Financial CEMATT Method: a New Approach for Performance Assessment using Accounting Information

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A R T I C L E I N F O	A B S T R A C T
	The paper highlights the issue of accounting information as source for determining the financial position, with the customization on a case study in the clothing industry. This study provides an integrated approach to how the financial position can be determined by the financial CEMATT model for a case study based on 108 medium-sized companies selected according to their turnover in the clothing industry in Romania in 2014. The results of the study were encouraging, the most analyzed companies being within the area of financial balance; moreover, none of the companies analysed, in terms of financial diagnosis, wasn't registered in the critical region, that lead a company to bankruptcy.

1. Introduction

The purpose of this paper is to assess the financial performance and to highlight the role that accounting information holds in a company in financial decision making of investors and managers, aimed at strengthening of the financial performance. The main objective underlying this scientific research is to establish a hierarchy of medium-sized companies, acting in the clothing industry and with turnover more than Eur 1 million, as a result of analyzing the financial diagnosis by means of a specific model. The assessing the financial performance depends on the accuracy of accounting information.

Financial performance assessment is currently an important topic among researchers, investors, shareholders, managers, creditors and financial analysts. Numerous theoretical and practical articles on the topic have appeared in business, financial and accounting journals. These articles present different ways to measure the financial performance, for many sectors: iron and steel industry (Ma *et al*., 2002), manufacturing (Zhang *et al.*, 2014), agriculture (Latruffe *et al*., 2008; Chen *et al*., 2008), retail (Yua *et al*., 2014), transportation (Odeck, 2006, 2008; Fung *et al*., 2008; Chen *et al*., 2008; Barros and Peypoch, 2009), hotels industry (Leea *et al*., 2007; Chen and Chang, 2012), banks (Ongore and Kusa, 2013; Mukherjee *et a*l., 2001; Swarnapali, 2014; Shah and Jan, R, 2014), insurance companies (Adams and Buckle, 2003; Ismail, 2013; Burca and Batrînca, 2014).

The main objective is to propose a method of assessing financial performance, that provide relevant information for interested stakeholders, that can use these indicators in financial analysis, research studies and forecasting activities. Also the method can establish a hierarchy of the companies acting in a certain sector. Here, for the financial CEMATT method application we have chosen the clothing industry in Romania that is not discussed in extensive studies in economics, thus making important contributions to the studied field.

2. Literature review

Terminologically, information is a piece of communication, news that informs someone on a situation (Dictionary of the Romanian Language, 1998) and a symbolic representation of entities in the real world (Dobrotă, 1999). According to some authors (Ursăcescu, 2002; Faibisoff and Ely, 1974; MacKay, 2005), the information is that data that brings new knowledge to its recipient, that changes the perception of reality and reduces uncertainty about it.

Information in general and accounting information in particular (Pop, 2002) is the main source used in the management process, enabling critical examination of the use of material resources, human and natural resources in order to make appropriate decisions.

We believe, like Hlaciuc and Boghean (2012), that the accounting information is that result of a system of principles and rules, relatively homogeneous, which remains the ace in the sleeve of different user groups, with a high degree of credibility in relation to other information sources found in the jurisdiction of the entity,

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accounting being often perceived as a true arbiter between the offer of information, on the one hand, and the variety of information requirements belonging to each class of users, on the other hand. In order that the information to be truly useful, it is subject to compliance with quality standards (Ciuhuleanu, 2015).

Accounting information constitutes an abstraction, a product of intelligent knowledge, but also a pervasive reality, which each entity willingly or unwillingly meets daily with (Todea et al., 2011). The quality of accounting information can reduce a firm's exposure to systematic liquidity risk and can affect firm valuation and cost-of-capital through their impact on different aspects of liquidity, especially when some events (e.g. financial crisis) may arise. Thus is confirmed the important role of accounting information during liquidity events (Sadka, 2011). Use of proper accounting information and analytic techniques can help a tolerated union of necessity between revenue management programs and firm strategy (Huefner and Largay, 2008) that can increase financial performance of firms.

