

# USE OF STATISTICAL METHODS IN DETECTING ACCOUNTING ENGINEERING ACTIVITIES (AS EXEMPLIFIED BY THE ACCOUNTING SYSTEM IN POLAND) – FIRST PART: THEORETICAL ASPECTS OF ANALYSIS

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**Abstract** This article is one in a series of two publications concerning companies' detection of accounting engineering operations in use. Its conclusions and methods may be applied to external auditing procedures.

The aim of the present duo-article is to define a method of statistical analysis that could identify procedures falling within the scope of a framework herein defined as accounting engineering. This model for analysis is meant to be employed in these aspects of initial financial and accounting audit in a business enterprise that have to do with isolating the influence of variant accounting solutions, which are a consequence of the settlement method chosen by the enterprise. Materials for statistical analysis were divided into groups according to the field in which a given company operated. In this article, we accept and elaborate on the premise that significant differences in financial results may be solely a result of either expansive policy on new markets or the acquisition of cheaper sources for operating activities. In the remaining cases, the choice of valuation and settlement methods becomes crucial; the greater the deviations, the more essential this choice becomes. Even though the research materials we analyze are regionally-conditioned, the model may find its application in other accounting systems in the country, provided that it has been appropriately implemented. Furthermore, the article defines an innovative concept of variant accounting.

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## INTRODUCTION

This article belongs to a series of publications dealing with the author's original concept of accounting engineering as a modern management paradigm. Some other publications by the author considering the same topic are: (Michalczyk 2005a-d, 2006a-e, 2007a-c, 2008, 2010a-c, 2011a-f, 2012a-e).

A tendency to exploit the possibilities created by accounting methods through which economic operations are settled is a mark of modern economic conditions, both in the economies of developed as well as developing countries. This inclination results from the expectation that company managers

maximize company profits, which is a goal of economic activity, and the fact that variant solutions in accounting offer new possibilities. If a certain type of activity can be defined in accounting in many different ways, depending on the chosen method of settlement, and if the choice of methods translates into different financial results, then one tends to exploit the possibilities this choice offers and select a method which will help achieve company goals in the most efficient way.

These goals are associated with embellishing financial results so that they may act as a positive factor, affecting the value of company shares on the market, contributing to the creation of a positive image of

the company among credit grantors, and, if need be, facilitating the procedure of obtaining a bank credit. On the other hand, accounting may also be used as a system affecting the amount of calculated income taxes, provided that accounting solutions of this kind are accepted by the tax law of a given country.

The problem should also be considered in a longer perspective, since it concerns not only the present time, in which the procedure of „accounting valuation” happens, but also future reporting periods. This follows from the fact that, for example, increasing the financial result via increasing the number of „blocked” costs in the form of a higher net value of capital assets will translate into higher amortization costs in the future. This creates a situation which is a danger to the safety of economic circulation, for which accounting should always be responsible, and in which increased profits in the present period will, as the current rules of accounting dictate, result in higher costs in future periods. Thus, there exists no rational reason to analyze trends associated with, for instance, market value of a company's shares without conducting a detailed analysis of the accounting methods which the company chooses to employ.

Ethics is yet another aspect to be discussed. In numerous countries, national balance sheet law (accounting regulations), which usually has the legal force of acts, allows individuals managing a company to choose a settlement method to be used in the company's accounting. Since accounting (financial reporting) is the most widely accepted system of economic analysis (which then provides materials used to evaluate the economic efficacy of operations), a procedure in which assessment is conducted by the assessee is created. This mechanism may pose a serious ethical dilemma since its application may result in what is generally called a financial or accounting scandal. One of a multitude of examples is Enron. Readers need not be reminded how big the company's market share was, and how wide-ranging were the consequences of its collapse, also in the light of the bankruptcy of one of the top auditing firms in the world. One thing that need to be noted however is the influence the case of Enron had, even in East-Central Europe, on the general perception of accounting methodology and the procedures of financial or accounting auditing. This influence concerns not only the advancing globalization of the world economy, or the way the state of top stock markets in the world affects those of developing countries, but also, and

most importantly, the increasingly popular „creative approach to accounting”.

