financial reporting ensure the quality and accuracy of information and are key features for assessing sustainable development. The quantitative analysis and case study observation allowed us to capture divergencies in the evolution of financial indicators caused by nonconformities in the financial statements. This study provides an empirical perspective that can raise awareness of potential biases in financial reporting evaluation. The accuracy of financial data directly influences the soundness of managerial decisions and has a major impact on the economic efficiency strategy of companies.

Key words: nonconformity, development, empiric filtering, financial reporting, evaluation

J.E.L. classification: G17, M20, M40, P50

1. Introduction

The efficient disclosure of an entity’s data to the external interested parties depends on the degree of reporting compliance with regulatory requirements. Financial reporting quality is given by accuracy, conformity and control in reporting decisions (Way, 2019, p.18), whereas deviations, faults or errors in reporting define financial nonconformity.

The line between conformity and nonconformity is delicate and relies on knowledge, judgement of physical reality, group norms (Hornsey *et al*, 2003, p.321; Bellezza, 2014, p.35) or managerial perception (Zhao and Pattern, 2016, p.80).

The current paper is concerned with the empirical detection of nonconformities in a dataset that may distort the findings and dissimulate the results of an analysis. We do not strive to detect fraudulent report causes, but to propose new filtering perceptions and to substantiate the importance of empiric tests in selecting a sample of data. The findings are summarized into a three-stage filtering plan that is able to help the user to detect discordant information and eliminate it from the dataset, in order to support the veracity of results.

2. Literature review

Information is sensitive and shaped by a set of rules and managerial decisions. The data disclosure channels and the considerations that might affect a company’s financial reporting choices have multiple deterministic perspectives and are quintessential for sustainability evaluation. Theorists approached reporting reasoning and accounting choice by focusing on tax considerations (Cloyd *et al*, 1996, p.23; Moraru and Popovici, 2015, p.146), regulations (Leuz and Wysocki, 2016, p.525), agency costs (Jensen and Meckling, 2007), external events affecting non-contracting parties (Fields *et al*, 2001, p.255), information asymmetries (Frankel and Li, 2004, p.229), ethics (Hope and Wang,

2018, p.70), the role of accountants and levels of assurance (Cuadrado-Ballesteros *et al*, 2017, p.1141).

Special consideration was directed also into researching the relationship of financial disclosure quality and investment efficiency (Chen *et al*, 2011, p.1255; Shroff *et al*, 2014, p.759), auditing and agency conflicts (Hope *et al*, 2012, p.500) and corporate performance (Martínez-Ferrero, 2014, p.49) with a distinct focus on errors and nonconformities (Garrett *et al*, 201, p.1088; Purda and Skillicorn, 2015, p.1193).

Concerns regarding financial reporting nonconformities have been long debated. Nonconformity has been analyzed from the perspective of quality management systems (Nikolay, 2016, p.228) or of fraud and the costly effects it incurs on small businesses (Thomas and Gibson, 2003). Fraud detection was reviewed with the well-known red-flags approach that recommends the use of a checklist of fraud indexes (Albrecht and Romney, 1986; Krambia-Kardis, 2002; Kranacher and Stern, 2004) or with several analytical procedures (Blocher, 1992; Kaminski and Wetzel, 2004).

The history of nonconformities viewed as errors, frauds or false financial reports shows various approaches for investigation. According to Benford's law, also known as the *law for anomalous numbers* or the *first-digit law*, data analysis should address the situations where digits deviate from expectations (Fewster, 2009), and observations should be deleted from a dataset if they don't have a normal distribution (Durtschi *et al*, 2004). The research of intrusion detection in financial reporting was developed in time and seems to converge to various machine learning techniques (Patel and Buddhadev, 2014, p.43) that rely on experience, examples and analogy in order to construct algorithmic mechanisms. Discovery sampling (Bierstaker *et al*, 2006, p.526; Elder *et al*, 2013, p.99) and comparison analysis was performed by classical or Bayesian approaches mostly to enhance effectiveness and productivity in audit missions (Erdogan and Uludag, 2014, p.669).

Filtering information in finance underwent extensive research development (Platen and Runggaldier, 2004, p.79), with a hinted need for empiric evaluation enhancement and user-based assessment of the dataset (Herlocker *et al*, 2004, p.14).

We explore a case study analysis that reflects the importance of the empiric approach to deviating or disproportionate sample features, which may help to identify the nonconformant cases that should be rejected in order to best model the analysis tasks.

