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Investigation of the relationship between contemporary cost management methods and improvement in financial performance

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This article gives an overview of contemporary cost management (CCM) methods (target costing [TC], activity-based costing [ABC] method, total quality management [TQM]), and presents the benefits of introducing them to business practices. Previous studies have considered the possibility of cost reduction and optimisation by introducing CCM methods thus improving company performance. This explorative empirical study is a first step in investigating the relationship between CCM methods and financial performance. The aim of the research is to clarify the conceptual and methodological ambiguities surrounding the justification of using adopted measurement scales. This study is based on the outcomes of a questionnaire completed by a representative sample of 48 Croatian limited companies. The findings highlight the influence of CCM methods on the financial performance of the companies surveyed. They also provide the basis for recommendations to management accountants and raise more questions for research. Based on psychometric characteristics of measurement constructs, the questionnaire applied in this study can serve as a starting point for instrument development in future research.

Keywords: management accounting; contemporary cost management (CCM) methods; financial indicators; statistical methods; regression linear model

JEL classification: M40, M41, M49

1. Introductory considerations

Cost management methods used in the contemporary business environment must support the manufacturing of new products that will meet customers' requirements at the lowest possible cost to the company. Moreover, these methods must help reduce the manufacturing costs of existing products. Since a successful product (service) is a combination of quality and functionality at the lowest possible cost, contemporary cost management (CCM) methods are applied to achieve the above objectives.

Kaplan (1984) emphasises the greatest weakness of conventional management accounting, noting that management accounting can no longer exist as a separate discipline, developing its own procedures and measurement systems and applying them universally to all companies, not taking into account the values, goals and strategy of an individual company. It must serve the strategic goals of the company. This suggests that traditional management accounting can no longer meet the information needs of management and that a different, contemporary approach to cost management is required.

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The development of cost management methods can be divided into two periods. The period until the 1980s is characterised by the predominant use of absorption costing or variable costing, where product (service) price was calculated using a cost-plus pricing method. The development of CCM methods started after the 1980s. Contemporary methods were developed in order for companies to adapt more easily to the new manufacturing environment as well as new and diverse customer requirements.

Stenzel and Stenzel (2003, p. 226) underline that contemporary cost management involves the use of a suitable cost management tactic or method (activity-based costing [ABC] method, total quality management [TQM], target costing [TC], life cycle costing...). They also note that managers who use CCM methods understand traditional and advanced cost management methods well enough to create a highly visible and transparent system of strategic cost structures for resource allocation and cost management. Moreover, they note that CCM methods contribute to a company's profitability.

A company's profitability is closely linked to the production of goods or provision of services at the lowest possible cost to the company and implies careful monitoring and analysing of all costs as well as finding opportunities to reduce, optimise and define the cost at which the company can achieve the selling price that will generate sufficient sales volume for the company to make profit.

Cost structure of a specific product and/or service begins to form during the design phase in the case of a new product, or in the process of redesigning in the case of an existing product. This makes the basis of TC. Most approaches to cost management do not take into account the costs incurred before and after the manufacturing process. When one considers the fact that most of the product costs, such as research and development costs or design costs, are incurred before the product enters the manufacturing process, one recognises the shortcomings of methods that do not take into account the phases that precede and follow the manufacturing process. In addition, the understanding of the nature of cost behaviour presents a major problem. Most of the time companies focus on product costs and disregard the influence of other activities, such as marketing and services. The real cost drivers are disregarded as well. As a result, costs are grouped into the costs of materials, labour and overhead costs and the influence of activities on the incurrence of costs are not taken into account.

The above represents the basis of the ABC method. After identifying the activities performed in the company, the costs incurred in the company need to be allocated to these activities and in this way the opportunities for improvement are recognised. In addition to the ABC method, emphasis is placed on the quality of products and services making the quality an essential component of a contemporary business strategy. This is why TQM is considered to be a CCM method.

TQM is a management strategy based on the quality promoted in the entire company, but it is primarily focused on the customer and the dynamics of the environment. This orientation is based primarily on the synchronisation of the process and all partners along the value chain aim to create knowledge through innovation and ultimately achieve global competitiveness (Mehra & Agrawal, 2003, p. 1013). By definition TQM includes the ambition to gain advantage over competition. This puts TQM among CCM methods. It provides additional benefits when applied simultaneously with other CCM methods, such as TC and ABC.

The above-mentioned CCM methods and their influence on financial performance of a company are the subjects of this article, which builds on the research regarding the connection between cost management methods and the financial performance of a company. Given the scarcity of empirical research in this field in the Republic of Croatia,

the article offers some useful insights into the influence of the methods on financial performance of companies whose securities are traded on the Zagreb Stock Exchange.

The article consists of four sections. The first section contains introductory considerations. The second section deals with the theoretical considerations of cost management methods. Methodological framework and research findings are presented in the third and fourth sections.

2. Theoretical considerations of cost management methods

Researchers in the field of management accounting suggest the use of the ABC management method as an important tool for contemporary cost management (Chenhall, 2004; Dekker, 2003; McNair, Polutnik, & Silvi, 2001). Hilton, Maher, and Selto (2000) and Dekker (2003) include TC and TQM in CCM methods. They consider these methods to be essential for the long-term success of a company.

Many studies argue that modern management accounting techniques (such as TQM, ABC, TC, Just-in-Time [JIT] and Balanced Scorecard [BSC]) recently adopted by a number of organisations affect the management accounting functions (planning, controlling, communication, and decision-making) and then shift their focus from a simple role of cost determination and financial control to a sophisticated role of value creation (Abdel-Kader & Luther, 2008).