If Enron could do it, can we do it too? And if we have this opportunity, and it is potentially beneficial for us, should we not take it? Yes, Enron did collapse, but we are „much, much smaller” - maybe we can make it? And even if we don't succeed, maybe we can at least profit from it for however long we can? And after us, as the famous by-word goes, the deluge may come. Not without reason did we mention Enron (and not e.g. WorldCom) in the introduction to this article. Even though Enron's practice of shifting costs to affiliates was indeed contemptible as it was supposed to defraud (to cause the wealth of the deceived person to be misappropriated) the company's stakeholders, it was acceptable in the light of US law at that time. In American courts, unlike in Poland, it is considerably easier for people who were deceived as a result of intentional, but not unlawful, actions to plead their case. In Poland, it is assumed that if someone is deceived as a result of legally-acceptable actions, they only have themselves to blame. This is simply taken to be a consequence of them being unfamiliar with the current law.

This particular element, compliance with the law, is essential to our discussion. The term „accounting engineering” herein used is an entirely new coinage. In the present article, accounting engineering is taken to refer to, in accordance with the current balance sheet law, those types of accounting operations whose primary objective is to enable management boards to attain the goals set before them by capital holders. The main aim of this method of managing company resources is to ensure that the effects of economic operations are in concordance with assumed goals. Thus, accounting engineering defines the degree of correlation between accounting operations and company management („the managerial aspect of accounting”).

It is hence safe to assume that the analytical model put forward in this article could be used as evidence in court, proving, by means of scientific analysis, the deliberate nature of the defendant's actions.

Accounting engineering may thus be distinguished from creative accounting. The latter comprises actions contrary to the current balance sheet law.

Another term introduced in the present paper is „variant accounting”, which covers variant (alternative

and optional”) solutions in the Polish balance sheet law. Such solutions are characterized by different „vestigial” financial results of identical economic operations.

What is derived from these terms is the idea of “impression management”, which refers to an accounting description of a company’s operations (financial reporting) that is not intended to present financial data in an objective way, but to influence the recipient of such reports. Manipulating the way financial data are presented is supposed to encourage stakeholders to take actions beneficial for the company or to discontinue potentially harmful actions (v: Michalczyk, 2011d, p. 34-38).

### THEORETICAL OVERVIEW OF ACCOUNTING ENGINEERING

The process of managing the shape of incomes and profits, known as earnings management, has been a subject of research in management and accounting since, at least, the 1970s. The majority of essential, classical works dealing with scientific research into the matter constitute publications examining accounting practices in English-speaking countries (mainly the United States), e.g. those of C. Hayn’s (1995), D. Burgstahler’s and I. Dichev’s (1997).

In the 1970s, they were also defined as an opposite of „neutral” accounting evaluations of economic operations of companies. At the same time, it is assumed that „neutral accounting” is a possible part of a business activity. Simultaneously, „low motives” are posited as a motivation for „managing the shape of incomes and profits”, which is defined by K. Schipper as private gain (1998, p. 92). P. Healy and J. Wahlen (1999), P. M. Dechow, and D. J. Skinner (2000), among others, draw our attention to similar aspects. They contributed to the formation of the concept of earnings management, as well. In Poland, the following researchers approached the subject: A. Jaruga, J. Fijałkowska, R. Papa, and L. Ferreira (2004) and L. Michalczyk (2011).

Each theory of earnings management has some common elements:

- 1) accepting possibilities resulting from the implementation of the agency theory,

\* This article has been established in accordance with semantic logic - it is based on the original distinction in Latin where the word “alternative” entails a choice between two possible variants; if there are more than two variants, the word “option” is used. Every choice is, in turn, a variant. Economic English assumes (contrary to the abovementioned logic) that every choice is an alternative.

- 2) the maximization of profits as a goal set before people managing a company by holders of its capital,

- 3) taking into consideration possibilities resulting from variant accounting solutions,

- 4) accepting the existence of „low motives” behind people’s actions, which is the essence of the capitalist view of the economic reality.

The term „profit” is here understood in its „general” sense. It refers to the net amount of the financial result which will be allocated according to the owners’ will: the money may be divided among employees, it may be added to the proprietary capital (e.g. supplementary capital), or used to make good losses from previous years. As we can see, in its widest sense, it is an equivalent of „net profit” (which includes taxes) in accounting. In this respect, one would also need to take into account the specifics of tax systems in particular countries as well as their correlation with accounting solutions.

Earnings management is used in order to affect present and potential (future) stakeholders of a company. According to the classic „typology” outlined in The Caux Round Table’s Principles for Business (1994), the following should be included in this group: employees, owners and investors, contractors, clients, competitors, and national or local organizations. Research conducted so far revealed this fact as regards changes in the value of shares already listed, or to be listed, on the American stock exchange (f. ex.: Hayn 1995, Teoch a. a., 1998a, 1998b). It seems justified to presume that similar practices may also be observed in listed companies in other countries, and not only as a result of their capital being interlocked with foreign companies.

