

Time Based Cost Accounting as a Tool for Increasing Regional Competitiveness

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Abstract

Regional companies seeking to gain competitive advantage and increase the region's competitiveness against other must manage time as one of the most important strategic management factor. The main scientific problem is that the information used of cost accounting for management decision making in companies in many cases underestimated the specific data provided by time based management. This article theoretically and practically argues that it is possible to solve the problem of the absence of interaction between time-based management and cost accounting by introducing the system of time-based cost accounting, the key measure of evaluating the activity of which is time. Time-based cost accounting system will allow regional companies to management non-value added time-based costs of activities for increasing regional competitiveness.

Keywords: time based management, cost accounting system, competition and regions.

Introduction

Nowadays is not enough for companies to compete in price, quality or innovation in order to increase regional competitiveness. The scientific literature recognizes that time is one of the most important factors of strategic management. However, it is necessary to admit that the time factor is still rarely used for management-related decision making. Whereas, rapid globalization and fierce competition continue to increasingly emphasize the significance of time management. In order to survive time-based competition, regional companies have to be able respond rapidly to changing consumer needs. Therefore, on a frequent basis the contemporary scientific literature regards time as the strategic management factor that proves to be useful in any management area. In addition, a number of scholars concede that *there is no tendency to relate time-based management to cost accounting and to treat cost accounting as something useful*. Moreover, in some cases it is considered to be a direct obstacle that impedes management control, fast and timely management decision-making.

Therefore, the most significant obstruction for time-based management is invalidity of information provided by cost accounting systems used in compa-

nies, without interfacing costs and time dimensions in the chain of value creation process.

Research subject is time based cost accounting.

Research aim is to integrate time based management and cost accounting for management decision-making to provide new tool for increasing regional company competitiveness.

The **research methods** applied in this article are the systematic and comparative analysis of scientific literature and the generation of logical conclusions. The experimental research has been performed on the basis of the case analysis.

Research results have shown that the integration of time based management and cost accounting by introducing time based cost accounting system can solve many management problems by identifying and eliminating time and cost of non-value added activities and making fast and timely management decisions for increasing regional company competitiveness.

Literature review

Over the last two decades scientific literature of such areas as social sciences, management and administration has directed a great deal of its attention to time as the strategic management factor. In their advantage, however, the analysis of literature sources shows that there is an obvious imbalance between conceptual scientific papers and empirical research, which support this statement. For example, Kumar and Motwani (1995) examined 32 studies and established that only 8 of them included empirical support. The major part of scientific papers (e.g., Stalk, 1988; Hum, Sim, 1996; Gregory, Rowling, 1997; Daugherty, Pittman, 1999; Mouritsen and Bekke, 1999; Sim and Curatola, 1999) dating back to the nineties of the 20th appears to be of theoretical character.

Meanwhile, the 21st century, by contrast, saw a great deal of empirical research (e.g., Ward, Duray, 2000; Christopher, Towill, 2001; Whipp, Adam, Sabelis, 2002; Nahm, Vonderembse, Koufteros, 2003, 2004; Ceglarek, Huang, Zhou, 2004; Askenazy, Thes-

mar, Thoenig, 2006; Agarwal, Shankar, Tiwari, 2007; Alexander, 2007; Christopher, 2007; Avittathur, Swamidass, 2007; Gosling, Naim, Fowler, Fearne, 2007; Arshinder, Deshmukh, 2008; Klimov, Merkurjev, 2008; Gunasekaran, Lai, Cheng, 2008; Tammela, Canen, Helo, 2008; Browning, Heath, 2009; Gosling, Naim, 2009; Romano, 2009; Roemer, Ahmadi, 2010 and others).

A number of scholars also engaged in research of separate time-based management concepts, such as computerized production, the Taguchi method, The Material Requirements Planning System (MRPI, MRPII), economic production, Just in time (JIT), the philosophy of total quality management, the Theory of constraints (TOC) and others, which recognize the significance of time as a restricted resource and its management (e.g., Barker, 2001; Stratton, Mann, 2003; Christensen, Germain, Birou, 2005; Green, Inman, 2005; Li, Rao, Ragu-Nathan, 2005; Nair, 2006; Narasimhan, Swink, Kim, 2006; Ward, Zhou, 2006; Holweg, 2007; Matsui, 2007; Schonberger, 2007; Shah, Ward, 2007; Mia, Winata, 2008).