2.1. Target costing

TC is a pricing method developed as a result of an extremely competitive environment in which each attempt to increase the price of a product is punished by customers. It was developed in Japan as a response to the changing environment in the 1970s. This method is considered to have been invented by Toyota (Tanaka, 1993), a company that in 1965 began focusing on satisfying the growing and diversified needs of customers, which led to the production of small batches of different products.

TC facilitates effective cost management both in the design phase and in the production phase. However, the application of this method in the product design phase provides the greatest potential for cost reduction (Gagne & Discenza, 1995, p. 21). Cooper and Slagmulder (2002) define TC as a structured approach to determining the cost at which a given product with specified functionality and quality must be produced to achieve the desired level of profitability throughout its life cycle at the expected selling price. This method is at the same time a profit management tool and a cost management tool. It follows from the above that TC is a cost management method used for designing products whose profitability justifies the production itself. Cooper and Slagmulder (1999) also describe TC as a costing technique that the company uses to manage future profits by explicitly incorporating the target cost in the product development process.

The essential difference between TC and all other cost management methods is the fact that cost reduction takes place in the pre-production stage of the product life cycle, i.e. at the stage of planning and product development. When it comes to reducing costs in the production phase, this can be achieved by reducing negative deviations from the standard cost or by improving the efficiency of production processes. The application of traditional approach involves achieving the highest possible level of process effectiveness and efficiency, whereas TC entails the most cost-effective product design.

This is a managerial method dictated by the market. Accounting systems in Japan have been designed to enable a company to achieve the desired performance in line with

market conditions. El-Dyasty (2007, p. 40) notes that an organisation which can reduce costs in the cost structure of its new products, maintaining at the same time the quality and functionality of the product, will be able to survive and compete successfully.

Guiding, Cravens, and Tayles (2000, p. 120) consider TC as a CCM method due to the fact that it is not focused on accurate cost monitoring but rather on the forward-looking cost philosophy and is closely associated with achieving competitive advantage. External focus of this method is obvious because it is a market-based costing method, rather than cost-based pricing method.

Monden and Hamada (1991) and Cooper (1995) are among those researchers who support the view that TC leads to lower-cost products in comparison to products where design engineers are expected to minimise the cost of the new product. TC reduces costs by including suppliers and manufacturers in the design process thereby focusing the entire chain on eliminating costly waste, surplus and inequality (Helms, Etkin, Baxter, & Gordon, 2005, p. 49). Costs are not the main factor in product pricing. The main factors are the prices of competing products and the value that a product has for consumers (Karić, 2008, p. 131).

In addition to being predominantly used in large companies, TC is mainly used in manufacturing companies rather than in service companies. This was confirmed by the research conducted by Dekker and Smidt (2003), which included all Dutch production companies listed on the Amsterdam Stock Exchange. The study also included all non-manufacturing companies (excluding financial and insurance companies) with an aim to test the hypothesis that TC cannot be applied to that category of companies. Of the 175 companies surveyed, none from that category applied TC. Huang, Lai, Kao, and Chen (2012) in their research confirm that the implementation of TC in electronics and information industry firms in China was positively associated with their performance. This leads to the first hypothesis of this article: On the basis of given mentioned literature, the following hypothesis can be derived:

Hypothesis 1: *Application of TC improves financial performance (regardless of the activity).*

2.2. The ABC method

A company manufactures products and provides services by performing a series of activities. Managers must be aware which activities consume the largest amount of resources and, consequently, incur the largest share of the costs. Direct raw material and labour costs are not an issue because the cost driver for them is the number of product units. The issue is that indirect/overhead costs, whose share in the total costs is increasing, need to be adequately allocated to cost objects (products and services). The reason for the increasing overheads, among other things, is the production of various products according to specific customer requirements.

Production of various products in small batches is characterised by the need for indirect activities to meet customer needs, which include fast and flexible delivery. Indirect costs – overhead costs that are incurred as a result of these activities – are associated with the types of products rather than the quantity of products produced. Therefore, it is important to control these costs and identify their drivers. ABC and activity-based management (ABM) help us achieve this (De Zoysa & KanthiHerath, 2007, p. 276). Krumwiede (1998), Agrawal, Mehra, and Siegel (1998) and Kaplan and Cooper (1998) also note that the greatest benefit of the ABC method is the allocation of overheads. Given that the overheads are growing substantially and in most companies

outweigh the costs of direct labour many times over, a number of companies began to treat direct labour as a component of overhead costs rather than separating them as a special category of costs.

The main idea behind the ABC method is that the cost of a product equals the sum of the costs of raw materials used in production and the costs of all production process activities (Shields & Young, 1989). The basic concept of the ABC method includes the fact that products do not consume company resources. Company resources are consumed by activities that take place within the company and they are the ones that create the overhead costs.

The ABC method is justified in companies engaged in highly-competitive industries, characterised by automation, and consequently high overhead costs. These companies produce a variety of products, mainly to the specific requirements of customers. As a result, it is necessary to use a large number of cost drivers to allocate overhead costs to objects, as accurate data on the costs are necessary to become profitable and gain a competitive advantage.

The ABC method also improves a company's business performance as it allows visibility of the value-added activities and activities with no added value. Value-added activities are those activities that customers value and are willing to pay for. They cannot be eliminated from a company without compromising the quality of the business process or product. These are, for example, design, manufacturing, and delivery of products to the customer. On the other hand, activities with no added value are those which customers are neither willing to pay for, nor do they appreciate them, such as waiting, remanufacturing of a product or checking of already manufactured products. However, some of these activities are essential to a company's business and cannot be eliminated from the business process in spite of the fact that they will not add value for the customer. The company must constantly strive to eliminate activities without added value and to develop and introduce value-added activities.

Analysis of activities proved to be useful in improving the planning, pricing and management control in companies. Blocher, Chen, and Lin (2002, p. 100) suggest that ABM is aimed at activity management in order to improve the efficiency and effectiveness and at the same time increase value for the customer and profit for the company (Blocher et al., 2002, p. 100). The same authors note that the ABC method provides information managers need for activity management with an aim to improve competitiveness.