The theory of perspective, appropriately adjusted to fit the needs of accounting engineering, would take into account the relations with chosen elements of the economic environment of a company and a relativity-based approach (c.f.: Kahnemnan & Tversky, 1979). In these respects, they are accepted by the concept of accounting engineering.

However, unlike the theory of perspective and its derivative - the concept of behavioral finance (c.f.: Burgstahler & Dichev, 1997; DeGeorge a. a., 1999; Leuz a. a., 2003), accounting engineering is essentially a mathematical approach and analysis in them: a statistical approach.

What is more, the approach consistent with the theory of perspective has been modified within accounting engineering. This alternation has to do with the

connection between a company’s accounting and its operational objectives. These objectives are associated with the maximization of profits per account balance for people managing the company and for the company itself. First, the objectives are pursued by maximizing personal income of the manager, which in turn influences his or her attitude in pursuing the economic goals of the company. The second group entails „increasing” the book value (and, indirectly, the market value) of the company.

Manipulating the moment of the capitalization of costs in accounting or cost activation takes place in operational management. In accounting, the capitalization of costs refers to transferring particular assets to the result of the current reporting period. Cost activation, on the other hand, is responsible for classifying costs as assets. Financially speaking, these two are deemed to be opposite, while in accounting, they are believed to be simply different, nonequivalent. Maneuvering between these two is what accounting engineering is preoccupied with. However, within a longer period of time, particular elements of assets are completely settled. Even so, juggling costs and incomes may be done on a permanent basis.

As a result, accounting engineering, as an imperative of accounting operations, is primarily applicable in operative management. In the case of long-term management, accounting settlements of particular business assets or the company’s liabilities will always be equal. In this case, using different accounting methods does not matter as far as differences in financial results or net balance sheet values are concerned. Fixed assets always reach, sooner or later, zero net value; running costs associated with the production or provision of services, including the value of sold products (deferred costs) are, in the long run, always equal to total costs, irrespectively of where and when they are recorded, etc. This is in keeping with the logic of time-based settlements used in accrual accounting, which is based on, among other things, the principle of adequacy of costs and incomes.

At the same time, current differences appearing in the financial result are impermanent. They could become permanent only if the company „reconstructed” its assets and shifted equal sums between particular reporting periods. However, in the changeable capitalist economy, such an assumption (along with the rational basis for such actions) is questionable. Nevertheless, the influence of settlement methods

on financial results may differ in particular periods and for that reason it needs to be under permanent control. Such control procedures would verify the influence of the employed accounting methods on the current financial result of the company.

As regards accounting engineering operations, two groups of settlement methods may be distinguished. The first one calls for changes in the accounting policy, while the other requires no such alterations. While changes in the accounting policy of a company operating on the Polish market and based on the Polish balance sheet law must be included in the financial report as additional information, distinguishing, for instance, between amortization (which has to have a constant value) and depreciation (which is a result of the economic operation of a particular fixed asset) allows the company to achieve a desirable net financial result.

The development of earnings management activities is a consequence of the following:

- 1) capital holders hire managers to manage their companies while they themselves give up direct and current control of the company,
- 2) the maximization of the company’s profits and its goodwill are taken to testify to the quality of the managers’ work, upon which depend their remunerations and future employment in the company,
- 3) accounting (the provider of economic information about the company) is perceived as a mechanism which verifies the work performed by the managers (v: Michalczyk, 2011b, p. 115-132).

Since the development of accounting led to the creation of variant accounting and since managers are allowed to choose their accounting staff as well as define the degree to which accounting is used in the companies they manage, a phenomenon whereby managers assess themselves came into being (Michalczyk, 2011a, p. 107-129). In earnings management, it is in fact the managers, and not capital holders, who decide whether the company functions correctly or yields accounting losses. This is made possible by the achievements in and the development of the accounting theory, by virtue of which variant accounting is created. At the same time, there exist no mechanisms that would verify financial reports by reducing them to the lowest common denominator. Variant accounting led to the creation of a phenomenon whereby a necessary condition for the maximization of current profits (accumulated or allocated) is for the currently obtained profit to be

maximized. This seemingly tautological relation is justified by the fact that it is the choice of the settlement method that is responsible for the differences in the degree to which particular companies realize their economic goals. The eradication of this phenomenon (in all accounting systems) should become a future objective of accounting and accounting audit.