Over the last two decades the scientific literature has also widely covered management accounting and has been focused on prevailing disadvantages of both traditional cost accounting system (TCA) and modern cost accounting systems (Throughput Accounting, TA; Activity based costing, ABC) (e.g., Mishra, Vaysman 2001; Corbett, 2005; Cohen, Venieris, Kaimenak, 2005; Ning, 2005; Horgren, Datar, Foster, 2006; Krishahnam, 2006; Pierce, 2006; Euske, Alan, 2007; Sartorius, Eitzen, Kamala, 2007; Abusalama, 2008; Grondskis, Sapkauskiene, 2011).

Thus, the connection existing between these two areas gives rise to the problem of time-based cost management, which tends to be widely covered in scientific papers written by management scholars all over the world (e.g., Johson, Kaplan, 1987; Fry, Steele, Saladin, 1998; Burrows, Brown, Thom, King, Frearson, 2001; Baines, Langfield-Smith, 2003; Lea, Min, 2003; Zimmerman, 2003; Kaplan, Anderson, 2004; Barber, Dewhurst, Pritchard, 2006; Hutchin-

son, 2007; Whicker, Bernon, Templar, Mena, 2009; Šapkauskienė, Leitonienė, 2009).

However, there is only a small number of research projects aimed at proposing the cost accounting system that would join together cost and time dimensions in the chain of activities (e.g., Fry et al., 1998; Lea, Min, 2003; Barber et al., 2006; Hutchinson, 2007; Sapkauskiene, Leitoniene, 2007, 2010; Whicker et al., 2009). In addition, the existing research cannot satisfy the prevailing need for brand new management accounting systems enabling to assess benefits provided by time-based management systems, since the focus is on finding answers to the question which one of the existing but already criticized accounting systems proves to be more appropriate in the environment of time-based competition, except for some scholars who provided problem solving methods (e.g., Kaplan, Anderson, 2004, 2007; Cleland, 2004; Kokubu, Nakajima, 2004; Barrett, 2005; Major, Hopper, 2005; Cardinaels, Labro, 2008; Jasch, 2008; Katsuhiko, Marcelo, Yoshikuni, Hiroshi, 2009; Nakajima, 2009), by integrating the time factor into cost accounting one way or another.

Academic research and theoretical models proves that there is a connection between company activities and costs that are evaluated on the basis of time; however, this mechanism of interconnections requires thorough explanation and formalization. In the theoretical and practical realms of the management of company activity costs and finances there is a frequent tendency to concede that the value adding time of company activities shows only a small portion of time concerning the product consumption in production or service supply. These appear to be the weak points of investment management and capacity increase, which are also deemed to be the major shortcomings in the financial evaluation of activities. It becomes possible to eliminate most of these disadvantages by integration of time based management and management accounting, which would encompass the entire activity creation process, and singling out value adding and non-value adding time-based costs of activities.