Authors who investigated the ABC method emphasise that it ensures profitability and competitive advantage over companies that do not use this method (Cagwin & Bouwman, 2002, El-Dyasty, 2007; Kaplan & Cooper, 1998; Kennedy & Affleck-Graves, 2001). This method is also suitable for large companies (Krumwiede, 1998) and manufacturing companies (Cagwin & Bouwman, 2002; Kaplan & Cooper, 1998). Kaplan and Cooper (1998) note that service companies can gain greater benefits from the application of the ABC method. However, there is an impression that this is only a theoretical assumption.

A large number of previous studies have concluded that ABC and ABM are effective tools for providing accurate cost information in the current environment, marked by an increase in indirect costs. By using the ABC method, the resources are allocated to activities that add value. This reduces costs and increases profits. Moreover, studies have shown that companies which use ABC achieve much better business results than those who adhere to traditional cost management systems (e.g. El-Dyasty, 2007, p. 49). Hardan and Shatnawi (2013) established in their research that there was a positive relationship between applying the ABC and the telecom companies' financial performance. This leads to the second hypothesis of this article:

Hypothesis 2: *Application of activity-based TC improves financial performance (regardless of the activity).*

2.3. Total quality management

Today's consumers demand a high level of quality (Horngren, Datar, & Rajan, 2011). The objective of determining the required quality of a product is bringing it in line with customer requirements. Over-designed products and products whose quality is too high will be deemed too expensive. On the other hand, under-designed products will lose their customers who will buy more expensive products which in their opinion give them better quality for their money (Chase, Aquilano, & Jacobs, 2001, p. 25).

TQM refers to the improvement of activities in the value chain of a company, as well as the manufacturing of products and provision of services that will exceed customer's expectations. Porter (2007, p. 43) claims that the value chain, which divides the company into separate activities it carries out in the field of design, manufacturing, marketing and distribution of its product, is the primary means of recognising the competitive advantage and good financial performance as well as seeking ways to improve them. Juran and Gryna (1993, p. 6) note that the function of the quality is a series of activities aimed at achieving product suitability, regardless of where these activities are carried out. Yakup and Sevil (2012) claim that any serious attempt to deal with quality issues must take into account the costs associated with quality. The implementation of quality costs provides input and feedback to the quality systems that are responsible for quality improvement (Tsai & Hsu, 2010).

TQM improves the quality of products and/or services at a lower cost. By improving product quality, wasting of resources due to failures decreases and consequently the costs are reduced. This makes it possible to offer a high quality product at low/reasonable prices. Harrington (1987) notes that a company can achieve better financial results by reducing the costs of failures rather than by improving sales. This relationship between quality and cost is different compared to traditional economics theory. The chain reaction begins with the improvement of quality, resulting in reduced costs; this then allows companies to offer high quality at low prices. In this way, the company will be rewarded with a larger market share and a better competitive position in the market (Deming, 1982 in: Prajogo, 2007, p. 72).

In view of the above, it is essential to quantify the cost of quality. Spending money on quality improvement programmes without assessing the expected benefits leads to investing with little or no influence on the financial results (Schiffauerova & Thomson, 2006, p. 655). According to Dale and Plunkett (1999), quality costs include costs incurred during the design, implementation, operation and maintenance of the quality management system, costs of resources used in the process of continuous improvement, costs of product and service failures and all other necessary costs and activities without added value necessary to create a quality product or service. Lazibat and Matić (2000) note that the importance of quality costs arises from the bare fact that everything that has been consumed to produce unusable effects could have been used to produce usable effects or to improve the existing effects thereby directly increasing competitiveness. The results of a successful quality programme implementation and control are based on reliable data on the amount, structure and characteristics of all quality cost categories (Peršić & Janković, 2006, p. 487). According to Chopra and Garg (2011), quality costs can help to quantify specific quality levels and ultimately improve productivity.

To determine the costs and revenues from the implementation of TQM, we use management accounting information. A quality management system developed without an active participation of a management accountant may lead to inadequate application and failures in taking advantage of the potential benefits of TQM (Blocher et al., 2002, p. 226). The same authors note that TQM is used for analysing the consequences, in terms of costs, of different product designs as well as for measuring and reporting the costs and revenues from the implementation of the programme. Although TQM was originally not designed as a system, i.e. a cost management method, it was quickly realised that it had a significant influence on business costs and, ultimately, on the financial performance itself (Blocher et al., 2002). Stenzel and Stenzel (2003) concur with this opinion and note that the application of TQM affects most aspects of revenue (customers) and costs (costs of goods sold, cost of the period). Shahin's study (2011) shows that TQM can have a strong and positive influence on financial performance and the status of an organisation. This leads us to the third hypothesis of this article.

Hypothesis 3: *Application of TQM improves financial performance (regardless of the activity).*

2.4. Integration of methods with a view to increase financial performance of the company

Researchers underline that some cost management methods, when applied together, enhance each other's effect (for instance, Cooper & Kaplan, 1991). Studies on the use of ABC show that it brings benefits by providing more accurate information about product costs in a contemporary business environment. The application of this method leads to better control of costs, cost reduction by eliminating activities that do not add value, thereby increasing profits. Ultimately, this increases financial performance. Studies also show that companies that apply the ABC method outperform those that do not. Since the ABC method often provides more and better information than traditional cost management methods, its implementation makes the use of other CCM methods easier. Many companies have realised that the ABC method greatly facilitates the application of the concept of quality costs (Anderson & Sedatole, 1998; Ansari, Bell, & Okano, 2006; Cokins, 2001; Tsai, 1998).