After analyzing various studies performed by theorists in the field (Toma, 2004; Mihalache, 2005; Eierle and Schultze, 2013; Scorte et al., 2009; Vătăşoiu et al., 2010; Pănuş, 2010; Florea, 2006; Bushman and Smith, 2003; Danos et al., 1989; Briciu et al., 2013; Hall, 2011; Bushman et al., 2004; Dinca et al., 2012; Dima, 2013) we concluded that the accounting information in an enterprise foresees the critical decisions that influence the decision to facilitate information for management control as well. Please note that the accounting information has, as a starting point, two different and uneven sources in terms of quality: that information coming as a result of transactions carried out on various markets being seen during the financial year, having a rigorous and objective character, and that information known at the end of the year that is largely the result of estimates and reflects the accounting policies of the enterprise management.

According to the international conceptual framework, in order to be useful in making decisions, accounting information must be relevant and faithfully represent what it claims to represent (IASB, 2010). The usefulness of accounting information increases if it is comparable, verifiable, readily available and understandable. Relevance and faithful representation of the accounting information are considered fundamental qualitative characteristics (Albu et al., 2012) because it is used for calculation of a wide range of indicators in financial analysis and financial diagnosis.

The main users of accounting information issued in an enterprise are: current and potential investors, the company management, employees, financial and trade creditors, customers, the government and its institutions, and the general public.

Hall (2010) considers that managers primarily use accounting information to develop knowledge of their work environment rather than as an input into specific decision-making scenarios. In this role, accounting information can help managers to develop knowledge to prepare for unknown future decisions and activities. We know that accounting information is just one part of the wider information set that managers' use to decision making and the quality of decisions depend on other sources of information at a manager's disposal. Also, managers interact with information and other managers utilising and verbal forms of communication that is not based on written reports.

For investors, accounting information has a valuation role, providing investors with information for making informed investment decisions, especially in capital allocation. Private-equity firms require accounting information to control the conflicts of interest both within the private-equity firm (between the general and limited partners) and within their investors. Controlling these conflicts shifts the role of accounting back toward its original stewardship roots (Zimmerman, 2015). The role of accounting information's can be viewed in shaping user perceptions by providing new evidence that the descriptive valence of accounting constructs can impact consumer purchase decisions (Tian and Zhou, 2015).

Being aware that we can never say surely what must be done today in order to be better in the future, we present a real case study in the world of middle-sized enterprises in the clothing industry, to show how financial decisions are taken at the micro and macroeconomic level.

3. Concerns on the clothing industry in Romania

The textile industry and the apparel, which has a tradition of over 100 years in Romania, grew stronger in the period between 1965-1980, with equipment, facilities and technology mainly in the country. The production structure in the mentioned period of development was built to meet the needs of the internal market with textiles and clothing, and the surplus products to be mainly exported to CMEA countries and then to other countries.

According to the National Classification of Economic Activities of Romania (NACE Codes), activities of the companies operating in the apparel industry can be found in item 14 - clothing. The basic characteristics of the apparel industry are expressed by the following factors (Visileanu et al., 2010):

- undertakes a significant amount of labour force, mainly female;
- contributes to social stability being represented in all counties;
- has a significant share in the export economy;
- contributes with profit to the foreign trade balance of the country.

Next to efforts to improve the financial and accounting activity in enterprises in the clothing industry, as deemed by Trifan (2010), without which effective management of internal activity cannot be achieved,

efforts on organizing accounting and cost calculation on center costs are necessary in order to highlight management accounting and analyses of the financial and performance position, that appeared at enterprise level.

Romania currently shows a downward trend in terms of share of the domestic industry on the global textile and clothing market, while remaining an important milestone in the Central European area, outpacing competitor industries from countries such as Bulgaria or Ukraine (Folcut *et al.*, 2009). However, the financial crisis and the rapid rise of Asian markets in 2015 led to the disappearance of more than 120,000 jobs in textile, clothing and footwear industries during 2007-2014. In the same period, however, the salaries of more than 220,000 employees, that remained in the field, increased by almost 80%, making tentative steps towards the average on economy (Ziarul Financiar, 2015).

Study data were selected from among medium-sized enterprises, active in 2014 in the clothing industry in Romania (with a number of employees ranging between 50-249), with activity conducted within the NACE code 14 - Manufacture of wearing apparel (14.13 Manufacture of other apparel excluding underwear). Thus, 366 active companies were identified in the database, 20 of which have been removed, for which the database does not provide comprehensive data. Of the 346 valid businesses, further on in the study, we will focus only on the first 108 medium-sized companies with turnover greater than Eur 1 million that represents 29.51% of the active medium-sized firms in clothing industry in Romania.