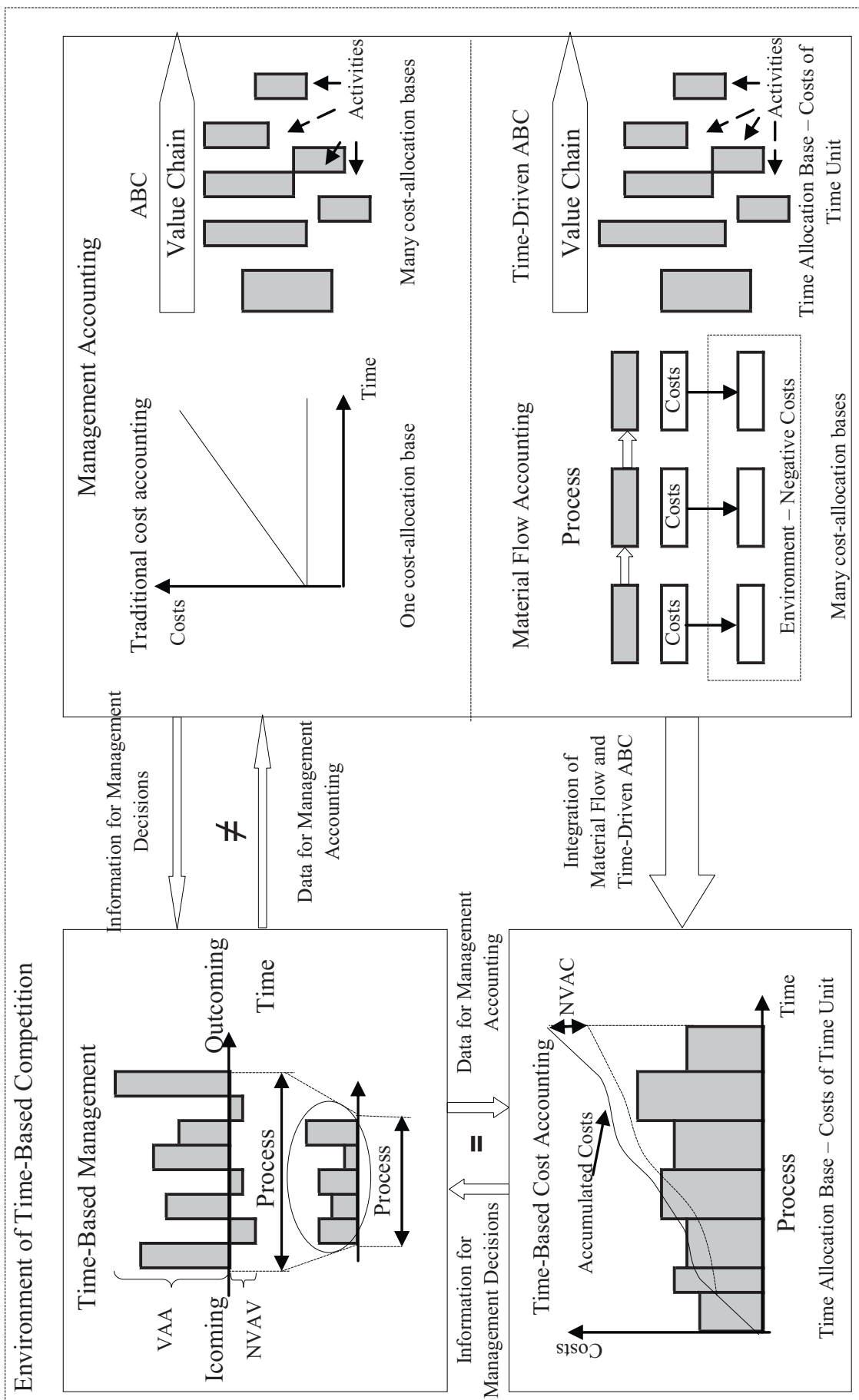


Fig. 1. A Structural Scheme of Integration of Time based Management and Cost Accounting System
Source: developed by the author Sapkauskiene, A. Assumptions for the integration of time based management and cost accounting

Literature review allows singling out assumptions for the integration of time based management and cost accounting system (see fig. 1):

- *The management of time as the strategic factor will allow region companies to achieve competitive advantage;*
- *In order to gain time-based competitive advantage, companies have to reduce the amount of time at all the stages of the value creation process, including research and development, projection, production, marketing and distribution in consideration of consumer needs and expectations;*
- *Region companies will succeed in gaining competitive advantage after the introduction of time-based management systems (computerized production, the Taguchi method, MRPI, MRPII, economic production, JIT, the philosophy of total quality management, TOC and others);*
- *Both traditional and modern cost accounting systems provide decision makers with misleading information, which points to the necessity of time-based cost accounting system in time-based management;*

- *In seeking to deal with the absence of the connection between time-based management and management accounting systems, most of the research concentrated on establishing which one of the existing, though denied, cost accounting systems (TA, ABC) proves to be the most efficient in time-based management;*
- *In the early 21st century the USA proposed the time-driven activity-based cost accounting system (Time-driven ABC) in order to remove most of disadvantages by using 'duration' in cost allocation and evaluating costs of the time unit. However, this system excludes the flow of costs in the chain of value creation.*

Japan began to use environmental material flow cost accounting system at the same time, which, by contrast, deals with disadvantages of the time-driven ABC system by taking into account the activity-based cost flow. Its main shortcoming appears to be the ABC system used for cost allocation, which is met with widespread criticism in studies of both theoreticians and practitioners.