The identification of quality costs presents the main difficulty in the implementation of the quality management programme. Considering that cost accounting based on the traditional methods does not provide a quality basis for recognising these costs, it is necessary to introduce contemporary methods of calculating costs, such as the ABC method. The ABC method facilitates the implementation of TQM in two ways. Firstly, it correlates costs with activities thereby improving the visibility of quality cost, thus making the costs of activities that are a result of poor quality visible to the organisation. In contrast, traditional accounting systems focus on organisational functions such as production, sales and administration. The management is not aware of quality costs unless data relating to the cost of quality are collected. Secondly, organisations that use the ABC method have most of the information needed for the implementation of TQM. A company which successfully applies the ABC method only needs to identify the costs and activities related to quality and quality improvement and then classify these costs as deemed necessary by this company. Companies using the traditional accounting systems need to carry out further analysis in order to identify and measure quality costs and prepare reports on those costs. Smith and Dikolli (1995) argue that TQM, the ABC method

and customer profitability analysis should be used simultaneously to take into account all aspects of customer focus.

Since product costs can be affected the most in the process of planning and product development, application of TC is extremely useful for designing the product in accordance with the of customers, at a price they are willing to pay. In addition, using TC in the early stages of product development helps in achieving the balance between costs and product characteristics on the one hand and the price that customers are willing to pay on the other (Ansari, Bell, Cypher, & Dears, 1997). Stenzel and Stenzel (2003) consider it necessary to combine TC with TQM in order to define the product, its design and market. Decisions about the design focus on the quality level and product suitability specifications. The same authors consider that the ABC method should be used when implementing TC in a company and including the cost of resources in the analysis. The proposed framework for the integration of the above-mentioned cost management methods (TC, the ABC method, TQM) into a company's value chain is shown in Figure 1.

A company's value chain consists of the primary activities and support activities. According to Porter (1985), primary activities include inbound logistics, operations, outbound logistics, marketing and sales and service, whereas support activities include procurement, technology development (Porter rather uses technology development instead of research and development), human resource management and firm infrastructure. As marketing a product starts with research and development, the first step in the mentioned phase involves the application of TC. This method is used with a view to design a product in accordance with the requirements and preferences of customers at a price they are willing to pay. The next method is the ABC method. The benefits of this

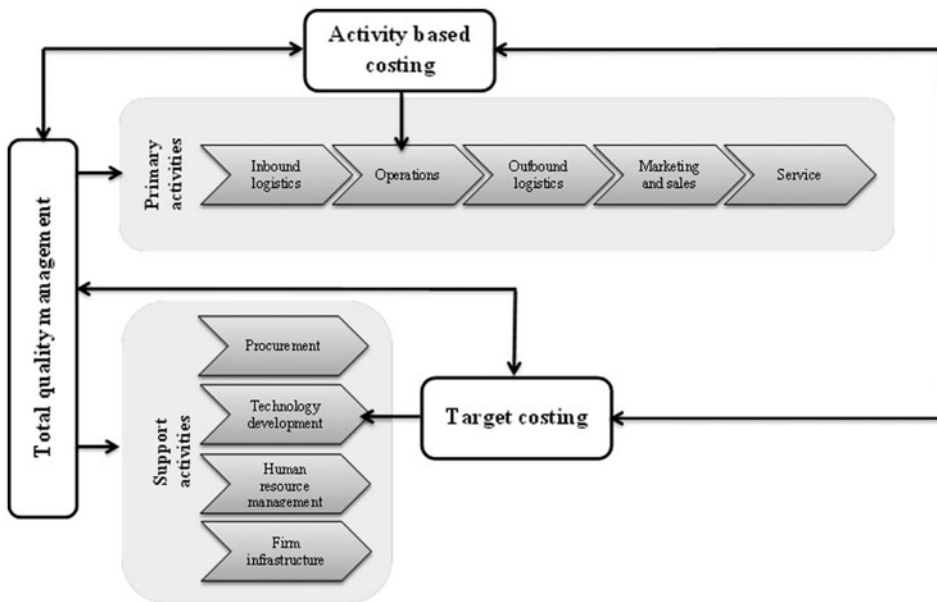


Figure 1. Proposed theoretical framework for the integration of contemporary cost management methods into a company's value chain.

Note: adapted by authors from Michael E. Porter (1985) *Competitive Advantage*. New York. Free Press, pp. 37–43.

Source: Created by the authors.

method are mostly obtained in the production phase (operations). The ABC method is used for determining the overhead costs by cost objects. In this way, one avoids mistakes in determining the selling price of products and/or services. TQM refers to all the activities in a company's value chain. The application of this method improves the quality of processes and products. Costs, quality and the speed at which customer needs are met are essential factors for survival in the market. The combination of these methods can help a company to achieve and maintain competitive advantage in the market, providing systematic implementation. The last hypothesis of this article reads as follows:

Hypothesis 4: *Simultaneous application of several CCM methods improves financial performance more than the use of a single method.*

The four research hypotheses are tested in the sections that follow. A detailed description of the methodology is followed by results and discussion.

3. Research methodology

The study involved Croatian companies, i.e. those companies whose securities are admitted to trading on a regulated market (Zagreb Stock Exchange). Banks, investment funds, insurance companies, cities and companies in receivership were not included in this study. According to the Croatian Financial Services Supervisory Agency, in late 2011, there were 197 active companies in Croatia whose securities were traded on the Zagreb Stock Exchange. The target group of this study consisted of 172 companies. A structured questionnaire was sent by post and by email to 172 companies. It was addressed to the head of accounting/chief financial officer of the company. Forty-eight companies participated in the study (33 questionnaires were sent back by post and further 15 via email); 46 of them were used for this survey. The effective response rate was 27%, which is considered satisfactory.