3. Research methodology

The current paper oversees a sample of financial information from acting companies in the coastal area of Romania, in the counties of Constanta and Tulcea. The research was conducted as a case study analysis, based on quantitative processing (Aivaz, 2018, p.122) of a large financial database gathered from all the profitable firms in the targeted area during 2014-2018. The empirical interpretation of results used the graphical method to create an image of the financial trends and to perform comparative analyzes on business between the two regions. This paper is complementary to other studies developed in the same financially emergent region which have explored different dimensions of financial reporting interpretation (Aivaz 2012 and 2018a; Stanciu *et al*, 2016; Popovici *et al*, 2017, p.113).

The main financial indicators assessed were the medium rates of the reported turnover, operating costs, salary expenses, with values greater than zero, gathered from all the profitable companies in the coastal area of Romania as presented in Figure 1. A particular focus was set on the incentives for nonconformities based on the divergent trends and empirical comparison findings. The database sources were the information provided by ANAF and INSE via their public sites. The need for open-access government data is of paramount importance for businesses and researchers to create efficiency models and contribute to decision-making and added-value for improvement of quality of life (Rojas *et al*, 2018, p.553)

The chosen indicators are the main financial indexes for operational performance that are reported by companies in their financial statements, in compliance with Romania's financial reporting regulations. Medium rates were calculated for each of the indicators and the investigation on the incentives for accuracy and compliance was based on the observed trends and empiric interpretation.

Figure no. 1 Evolution of the number of profitable companies presented by county and period



Source: Authors' study based on the INSE indicators

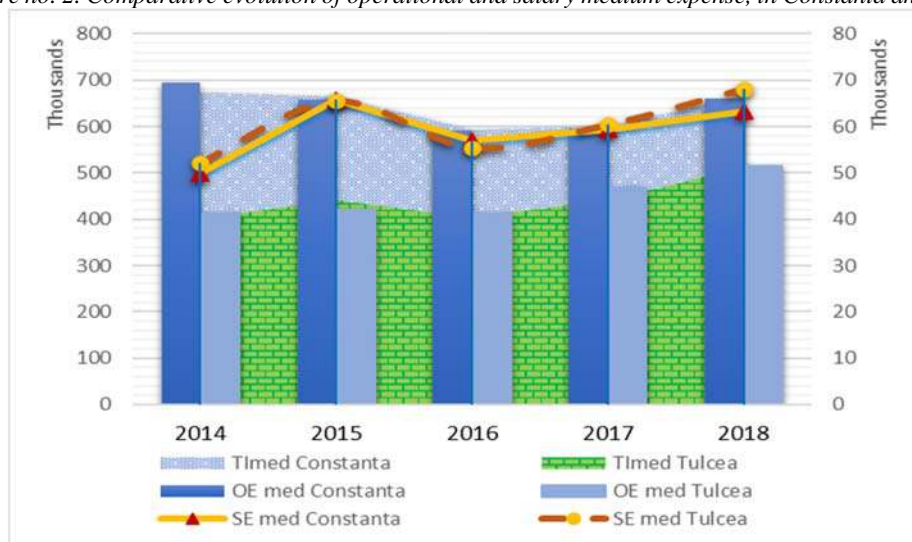
The evolution of the number of profitable companies in Constanta compared to Tulcea during 2014-2018 clearly point to a greater predilection for business and operational initiatives in Constanta. The number of profitable firms presents a growing trend in both counties, but the difference between the two counties is noticeable and indicates significant disparities for economic development.

4. Findings

In order to assess the general economic development situation in the two coastal counties, we followed the evolution of the main operational indicators reported in their financial statements by the companies included in the survey sample. We observed the trends and followed the patterns that led to nonconformity reporting incentives.

According to Figure 2, we compared the operating costs (OE), salary expenses (SE) and turnover (TI), calculated in medium values, between Constanta and Tulcea.