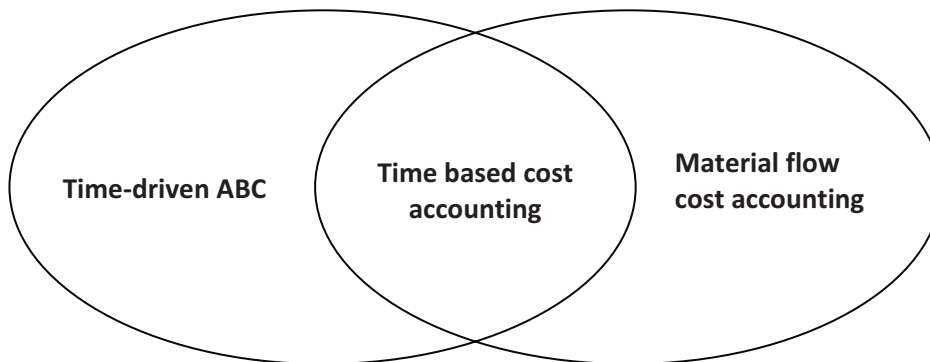


Fig. 2. Assumptions for the emergence in time-based cost accounting

Source: developed by the author Sapkauskiene, A.

By integrating time-driven ABC and material flow cost accounting systems, it becomes possible to create a new *time-based cost accounting system* (see fig. 1 and fig. 2) *that would relate cost and time dimensions and solve the problem of the absence of the connection between management accounting and time-based management.*

Results and interpretation

Supporting a structural scheme of integration of time based management and cost accounting system experimental research has been performed on the

basis of case study involving sixteen service type objects processes. The main data required for the study were collected from the service company financial statements, information reports and internal company management accounting reports. The rest of the data were collected from direct observation and interviewing.

The study showed, that first of all, the application of the time-based cost accounting system let identify total value-added and non-value added time-based cost of separate objects (see fig. 3).

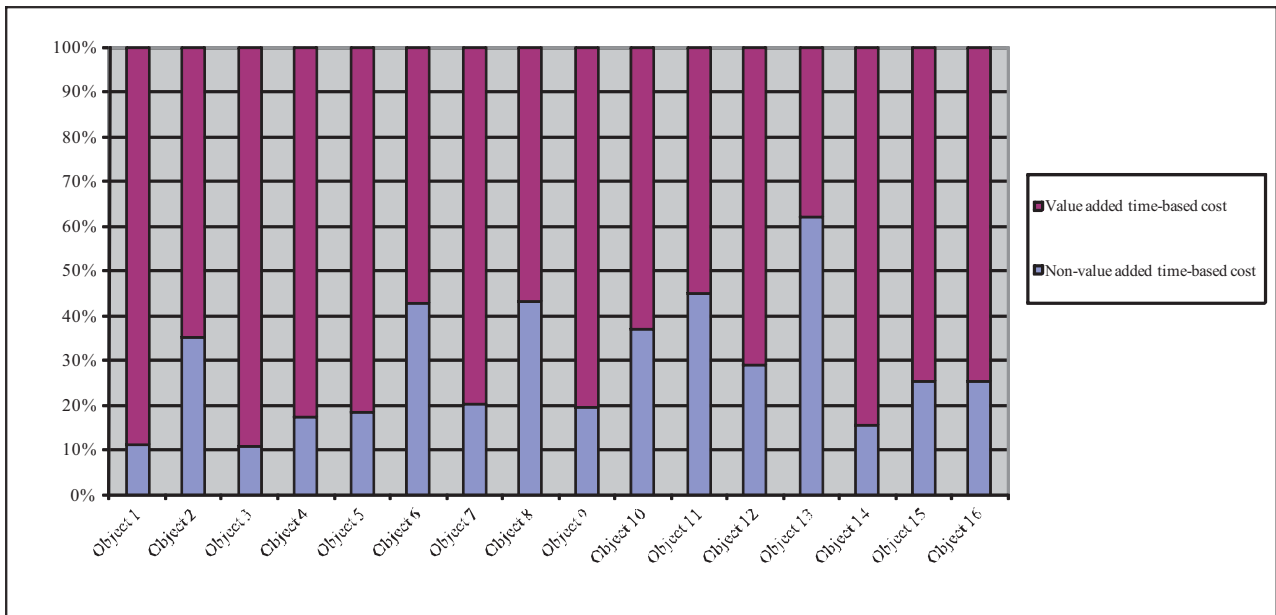


Fig. 3. Value added and non-value added time based costs structure of the objects

Figures 4 and 5 show the ability to identify and analyze non-value added costs by the costs groups and/or by the activities of the separate objects. According to material flow cost accounting system costs are grouped into direct (materials) cost, operational and energy cost. For example, Figure 4 shows that 35

percent and the major part of object 2 costs are non-value added time-based operational cost. The possibility to identify, eliminate or reduce non-value adding time-based energetic costs will allow companies to contribute to environmental protection problems.