3.1. Description of the sample

Table 1 gives an overview of the main characteristics of the sample: size, activity, head office, number of employees and a list of duties performed by the person who participated in the study.

Large companies account for the largest share of the sample (54%), whereas small and medium-sized companies account for 46% of the sample. On average, the surveyed companies had 850 employees. Fifty per cent of these companies are engaged in production activities, 46% are in a service business, while only 4% are engaged in wholesale and retail trading.

For the purpose of analysis, in this variable, two modalities were merged into one meaning that service and trading companies have been described as non-manufacturing. The position of the person who filled in the questionnaire was also analysed as the questionnaire was addressed to the Finance/Accounting Department. The required profile of respondents accounted for the largest share of participants (78% in total), while 22% of the questionnaires were filled in by other employee profiles (e.g. head of development department, corporate communications manager, assistant general manager, etc.).

3.2. Questionnaire

The questionnaire was designed to test and compare the application of CCM methods in Croatian companies. It was divided into five parts with a total of 46 questions

Table 1. Description of the sample.

Variable		n	%
Company size	Small and medium-sized	21	46
	Large	25	54
	Total	46	100
Company activity	Manufacturing	23	50
	Service	21	46
	Trading	2	4
	Total	46	100
Head office according to NUTS II classification	Northwest Croatia	18	39
	Pannonian Croatia	9	20
	Adriatic Croatia	19	41
	Total	46	100
Number of employees	Up to 250	17	35
	250 – 500	11	23
	501 or more	18	38
	Total	46	100
Position of the person who filled in the questionnaire	Chief financial officer	6	13
	Accounting personnel	16	35
	Controlling personnel	14	30
	Other	10	22
	Total	46	100

Source: Research findings.

(Appendix 1). In the first part (A1–A6), respondents rated the items on the degree of (non-)implementation cost management methods which were measured on a 3-point Likert scale. The next three parts of the questionnaire checked the degree of application of CCM methods: TC (B1–B4d), the ABC method (C1–C8) and TQM (D1–D8). A 5-point Likert scale was used to measure the degree of implementation of mentioned methods. Items about TC (B1–B4d) were formulated by the authors of this article based on theoretical insights from literature while items about the ABC method (C1–C8) were adapted from Cagwin and Bouwman (2002), Krumwiede (1998) and Shields (1995). The items related to TQM consisted of eight items formulated by the authors in accordance with the theoretical assumptions of this method, while items D1, D2 and D3 were adopted from Cagwin and Bouwman (2002).

The final part of the questionnaire related to the main characteristics of individual companies (E1–E7). Prior to analysing the results, independent and dependent research variables were described, and their methodological justification in testing the hypotheses was considered.

3.3. Independent variables

Independent variables were created depending on the degree of implementation of each of the CCM methods. In accordance with the theoretical assumptions of this article, companies were divided into two groups: those who use a contemporary approach and those who use a traditional approach to cost management. The degree of implementation of each of the contemporary method was the key to determining the group to which an individual company belonged.

The variable used to divide the companies into those that apply CCM methods and those that do not apply CCM methods (also described as companies that use traditional cost management methods) was created by analysing the items in the first part of the

questionnaire (A4–A6). Companies with a contemporary approach to cost management were defined as those that in addition to using traditional methods¹, either partially or fully used at least two CCM methods. Companies with traditional approach are those which use only traditional cost management methods or those that simultaneously apply traditional methods and to some extent one of the contemporary methods. Table 2 is a result of the described criteria used for dividing the companies into these two groups.

The sample consisted of 43.5% of companies using contemporary approach to cost management while 56.5% of companies were classified as companies with traditional approach to cost management.

3.3.1. Reliability of measured constructs of CCM methods

To secure reliable, internally consistent measures, it is necessary to select appropriate items in the formative stages of the research. Cronbach's alpha reliability coefficient, inter-item correlation means and inter-total correlation means were calculated (Table 3).

Table 2. Companies according to their approach to cost management.

		n	%
Cost management methods	(1) Contemporary methods	20	43.5
	(0) Traditional methods	26	56.5
	Total	46	100.0

Source: Research findings.

Table 3. Psychometric properties of constructs used for measuring contemporary cost management methods.

	Contemporary cost management methods		
	Target costing method	ABC Method	TQM
No. of items	7	7	7
Items from Questionnaire	B1, B2, B3, B4a, B4b, B4c, B4d	C1-C7	D1, D2, D3, D5, D6, D7, D8
Cronbach's alpha	0.962	0.927	0.911
Item means	4.118	3.762	4.310
Inter-item correlation means	0.793	0.649	0.586
Inter-total correlation means	0.871	0.772	0.731
Construct Means	28.82	26.33	30.17
statistic Std deviation	6.541	5.602	4.108
KMO	0.811	0.695	0.818
Bartlett's test of sphericity	$\chi^2 = 138.745$ df=21, $p < 0.001$	$\chi^2 = 76.590$ df=21, $p < 0.001$	$\chi^2 = 237.577$ df=21, < 0.001
Number of factors (eigenvalue > 1)	1	1	1
Cumulative variance explained (%)	82.284%	70.412%	65.335%

Source: Research findings.

Cronbach's alpha is used for measuring internal consistency of each individual construct. Cronbach's equation for alpha is as follows:

$$\alpha = \frac{n}{n-1} \left(1 - \frac{\sum s_i^2}{s_x^2} \right)$$

α – Cronbach's alpha coefficient

n – number of items

s_i^2 – variance of the i item

s_x^2 – variance of the observed total test scores

According to Nunnally (1979), a score of 0.7 or higher is considered an acceptable reliability coefficient for Cronbach's alpha. However, coefficients above 0.8 are desirable. Cronbach's alpha reliability coefficient for all three constructs is extremely high (> 0.9) and is considered that associated items measure the constructs extremely well. Moreover, according to Nunnally (1979), values above 0.3 are considered as an acceptable correlation between items. The average correlation between items for all measured constructs is very high (0.793, 0.649 and 0.586), and they are considered as acceptable for each construct. In addition, all items in reliable scales should be connected with the measured construct with correlation values above 0.5. The data in Table 3 confirm another psychometric feature of the constructs, since each construct meets the recommended rule and their average for TC amounts to 0.871, for the ABC method 0.772 and for TQM 0.731.