4. CEMATT method – instrument for financial performance assessment

In order to make strategic decisions in firms, CEMATT method (Center for Management and Technology Transfer) offers a solution. This is a multi-criteria diagnostic tool for the condition of a company in order to make strategic decisions needed to guide the ambience of the current economic environment in Romania (Mereuţă, 1994), and is based on 6 components: financial, marketing, technology, quality, general management and human resources (Alexa *et al.*, 2013). A variant of this method can be used for assessing the financial performance of firms that is key information for managers, investors and creditors.

We know that financial position of a firm is highlighted by the relationship between assets, liabilities and equity (Achim, 2009), that show a certain level of financial performance. Information about all these financial structures is provided by the Balance sheet and Profit and Loss account of firms. Thus, for *financial CEMATT method* we propose a number of 11 indicators, described in Table 1.

Table 1. Financial CEMATT method indicators

No.	Indicators	Indicators description
1.	Return on assets	$\dfrac{\text{Operating results}}{\text{Total assets}} \times 100$
2.	Return on equity	$\dfrac{\text{Net results}}{\text{Equity}} \times 100$
3.	Invested capital productivity	$\dfrac{\text{Net sales}}{\text{Fixed assets}} \times 100$
4.	Long-term debt ratio	$\dfrac{\text{Long} - \text{term debts}}{\text{Long} - \text{term debts} + \text{Equity}} \times 100$
5.	Long-term debts scaled to self-financing capacity	$\dfrac{\text{Long} - \text{termdebts}}{\text{Self} - \text{financing capacity}} \times 100$
6.	Patrimonial liquidity	$\dfrac{\text{Current assets} + \text{Pr epaids}}{\text{Current liabilities} - \text{Re venues received in advance}} \times 100$
7.	Current assets turnover	$\dfrac{\text{Current assets} + \text{Pr epaids}}{\text{Net sales}} \times 365$
8.	Reduced liquidity	$\dfrac{(\text{Current assets} + \text{Pr epaids}) - \text{Inventorie s}}{\text{Current liabilities}}$
9.	Patrimonial solvability	$\dfrac{\text{Equity}}{\text{Total liabilities}} \times 100$
10.	Quick ratio	$\dfrac{\text{Cash and cash equivalents}}{\text{Current liabilities}} \times 100$
11.	Financial leverage	$\dfrac{\text{Long} - \text{term debts}}{\text{Equity}} \times 100$

Note: Self-financing capacity is determined as Net income + Depreciation and Amortization.

These 11 indicators selected are usually used in financial diagnosis that is a tool oriented towards users aiming at measuring the return on capital and risk, the assessment of the conditions for achieving financial balance and the degree of autonomy. These are important in decision making in firms related to suspending activities, redefining the strategy or policy on long-term or short-term (Căruntu and Lăpăduşi, 2010). The majority of the indicators included in the financial CEMATT method are internationally recognized and used individually in financial performance analysis: profitability as return on assets and return on equity (Horta *et al.*, 2012), liquidity (Gurbuz *et al.*, 2010; Horta *et al.*, 2012), financial autonomy (Horta *et al.*, 2012), ownership structure (Mirza and Javed, 2013; Saliha and Abdessatar, 2011), capital structure (Mirza and Javed, 2013), risk management (Mirza and Javed, 2013); debt (Saliha and Abdessatar, 2011), size (Love and Rachinsky, 2007), sales (Forbes, 2002; Shah and Jan, 2014) etc.

The evaluation mechanism of financial CEMATT method goes on the principle that each criterion i in financial direction *FD* sets a number of points (score) S_i, where $i = 1 \div 11$ with the characteristic that S_i belongs to the set $S_i = \{20, 40, 60, 80, 100\}$ specific for each criterion. The minimum element of the set, namely 20, is the score given to a criterion which is a statement of total or nearly-total maladjustment to the requirements of a market economy; the maximum score S_i set is 100 and represents a case of satisfying a requirement at high-international level (Grassebauer *et al.*, 2009).

In order to grant these scores S_i, for each criterion i were established intervals of performance (Table 2), according to the limits and favourable values of each indicators known from the financial literature.