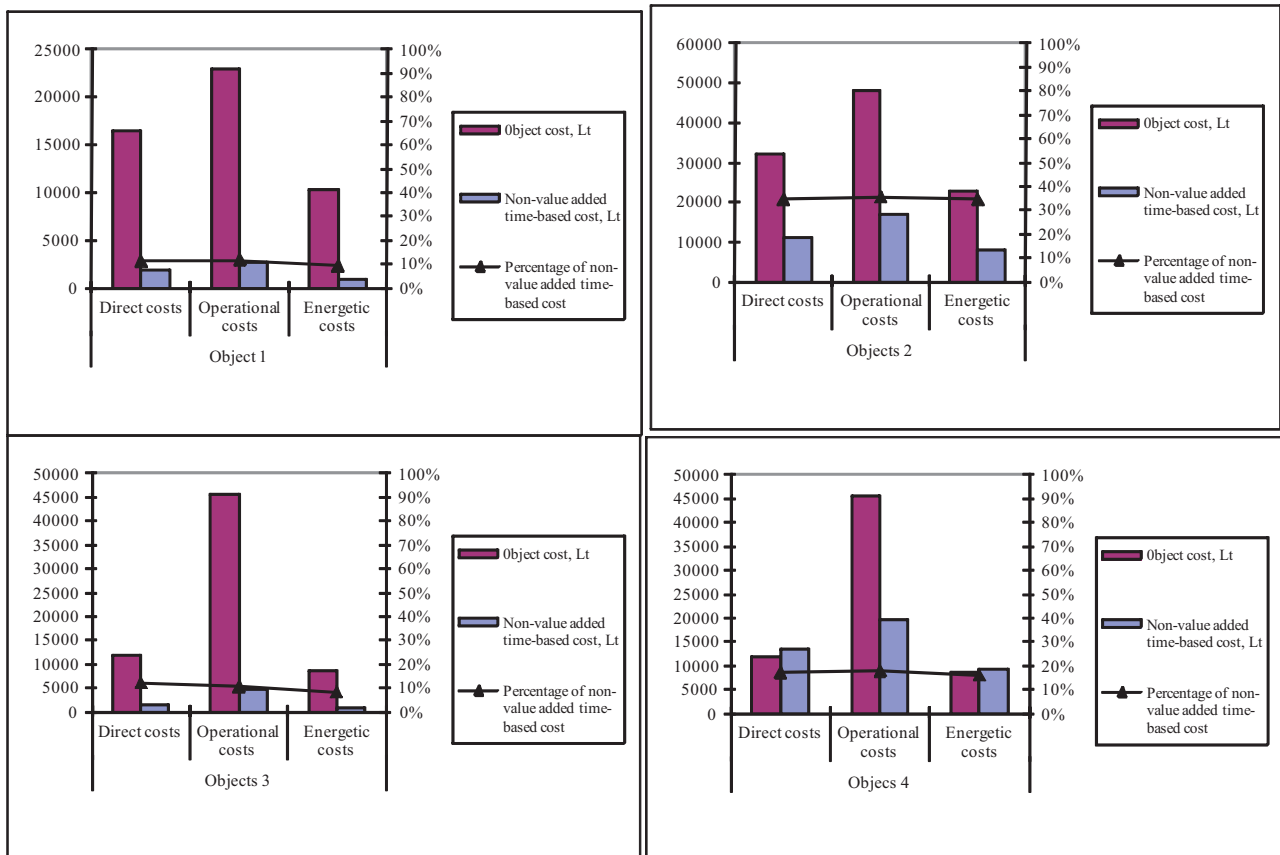


Fig. 4. Costs structure of the objects (object 1 – object 4)