An exploratory factor analysis was performed to check whether the measured constructs are unidimensional. The use of factor analysis is justified since item correlations matrices generate values above 0.5, and the values of the Bartlett test are statistically significant with acceptable results of KMO test. All manifest variables with eigenvalues higher than 1 grouped into a single component, which explains 82.28% of the variance for the construct TC, 70.41% for the ABC method and 65.34% for TQM.

Previous procedures have shown that measured constructs can be considered reliable and unidimensional. Based on the results, it is possible to use the proposed factors as manifest variables for measuring the application level of each of the CCM methods (the TC method, the ABC Method, TQM). Three composite independent variables were created based on item average of each of the proposed construct.

3.4. *Dependent variables – company's financial performance indicators*

The last question in the questionnaire represents dependent variables of this study. Respondents were asked to enter financial performance indicators for the past three years. In this article we have used the 2011 data² on financial performance indicators from BON-1 form of the surveyed companies: return on assets (ROA), net profit margin, revenue-to-expense ratio and profit per employee. Table 4 shows the descriptive data for these four indicators.

In the text that follows, each of these financial indicators is considered as a dependent variable, which measures the correlation of the contemporary approach to cost management (methods), seeking to confirm or refute individual research hypotheses above. To measure the influence of the contemporary approach to cost management, we have used a regression analysis for which we have created a single (composite) dependent variable. We have examined the internal consistency of the construct financial performance of the company in whose construction we used standardised values.

Table 4. Financial performance indicators of the surveyed companies.

Financial performance indicators	n	Minimum	Maximum	Mean	Standard deviation
ROA	46	.27	1.20	.903	.227
Net profit margin	46	-277.06	13.25	-23.783	56.453
Revenue-to-expense ratio	46	-43.94	5.36	-5.124	11.584
Profit per employee	46	-488128.70	75484.93	-44066.947	106436.083

Source: Research findings.

In an exploratory factor analysis, all four standardised items grouped into a single component, which explains 88.41% of the variance (KMO = 0.817, Bartlett's Test of Sphericity = 210.86, df = 6, $p < 0.001$). The construct can be considered as reliable since Cronbach's alpha is 0.956 with a strong correlation between items and the construct (> 0.827). The measured construct *financial performance of the company* can be used as a unidimensional and reliable construct in further analysis of the research findings.

4. Results and analysis

This section covers research findings. Taking into consideration the above, the research question is whether companies using CCM methods have better financial performance than those not using them. Since this article includes four dependent and three independent variables, correlation analysis was used. In examining the correlation between CCM methods and company's financial performance, we compared the data for each of the observed financial indicators in relation to the cost management approach used by the company (Table 5).

The correlations reported in Table 5 provide enough evidence not to reject the H4 hypothesis since each of the financial performance indicators is significantly positively associated with the variable CCM methods. Therefore it can be established that companies using CCM methods have better financial performance than those that use only traditional ones. Since the main hypothesis (H4) shows that the implementation of contemporary methods contributes to company's financial performance, it is to be expected that the first three hypotheses (H1, H2 and H3) will not be rejected either. However, the Pearson correlation coefficient showed that out of three proposed CCM methods, the correlation with financial performance indicators (ROA: $p < 0.01$, .412; NPM: $p < 0.01$, .395; R/E ratio: $p < 0.01$, .437 and PE: $p < 0.05$, .368) was statistically

Table 5. Correlation between company's financial performance indicators and cost management approach.

	(1)	(2)	(3)	(4)
(1) ROA				
(2) NPM	.917**			
(3) RE ratio	.889**	.850**		
(4) PE	.800**	.719**	.764**	
(5) CCM methods	.431**	.358*	.395**	.344*

Notes. **Correlation is significant at the 0.01 level.

*Correlation is significant at the 0.05 level.

(1) ROA – return on investment; (2) NPM – net profit margin; (3) RE ratio – revenue-to-expense ratio; (4) PE – profit per employee; (5) CCM methods – contemporary cost management methods.

Source: Research findings.

significant only in the case of TQM, while in the case of the other two methods the difference was not statistically significant. These results do not provide sufficient evidence to accept the hypotheses above (H1 and H2), which state that the TC method and the ABC method have a positive correlation with financial performance in the surveyed companies. Since TQM (H3) in this analysis was highlighted as a method that can be linked to a company's financial performance, it is necessary to further examine or measure its correlation depending on the activity of the company. Companies were divided into manufacturing and non-manufacturing. Table 6 shows the correlation between a company's financial performance and different degrees of application of TQM depending on the company's activity.

The results presented in Table 6 indicate that non-manufacturing companies using TQM have significantly better financial results (ROA: $p < 0.01$, .508; NPM: $p < 0.01$, .566; R/E ratio: $p < 0.01$, .545 and PE: $p > 0.05$, .416).

As the correlation analysis provided preliminary support to just one predictor variable (TQM), it was included in the regression model where we compared two regression models; the first looks at the influence of a CCM method (TQM) on financial performance of non-manufacturing companies, while the second looks at financial performance of manufacturing companies. The previously mentioned models were used to examine whether there is a difference between, i.e. whether CCM methods (TQM) affect companies' financial performance in the same way regardless of the companies' activity (Table 7).