Figure no. 2. Comparative evolution of operational and salary medium expense, in Constanta and Tulcea



Source: Author's study based on the INSSE indicators

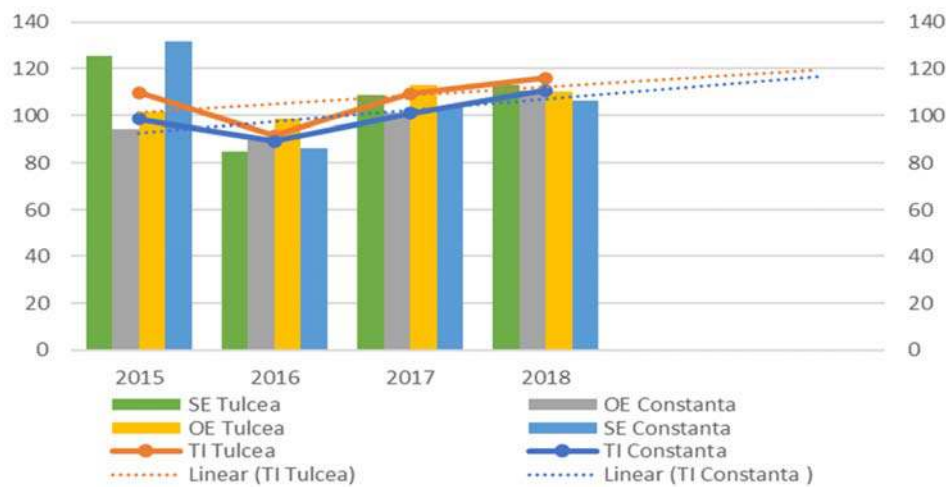
The evolution of medium operating expense and turnover during the analyzed period clearly indicate higher indicators in Constanta compared to Tulcea. The survey considered medium values of the analyzed indicators in order to address the differences determined by the numeric representation of companies in the two counties. The medium representation offers a more accurate image of the turnover and operational expenses in general terms of business considering the discrepancies of the numeric representation of profitable businesses in the investigated sample.

The trend of operational costs presents different trends in Constanta and Tulcea, with a downward course in Constanta until 2017 and a tendency for increase afterwards. In Tulcea the same indicator presents a more fluctuating progression, with an upward orientation in 2017. Also, it is interesting to notice that in Constanta the medium operational cost is higher than the medium turnover in Constanta, considering the fact that the companies included in the survey sample reported profit during the whole targeted period (thus the financial results would be relevant for research, but these indicators are not made public by the public sites for collecting information).

The medium salary expense indicators calculated for the companies in Constanta is lower than the same indicator calculated for the companies acting in Tulcea during 2014 and 2018. The evolution of SE reveals a very interesting and discordant upward pattern in 2015 with a rapid decrease in 2016 in both counties. The abrupt evolution during 2015 of SE has no visible similar effect for OE during the same period.

In order to investigate the pattern of evolution of the chosen indicators, we calculated evolution indexes and projected a forecasted trend for the turnover tendency during the next three years, as presented in Figure 3.

Figure no. 3. Comparable evolution of financial operating indexes and forecast of turnover index in Constanta and Tulcea



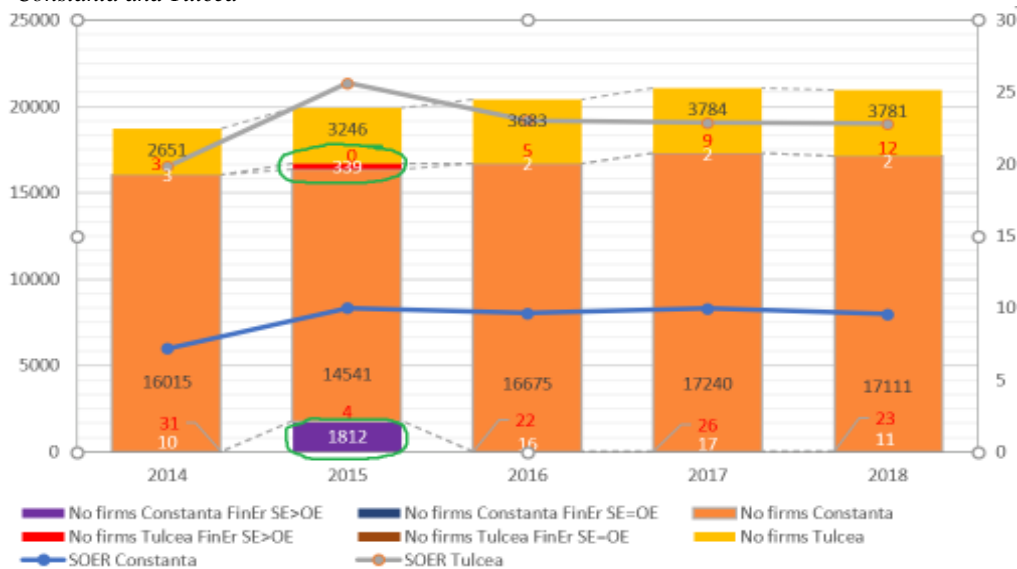
Source: Author's study based on the INSSE indicators