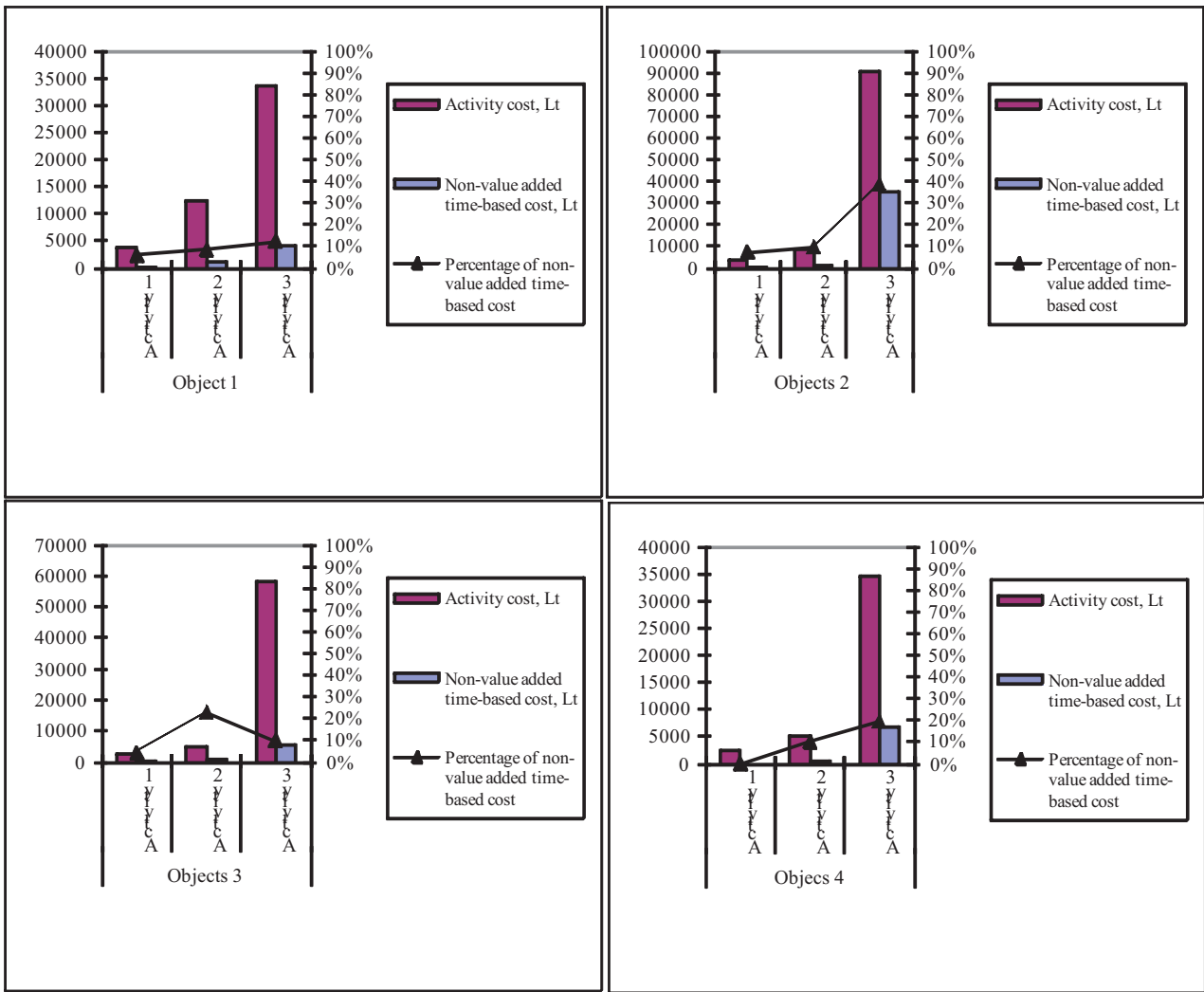


Fig. 5. Costs structure of the objects activities (object 1 – object 4)

Company’s managers must eliminate or reduce non-value added costs eliminating or reducing non-value adding activities time. Furthermore, a company seeking to increase competitiveness must reduce value-added time-based costs better managing and coor-

dinating value added activities time, too. Calculating company’s activity time-based costs the dimensions of time and costs are joined, by reflecting the costs in the value creation process.