Comparing the two models, it can be concluded that the use of TQM affects financial performance, but only of non-manufacturing companies (Model 1: $F = 8.508$, $p < 0.01$, Beta = .537, $p < 0.01$), whereas no statistically significant effect on manufacturing companies was established (Model 2: $F = 1.193$, $p < 0.05$, Beta = .256, $p > 0.05$). Model 1 explained 28.8% of the variance ($r^2 = .288$, adjusted $R^2 = .254$), and it can be concluded that 28.8% of variation in financial performance of the non-manufacturing company is the result of variations in the degree of the use of TQM. In view of the above, hypothesis H3 is not rejected, while hypothesis H4 is only partially rejected.

The results indicate that CCM methods affect companies' financial performance to a degree; however, the use of TQM shows the greatest influence, which is particularly noticeable in companies operating in non-manufacturing fields.

Table 6. Correlation between financial performance indicators and approach to cost management, depending on the company's activity.

		(1)	(2)	(3)	(4)
(1) ROA	Non-manufacturing				
	Manufacturing				
(2) NPM	Non-manufacturing	.945**			
	Manufacturing	.937**			
(3) RE ratio	Non-manufacturing	.821**	.778**		
	Manufacturing	.964**	.912**		
(4) PE	Non-manufacturing	.890**	.893**	.834**	
	Manufacturing	.702**	.692**	.768**	
(5) TQM	Non-manufacturing	.508**	.566**	.545**	.413
	Manufacturing	.215	.237	.247	.252

Note. **Correlation is significant at the 0.01 level.

(1) ROA – return on investment; (2) NPM – net profit margin; (3) RE ratio – revenue-to-expense ratio; (4) PE – profit per employee; (5) TQM – total quality management.

Source: Research findings.

Table 7. Results of regression.

Company's activity		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
Model 1	(Constant)	-3.401	1.178		-2.886	.009
(non-manufacturing companies)	TQM	.802	.275	.537	2.917	.008
R Square						.288
Adjusted R Square						.254
F						8.508 ($p < 0.01$)
Model 2	(Constant)	-1.788	1.766		-1.013	.325
(manufacturing companies)	TQM	.436	.399	.256	1.092	.290
R Square						.066
Adjusted R Square						.011
F						1.193 ($p > 0.05$)

Notes. Predictors: (Constant), TQM.

Dependent variable: Company's financial performance.

Source: Research findings.

5. Discussion and research implications

Researchers who have been investigating the benefits of cost management methods since the 1980s, have reached different, sometimes even conflicting conclusions about the use of various cost management methods and the circumstances of their application. In addition, for many years now researchers have been trying to establish whether there is a relationship between CCM methods and companies' financial performance and competitiveness. Specifically, they have been trying to determine whether companies using one or a combination of several CCM methods, are more successful than those who use traditional methods. The final list of CCM methods in foreign literature has not yet been agreed upon. This article focused on three methods: TC, the ABC method and TQM. The results of the study suggest that CCM methods affect companies' financial performance differently depending on the method used, and company activity.

In analysing the results of the study, it was investigated whether the use of items for measuring the degree of use of each of the observed CCM methods was justified. By analysing the psychometric characteristics, items which can measure the degree of the use of each of the observed CCM methods were proposed. The questionnaire used for the present research can be a starting point for researchers in some future studies on CCM methods. Composite variables were used in testing the hypotheses. The results indicate that the first two hypotheses (H1 and H2) are rejected, which is contrary to the findings of El-Dyasty's study (2007) who suggested that companies using the ABC method achieve much better business results than those who adhere to traditional cost management systems. The reasons may be found in the application of the method in accordance with the fundamental principles of application, bearing in mind that the

benefits of this method (better financial performance) cannot be expected if it is used inadequately. Management support and employee involvement in the implementation of the method, commitment to improving products and processes, and achieving and sustaining customer satisfaction are some of the factors necessary for the successful implementation of and achievement of positive effects from CCM methods.

After not being rejected by the correlation analysis, the third research hypothesis (H3) was not rejected by the regression analysis either. This gives us grounds for concluding that there is significant statistical evidence that TQM is correlated with companies' financial performance. This relationship was examined further by testing the difference in the financial performance of companies depending on the companies' activity. Regression analysis indicates that the influence of TQM on financial performance is statistically significant, but only in the case of non-manufacturing companies. Finally, if we look at all CCM methods and their influence on the financial performance of companies (H4), it is possible to observe a statistically significant correlation. However, the fact that this hypothesis was not rejected should be taken with caution because the present study did not confirm the correlation of TC and the ABC method with the financial performance of companies, and the results show that the most effective method (i.e. the most cost-effective investment for the management) is TQM.

In order to further investigate the influence of CCM methods on companies and their performance, future research should focus on the testing of longitudinal hypotheses about the influence of individual cost management methods on financial performance of companies as well as further testing of the proposed measured constructs and their possible improvement.

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Notes

1. Total absorption costing, variable costing and standard costing.
2. The 2011 data were used because the primary data were collected in the period between September 2011 and February 2012. In accordance with the period in which the data were collected, we used publicly available financial indicators for 2011.

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Appendix 1: Questionnaire about the use of cost management methods in the Republic of Croatia

Dear Sir/Madam, the following questions relate to your company's cost management practices. The data obtained in this study will be categorised by company activity and size and used as such for comparing various categories of companies included in this survey. Your personal data will be temporarily stored in our records and kept in accordance with the Personal Data Protection Act (Official Gazette 103/03, 118/06, 41/08). The data will be deleted upon completion of the study. Thank you for your cooperation!