The divergent trends of SE observed during 2015 as shown in Figure 2, also affect the indexes calculated in Figure 3, where the SE index is higher than the OE index in both counties instead of the other way round. Also, it is interesting to notice an abrupt decrease in the TI index during 2016 calculated with reference to 2015, that also points to a divergent situation of financial indicators to be filtered and investigated for the 2015 financial statements included in the survey sample.

The forecasted evolution of turnover (Linear TI) in the next three years points to an increase in both regions, with a better upward trend in Constanta than in Tulcea.

In order to address the discordant trends found in 2015, we ran a series of empiric filters to the investigated database. Because all the selected firms included in the survey were profitable companies with positive financial indicators, we ran three conditional filters to the database: a) how many companies reported salary expense (SE) greater than operational costs (OE); b) how many companies reported salary expense (SE) equal to operational costs (OE); how many companies reported salary expense (SE) smaller than operational costs (OE). Filters a) and b) were considered insights for error reporting, since SE is included in OE together with other operational expenses according to financial reporting regulations, and a greater value of SE compared to OE would be incorrect according to accounting regulations. In order to follow a visual trend of the ration between salary expense and operational expense (SOER), we calculated the indicators for each county. The results are shown in Figure 3.

Figure no. 3. Evolution of financial reporting of profitable companies and considerations on errors, in Constanta and Tulcea



Source: Author's study based on the INSSE indicators

The results of the filters point to a suggestive representation for the source of the discordant trends observed for the financial indicators in 2015. Figure 3 reveals significant incentives for financial reporting nonconformities in 2015, since a number of 1812 companies from Constanta and 339 companies from Tulcea reported SE>OE. According to financial reporting regulations, OE includes several indicators, amongst which are SE, expenditure with raw material and consumables, merchandise, utilities, external services, other taxes and local fees, value adjustments of assets, environment costs and other expenditure. Thus, SE<OE or SE=OE would indicate negative reports for the other operational expenditures and, consequently, would be an incentive for financial reporting nonconformity. The large number of nonconformity instances found in 2015 represent a probability for more than 10% error in the case analysis of financial indicators for this period.

The nonconformities instances found during the other periods are presented with white (for SE<OE) and red (for SE=OE) in Figure 3. The observed nonconformity instances for the periods other than the year 2015 have ratios lower that 0.5% compared to the number of companies compliant to the filter SE<OE. Nevertheless, all the cases identified as nonconformity incentives should be removed from any financial analysis, since they may determine irregular or faulty findings.

The findings of the current paper point to an additional three-stage filtering plan to user-evaluation methods that may become necessary when operating with a large database in order to observe financial trends and investigate economic instances:

1. Populating the database according to the analysis purposes;
2. Running different empirical tests in order to observe discordant instances and identify nonconformities;
3. Running a new filter to the database in order to eliminate the nonconformities.

5. Conclusions

Financial reporting nonconformity is a major concern that may escalate into faulty managerial decisions, investment errors or misinterpretation of economic indicators or trends.

Once a source of nonconformity in financial reporting is found, an action plan is required to be customized for the economic interest of the claimant. If the interest is for enhancing conformity and quality of financial reporting, then the corrective action plan may be customized into improved training techniques or control mechanisms. If the nonconformity is assessed for operational efficiency purposes, then the action plan may be directed to enhancing the findings of sources and outcomes for errors, leading to the recognition of the need for different procedures and synergistic

managerial decisions aimed at efficiency. If the interest is aimed at forecasting reasons or trend observation, then the corrective action plan may be improved with empirical filters for nonconformity or discordant sources in order to offer consistency and accuracy to the reference database. This paper presents a contextual case study for the third instance. Filtering the information and the use of statistical methods to identify and model the chance of nonconformities are tools that may improve the efficiency of the research.

In this paper, new empiric approaches are proposed for sample evaluation that we believe effective to be considered in order to avoid potential biases in financial reporting analysis. Empirical assessment can bring an enhanced dimension to the examination and can broaden the awareness of potential biases in the evaluation of financial reporting to substantiate sustainable reporting.

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