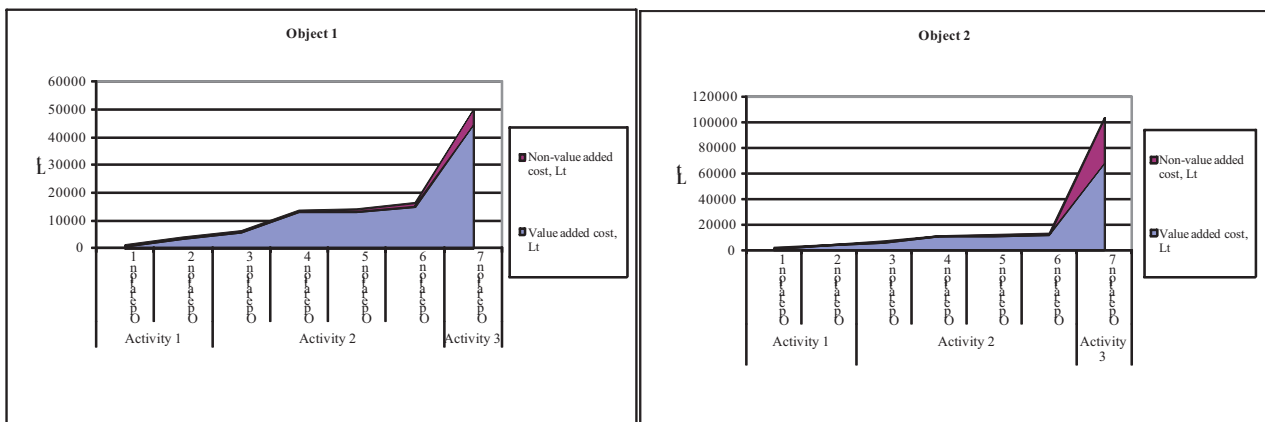


Fig. 6. The accumulated objects costs and time (object 1 & object 2)

Only having the accumulated objects costs in the value creation chain (see Fig. 6) and joining them with the timetable of value creation process makes

it possible to compare time, costs and non-value added time and costs. On the basis of integration of time based management and cost accounting the regio-

nal company has the possibility of planning the time for execution of orders and control the time and costs of execution of order so obtaining a competitive advantage.

Conclusions

A systemic and logical analysis of scientific literature showed that:

- the time dimension gains even greater importance, as speed, which is required by business and consumer expectations, continues to increase on a constant basis rather than to decrease. Therefore regional companies seeking to gain competitive advantage and increase the region's competitiveness against other must manage time as the most important strategic management factor;
- the integration of time-driven activity-based cost accounting system and material flow cost accounting system contributes to the problem-solving of the interaction between time-based management and cost accounting, where both activities and value creation are considered from a time perspective and at the same time, the possibility is offered to solve environmental protection issues that become more and more topical to the regions and all society.
- Companies eliminating or reducing non-value added activities time and cost will achieve competitive advantage. Created time-based cost accounting system can be one more tool for increasing regional competitiveness.

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Laiko kaštų apskaita regiono konkurencingumo didinimui

Santrauka

Šiandieninėje, greitai kintančioje verslo aplinkoje regioninėms įmonėms neužtenka konkuruoti mažinant kaštus, gerinant paslaugų / produktų kokybę ar diegiant inovacijas. Mokslinėje literatūroje pabrėžiama, kad laikas tampa vienu svarbiausių strateginio valdymo veiksmų regioninėms įmonėms, siekiančioms įgyti konkurencinį pranašumą, bei didinantis regiono konkurencingumą. Tėna pripažinti, kad laiko veiksnys vis dar retai naudojamas valdymo sprendimams priimti. Spartūs globalizacijos tempai ir įnirtinga konkurencinė kova vis labiau išryškina laiko valdymo svarbą. Regioninės įmonės, siekdamos išlikti laiku grįstos konkurencijos kovoje, turi gebėti greitai reaguoti į besikeičiančius vartotojų poreikius. Todėl laikas šiulaikinėje mokslo literatūroje dažnai pateikiamas kaip strateginis valdymo veiksnys, naudingas bet kurioje valdymo srityje. Daugelis mokslininkų pripažįsta, kad laiku grįstas valdymas visiškai nesiejamas su kaštų apskaita, rodo ją kaip nenaudingą ir kai kuriais atvejais kaip tiesioginę kliūtį valdymo kontrolei bei greitų valdymo sprendimų priėmimui. Didžiausia kliūtis laiku grįstos konkurencijos valdymui yra įmonėse naudojamų valdymo apskaitos sistemų teikiamos informacijos nepagrįstumas, nesiejant kaštų ir laiko dimensijų vertės kūrimo proceso grandinėje.

Tyrimo objektas – laiku grįsta kaštų apskaitos sistema.