(A) Application of cost management methods

Cost management method			
Total absorption costing	1	2	3
Variable costing	1	2	3
Standard costing	1	2	3
Target costing (TC)	1	2	3
Activity-based costing (ABC)	1	2	3
Total quality management model (TQM)	1	2	3

If your company uses one or more of the following cost management methods, specify the extent of its/their application. Levels of agreement are as follows: 1 – not applied, 2 – applied partially, 3 – applied fully:

(B) Target costing

The following questions relate to the use of target costing in your company. Choose an answer on a rating scale from 1 to 5 (1 – strongly disagree, 5 – strongly agree). If your company does not apply this method, please go to section C.

1. Your company's cost management focuses both on the production phase, and the phases that precede and follow the production process.	1	2	3	4	5
2. The desired (target) cost is achieved by eliminating activities that do not add value to the company.	1	2	3	4	5
3. The management actively supports the implementation of target costing.	1	2	3	4	5
4. Target costing is applied to:					
a) reduce costs	1	2	3	4	5
b) achieve and sustain customer satisfaction	1	2	3	4	5
c) improve cost control	1	2	3	4	5
d) control quality.	1	2	3	4	5

5. Your company determines the selling price (*circle one of the following answers*):

- (a) by adding the amount of profit margin to the costs of production
- (b) based on market requirements, by benchmarking with the prices of competing products
- (c) Other. Specify. _____

(C) Activity-based costing

If your company applies or is in the process of introducing activity-based costing, please answer the following questions. Choose an answer on a rating scale from 1 to 5 (1 – strongly disagree, 5 – strongly agree). If your company does not apply this method, please go to section D.

1. The management actively supports the ABC method.	1	2	3	4	5
2. The management has provided adequate resources for application of the ABC method.	1	2	3	4	5
3. All employees are involved in the implementation of the ABC method.	1	2	3	4	5
4. ABC is connected with the company's competitive strategy.	1	2	3	4	5
5. Adequate training on the implementation of this method has been provided.	1	2	3	4	5
6. ABC is integrated into the accounting system.	1	2	3	4	5
7. The benefits of ABC have exceeded the costs.	1	2	3	4	5
8. ABC is used for:					
a) determining product costs/costing	1	2	3	4	5
b) cost management	1	2	3	4	5
c) determining the price of the product/pricing	1	2	3	4	5
d) determining customer profitability.	1	2	3	4	5

(D) Total Quality Management

Questions 1–8 relate to the quality and quality management programmes in your company. Choose an answer on a rating scale from 1 to 5 (1 – strongly disagree, 5 – strongly agree). If your company does not apply this method, please go to section E.

1. Your company is dedicated to improving the quality of products and processes.	1	2	3	4	5
2. The management actively supports the quality programme.	1	2	3	4	5
3. Training related to quality programme has been provided to all employees.	1	2	3	4	5
4. You request from your suppliers that they maintain minimum quality standards.	1	2	3	4	5
5. Meeting the needs of consumers is the ultimate goal of the company.	1	2	3	4	5
6. The company benchmarks its business results against the best in the industry.	1	2	3	4	5
7. The company continually improves its processes to achieve the highest possible quality of its products.	1	2	3	4	5
8. Quality management programme is strongly linked with your competitive strategy.	1	2	3	4	5

9. Does your company quantify quality costs?

a) Yes b) No

10. Your company has implemented ISO 9000 certification or is currently introducing it.

a) Yes b) No

If yes, please answer the following question. If no, please go to question 12.

11. The introduction of ISO 9000 certification improved your company's financial performance.	1	2	3	4	5
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12. Evaluate the characteristics of your company's most important product compared against other competitors in the industry on a scale from 1 to 5 where 1 means – the worst in the industry, 3 – average, 5 – the best in the industry.

a) The performance of your most important product is	1	2	3	4	5
b) The reliability of your most important product is	1	2	3	4	5
c) The durability of your most important product is	1	2	3	4	5

(E) **Company's characteristics** – Here you will find some general questions. Your information will be used solely for the purpose of cumulative analysis.

- (1) Please circle the letter in front of your company's main activity
- agriculture, forestry and fishing
 - mining and quarrying
 - manufacturing
 - electricity, gas, steam and air-conditioning supply
 - water supply, sewerage, waste management and remediation activities
 - construction
 - wholesale and retail trade; repair of motor vehicles and motorcycles
 - transportation and storage

- (i) accommodation and food service activities
 - (j) information and communication
 - (k) financial and insurance activities
 - (l) real estate activities
 - (m) professional, scientific and technical activities
 - (n) administrative and support service activities
 - (o) public administration and defence, compulsory social security
 - (p) education
 - (q) health and social care
 - (r) arts, entertainment and recreation
 - (s) other service activities
- (20) Which category does your company fall into?³
- (a) medium-sized
 - (b) companies large companies
- (3) Specify the city/country in which your head office is located?
- (4) Which position do you hold in your company? (a). Chief financial officer (b). Director of accounting (c). Chief accountant (d). Controller (e). other
(please specify the position)
- (5) Which of the following descriptions best describes your company? (a). multinational company (b). Croatian company (c). branch office (d). other
(please specify)
- (6) In which markets does your company mainly do business: (a). domestic (b). foreign
- (7) If your company uses the following financial performance indicators, please fill in the table with the data for the past three years.

Indicator	2009	2010	2011
Expense-to-revenue ratio			
Share of profit from total income %			
Return on assets%			
Profit per employee (in HRK)			

Please give the name of your company.

³According to the Accounting Act (Official Gazette 109/2007), medium-sized companies include those that exceed two of the three criteria: total assets in HRK 32,500,000.00, income in HRK 65,000,000.00, the average number of employees during the financial year: 50; but do not exceed two of the following criteria: total assets in HRK 130,000,000.00, income in HRK 260,000,000.00, the average number of employees during the financial year: 250 Large companies are those that exceed two of the three criteria: total assets in HRK 130,000,000.00, income in HRK 260,000,000.00, the average number of employees during the financial year: 250.