That being so, certain links between accounting engineering and practical aspects of company management may be singled out:

- 1) managing the amount of tax liabilities,
- 2) managing the amount of the balance profit or loss shown,
- 3) managing financial liquidity via generating information for main stakeholders of the company.

The basis for such actions may be found in R. H. Coase's theory of transaction costs, which has been known for over 70 years (Coase, 1937), and a theory which is in some respects compatible, and in others contrary, to the first one - the theory of agency. These theories constitute opposite approaches to management in the economic reality of, for example, the USA. In the European environment, including Poland, where directors who are capital holders and directors from outside the company often mix within the same firm, the two concepts are complementary. In Poland, it is assumed that when a person creates a company, it is, in the first place, supposed to be his work place. This situation has its roots in the nature of the social insurance system and the tax law of Poland.

Agency theory is meant to signal certain uncertainties existing between an economic agent and its surroundings. It is a consequence of there being no mutual trust between the owner realizing, to the letter, strategic goals and individuals in charge of management, who are primarily interested in attaining current, operational goals (which constitute the basis for their assessment and reward). A group which is an exception to this comprises the owners who operate on the stock exchange and who are seen by the company as parasites, obviously only after their capital has been made available. The degree of distrust should be proportional to the distance that separates, in the company structure, the capital holder and production factors acquired by the company (classical solution: Fama & Jensen, 1983; Basley 1996; Dechov a. a., 1996; Peasnell a. a., 2005). The distance corresponds to the number of people managing the capital in the vertical structure of the organization.

Regardless of whether there exists, within the company, a separation of management from ownership (according to the model proposed by the agency theory), or whether this fact is of no import (as in the theory of transaction costs), accounting engineering is meant to maximize the profits for the benefit of the people managing the company. Accounting engineering is a mechanism designed to attain such goals. However, if management and ownership are not separated, the objectives of capital holders are pursued. Their objectives are synonymous with the strategic goals of the company. The objectives pursued by the management may be, in turn, different from those of capital holders. In accounting engineering, goals appointed by people managing an economic unit are considered to be of primary importance. It is they who determine the scope of the rules of the accounting policy in the company.

The „rationality of actions” and the fact that every person tries to maximize their profits may give rise to the following thesis: while agency relations within a given company create favorable conditions for earnings management phenomena, a direct involvement of the owner in company management reduces a tendency to embellish the company's financial results or its goodwill. Therefore, in this situation the only recipients of reports for whom such operations may be performed are the institutions financing the business or tax institutions. In the first case, an attempt is made to increase the balance profit. The second case, on the other hand, entails actions aiming to decrease the value of the financial result regarding these balance categories which concur with the current tax law. It is then rational to create a loss, especially if it can be transferred to tax settlements. This may take place in those areas where solutions offered by the variant balance sheet law are accepted by the tax law. A situation in which tax losses shown by the company in the past are settled constitutes the only exception. It is then a rational course of action to show at least such an amount of tax profit that can be completely leveled out by tax losses, deductible in a given year (reporting period), from previous years. The above practices, juggling profits and losses, fall within the framework of accounting engineering. The idea of earnings management attaches little importance and legitimacy to the creation of a balance loss referred to a tax loss, which demonstrates that, in view of a company's financial liquidity, the idea does not offer an optimum solution. Furthermore,

earnings management does not take into account the need to create a balance loss in order to facilitate the takeover (make it less expensive) of one company by another, which is a practice commonly encountered during the privatization of Polish companies”. The course of privatization relies primarily on the data provided by the books of the companies undergoing privatization. It is not hard to guess the consequences of this approach during insider privatization (the sale of the company to the employees) or when arrangements are made between the privatizing and the privatized parties. In such a situation, losses are usually created by force, which is accompanied by another flaw of the Polish model of privatization - purchasing with the money of the purchased, so as to ensure the lowest book value of privatized state-owned companies.

Therefore, accounting engineering attaches the same value to the maximization of profits and the maximization of both losses (the minimization of profits) as well as the book value of a company. This takes place especially in connection with the implementation of settlement methods accepted by the tax law or the reduction of value of state-owned companies to be privatized. It is also worth noting that one of the consequences of reducing the book value of privatized state-owned companies is the creation of a book profit shortly after privatization. This is usually the result of releasing provisions and other items of balance costs calculated prior to privatization, thanks to the regulations specified in the 8th article of the Polish accounting act. This phenomenon also substantiates the thesis concerning the purportedly greater economic efficacy and competitive power of privatized companies. Even if the thesis is indeed right, the claim that it is based solely on the balance data is unjustifiable.