Table 2. Scores for indicators value

No.	Criterion designation	Indicators Scores				
		20	40	60	80	100
1.	Return on assets (should not decrease below 10%)	<4	[4-10]	[10-15]	[15-20]	>20
2.	Return on equity (should not decrease below 5%)	<2	[2-5]	[5-10]	[10-15]	>15
3.	Invested capital productivity (should not decrease below 2)	<2	[2-3]	[3-4]	[4-5]	>5
4.	Long-term debt ratio (should not increase over 80%)	>80	[60-80]	[40-60]	[20-40]	<20
5.	Long-term debts scaled to self-financing capacity (should not increase over 4)	>22	[22-16]	[16-10]	[10-4]	<4
6.	Patrimonial liquidity (should not decrease below 1,30)	<1.30	[1.30-1.80]	[1.80-2.30]	[2.30-2.80]	>2.80
7.	Current assets turnover	>320	[290-320]	[160-290]	[30-160]	<30
8.	Reduced liquidity (should not be lower than 1)	<1.00	[1.00-1.20]	[1.20-1.40]	[1.40-1.60]	>1.60
9.	Patrimonial solvability	<25	[25-50]	[50-75]	[75-100]	>100
10.	Quick ratio	<0.25	[0.25-0.50]	[0.50-0.75]	[0.75-1.00]	>1.00
11.	Financial leverage (should not increase above 1)	>1.75	[1.75-1.50]	[1.50-1.25]	[1.25-1.00]	<1.00

After awarding scores, it can be achieved the classification of companies after financial performance by determining the aggregate score for each company. The aggregate score S_{FD} is a weighted average of the scores S_i granted to each criterion i in the financial direction *FD*, having as weighting coefficients the coefficients of importance K_i of each criterion i, that are set according to the degree of importance:

- K_i = 5 for a very important criterion, that means consequences of failure are extremely serious for the whole accomplishment. There were considered very important criteria: return on equity, long-term debt ratio, long-term debts scaled to self-financing capacity, reduced liquidity and quick ratio;
- K_i = 2 for a major criterion, that means consequences of failure are severe but only at the level of sections or departments. There were considered major criteria: return on assets and financial leverage;
- K_i = 1 for a secondary criterion, that means consequences of failure have isolated effects. There were considered secondary criteria: invested capital productivity, patrimonial liquidity, current assets turnover and patrimonial solvability.

The degree of importance in establishing the coefficients was determined in accordance with the aim of the paper, that is the assessment of the level of financial performance of firms and the sector using financial CEMATT method, and also establishing a hierarchy between companies acting in the sector, that can be used for decision making of managers, investors and creditors. The scale 5, 2 and 1 chosen for the degree of importance was maintained similar with the original CEMATT model specifications.

For *FD*, the aggregate score of performance S_{FD} is calculated by the relation:

$$S_{FD} = \frac{\sum_{i=1}^{n} K_i \times S_i}{\sum_{i=1}^{n} K_i}.$$

After this aggregate score of performance, named *Firm_score*, the companies can be included in the following categories:

- [0-20] - masked bankruptcy - detection of profit centres and triggering procedures for company cession;

- (20-40] - critical situation - radical restructuring, taking measures for overcoming the "alarm thresholds", significant restrictions of activity, important changes of profile / markets, capital inflows;
- (40-60] - difficult balance - major restructuring, new targets in the short / medium term, commercial marketing activities, improving management and drastic savings regime, capital inflows;
- (60-80] - satisfactory adaptation - selection of strategic objectives, "freezing" unprofitable businesses, capital inflows;
- (80-100] - validity in competitive environments - adopting a firm offensive strategy in this case major restructuring is not necessary.

5. Results and discussion

In order to apply financial CEMATT method and analyse financial performance, we choose a sample from Romanian textile industry. Being an important sector of national economy, both in terms of the contribution to gross domestic product and export growth, the textile industry in Romania has undergone in the last 20 years a difficult period of transformation and adaptation to a changing market.

For the sample of 108 companies were calculated indicators defined in Table 1 and the aggregate score of financial performance (S_{FD}) using data from the database built for this study. These indicators calculated for those 108 companies that were evaluated, are presented in Appendix 1 and 2. These calculations were made using methodology presented in section 4.