\*\* As opposed to, for example, the Belgian model of privatization. After World War II, state-owned companies in Belgium were put up for auction.

This typically involves either exchange or conversion of shares or stocks between the purchasing company and the purchased company, or the selling of the purchaser's shares/stocks to the purchased company. In this last scenario, the purchaser acquires financial means needed to pay the amount due to the former owner - the State Treasury. Subsequently, some further unspecified intangible and legal values are sold, commitments are compensated with the already transferred shares/stocks. This is a sign, one of many, that reveals a lack of responsibility for the implementation of liberal theoretical concepts into the economic environment of Poland, which is typical of the period of the political involvement of L. Balcerowicz.

It therefore seems appropriate to contend that the final goal of accounting engineering is not the creation of a virtual financial result, but the maximization of the available net circulating capital. All mechanisms working to this end are based on the mechanisms of variant accounting. In short, the idea of earnings management is one of indirect variants of accounting engineering operations that may be implemented in the economic reality of Poland. In this respect, accounting engineering is a conceptually wider notion.

Although earnings management has been known to exist since, at least, the 1970s, the theoreticians of accounting not only have not attempted to remedy it, but have even taken actions leading to the development of variant accounting. As a consequence, such well-known and reputedly thriving companies as, inter alia, Barrings Bank or Paramalat collapsed. Research has shown that approx. 25% of bankruptcies of companies are a direct corollary of employees' actions. In this group, the main, as regards its overall significance, category comprises actions classified as white-collar crimes. These actions make use of, among other things, variant solutions allowed (accepted or even affirmed) in accounting practice or crossing the boundaries of its codified regulations. The latter element may be said to correspond to creative accounting, while the former - to accounting engineering (Michalczyk, 2006, p. 86).

A. Hołda and W. Nowak (2003, p. 117-120) associate the „financial value of frauds” with the post and position occupied by a particular employee in a company - the higher the post, the greater the value of losses resulting from irregular activities. This relation may be accepted if the term „potentially incurred losses” is introduced, since without it, the approach presented by A. Hołda and W. Nowak is an insubstantial allegation. In addition, the relation follows from the legitimate, as far as the controlling function of accounting is concerned, assumption that greater extent of employee activity associates with a higher risk resulting from these activities.

It furthermore seems justified to claim that as long as the managing board, which has the influence on the choice of methods determining both financial results and the company's value, is rewarded for the visible results of those methods, there will always exist activities falling within the framework of accounting engineering or creative accounting. This follows from the fact that people who have a certain

opportunity are interested to take it (a motive). This represents a classic structure of a legal analysis based on the ancient Roman Law, which laid foundations for the standards of the Euro-American culture - motive-opportunity-action. Whether such activities are associated with accounting engineering (which makes use of solutions included in the balance sheet law) or creative accounting (actions contrary to the balance sheet law, accounting frauds) depends on the combination of factors such as: the level of knowledge of accounting professionals and responsibility as volitional qualities possessed by certain employees in accounting and finance departments.

Similar observations were also made by international accounting organizations. It is reflected in the effort to create mechanisms enabling efficient corporate governance as well as separate systems of remunerations for individual members of the managing board. Nevertheless, especially the results of this second element appear to be foredoomed to failure. This is because such actions are inconsistent with the essence of capitalism and private business, which makes its own decisions concerning the costs of production factors (including labor), taking into

consideration, which seems only rational, market and logistical relations.

The only correct course of action in this situation is to minimize the influence of variant accounting, as it is the root of the problem. Rejecting all „growths” and a rational blockage of new theoretical notions, as well as an effort to standardize accounting solutions, may remedy the problem of variant accounting, which is a serious threat to economic circulation, which should always be in the best interest of accounting. While achieving a perfect degree of compatibility of accounting systems is possible, albeit only in theory since each one of these systems has its own flaws, and a correctly executed standardization is illusory, it is feasible to reduce all accounting solutions to the lowest common denominator. This is the course that accounting, as a field of knowledge aiming to protect economic circulation, should take. All other actions are an unproductive, and practically speaking - absurd, waste of time.

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