It was found that, in many cases, the analyzed indicators are not within the normal ranges found in industry. For example, in the case of many companies, we have indicators greater than 5%, when return on equity was determined, or greater than the maximum allowed recorded by the leverage ratio, which is 80%. The examples that do not fit may continue in the case of patrimonial liquidity as well, where a normal value should not fall below 1.30. Misfit occurs in the case of patrimonial liquidity, where a normal value should be between 1.5 and 2, and in the case of solvency values, greater values than 1 must exist. But nevertheless, there are only 3 companies from 108 that fall within the most favourable range to all criteria.

In relation to the analyzed companies, the scores awarded can be viewed in the Appendix 2 for each company. In Appendix 2, companies were ranked by the aggregate score obtained, in descending order, for a better observation of the position each company. We found that the companies' situation is a good one seen in terms of the aggregate marks, although many of the 11 financial indicators fell outside the normal values in the industry. In Table 3, we show the framing of companies after the level financial performance in a category of performance. Statistically, the average score of performance is 71.67(Figure 1).

Table 3. Intervals of performance after firms' scores

Firms score interval	No. of companies
(90-100]	18
(80-90]	17
(70-80]	22
(60-70]	19
(50-60]	23
(40-50]	9
No. of companies	**108**

Although, the average score of performance sector score determined is framed on the interval (70-80] where we find almost the most companies.

Figure 1. Frequency of score of performance (*Firms_score*)

14
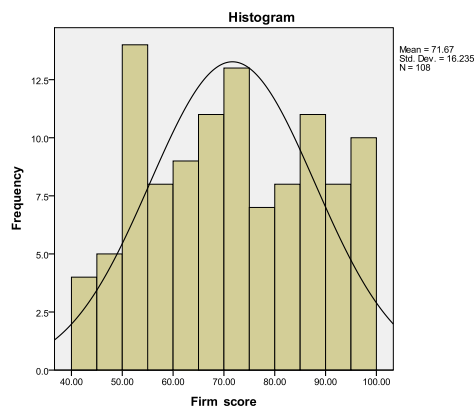
It was concluded that most medium-sized companies in the clothing industry in Romania fall into the category 60-80, which means that companies operate under optimal conditions, and that could give them a very good rating. Also note that in the analysis there have not been registered companies classified in the lowest categories, and so they may not be considered bankrupt. However, we believe that most companies are found to be working in normal operating parameters. Thus, over the sector score were found 48.15% of firms studied.

The results of financial CEMATT model are relevant for managers and owners that can find the position of their company in the sector according to financial performance, can assess the evolution of financial performance in a certain period, can know the main competitors or the companies with similar financial performance, and also can forecast the financial performance for future years. Also, this information allows managers and owners to lead in decision making for improvement of financial performance. Financial analysts can realise comparative studies of financial performance between activity sectors and firms, for the same period (comparing different sectors and/or firms) and different periods of time (comparing the evolution of financial performance in the same sector and/or firm).

6. Conclusions

As a result, we conclude that the accounting information is really an important source for determining the financial position and performance of companies. In financial decision making at company level, financial statements must be consulted, primarily the balance sheet and profit and loss account, which show the position, respectively the financial performance.

It was found that the accounting information can be the key in decision making in the management of a company. It also represents an important junction between the management, where decisions are made, and the finance, where financial situations are prepared. Thus, in conclusion, we say that the accounting information helps in making financial decisions within a company.

This study was conducted on a database of middle-sized companies in the Romanian clothing industry after a selected criterion in order to determine the financial position and their relevance for theoreticians that can design on it financial models, and stakeholders that substantiate their decisions according to the firm performance.

We proposed a new approach of CEMATT method, based only on the financial indicators, in order to assess the financial performance of companies. We find that there was an almost equal ratio of companies in the first three categories, and no company has been found bankrupt. We conclude on this case study indicating that the average firm score of the 108 companies is a good one, equal to 71.67, so we can say that overall, medium-sized companies in the clothing industry are in financial balance.

The idea of this research brings the latest novelty to the literature in the approach to issues chosen to be studied and can be of great benefit to both theoreticians, researchers in economics and not only, but also to practitioners, to companies that want to achieve financial diagnosis in order to see if there are financial problems in the company and what the financial position of the company is within its field. Thus, managers can evaluate the financial performance of the company in a certain period and can improve decision making when the financial performance of the company decrease.

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