Tyrimo tikslas – laiku grįsto valdymo bei kaštų apskaitos integravimas valdymo sprendimų, didinančių regioninių įmonių konkurencingumą, priėmimui.

Tyrimo metodai: sisteminė ir lyginamoji mokslo literatūros analizė bei loginis išvadų generavimas. Eksperimentiniam tyrimui atlikti buvo taikoma atvejo analizė.

Tyrimo rezultatai parodė, kad integravimas laiku grįsto valdymo ir valdymo apskaitos sukuriant laiko kaštų apskaitos sistemą išsprendžia daugelį regioninių įmonių valdymo problemų priimant greitus valdymo sprendimus, kartu didina jų konkurencingumą.

Atliktas tiriamos mokslinės problemos teorinis pagrindimas laiku grįstos konkurencijos kontekste leidžia išskirti tam tikras laiku grįsto valdymo ir valdymo apskaitos ryšio būtinumo prielaidas:

- laiko kaip strateginio veiksnio valdymas įmonėms padės pasiekti konkurencinį pranašumą;
- įmonės, siekdamos įgyti laiku grįstą konkurencinį pranašumą, turi siekti sutrumpinti laiką visuose vertės kūrimo proceso etapuose, įskaitant tyrimą ir vystymą, projektavimą, gamybą, marketingą, paskirstymą, projektavimą, atsižvelgiant į pirkėjų poreikius ir lūkesčius;
- regioninės įmonės įgis konkurencinį pranašumą, įdiegusios laiku grįstas valdymo sistemas (kompiuterizuotą gamybą, Taguchi metodą, MRPI,

MRPII, taupią gamybą, JIT, visuotinos kokybės vadybos filosofiją, TOC ir kt.);

- *tiek tradicinės, tiek modernios valdymo apskaitos sistemos teikia klaidinančią informaciją sprendimų priėmėjams, o tai išryškina laiku grįstos kaštų apskaitos sistemos poreikį laiku grįstame valdyme;*
- daugelyje atliktų tyrimų, siekiant išspręsti laiku grįsto valdymo bei valdymo apskaitos sistemų ryšio nebuvimą, nustatyta, *kuri iš egzistuojančių, nors ir paneigtų, valdymo apskaitos sistemų labiausia tinkama laiku grįstame valdyme;*
- XXI a. pradžioje JAV pasiūlyta laiko veiklų kaštų apskaitos sistema stengiamasi pašalinti daugelį trūkumų, paskirstant kaštus naudojant „trukmės“ paskirstymo bazes bei įvertinant laiko vieneto kaštus, tačiau ši sistema nevertina kaštų srauto vertės kūrimo proceso grandinėje. Priešingai, Japonijoje XXI a. pradžioje pradėta naudoti aplinkosauginė medžiagų srauto kaštų apskaitos sistema kaip tik sprendžia laiko ABC sistemos trūkumus, vertindama veiklų kaštų srautą. Tačiau pagrindinis jos trūkumas – ji kaštams paskirstyti naudoja ABC sistemą, kuri plačiai kritikuojama tiek mokslininkų, tiek praktikų darbuose;
- integruojant šias dvi naujas, mažai išplėtotas kaštų apskaitos sistemas, kurios vertina laiko veik-

ni (laiko veiklų kaštų apskaita, siūlanti kaštus skirstyti pasirenkant trukmės paskirstymo bazes bei aplinkosauginė medžiagų srauto apskaita), galima sudaryti naują laiku grįstą kaštų apskaitos sistemą, siejančią kaštų ir laiko dimensijas bei sprendžiančią valdymo apskaitos ir laiku grįsto valdymo ryšio nebuvimo problemą.

Eksperimentinio tyrimo metu buvo nustatyta, kad:

- sudaryta laiko kaštų apskaitos sistema leidžia identifikuoti ir analizuoti vertę suteikiančius bei vertės nesuteikiančius objektų / paslaugų laiko kaštus, siekiant eliminuoti ar sutrumpinti vertės nesuteikiantį veiklų laiką ir eliminuoti ar sumažinti vertės nesuteikiančius laiko kaštus;
- skaičiuojant įmonės veiklų laiko kaštus, siejamos laiko ir kaštų dimensijos atspindint kaštus vertės kūrimo procese;
- tik turint akumuliuotus paslaugų kaštus, vertės kūrimo proceso grandinėje ir jungiant juos su vertės kūrimo proceso laiko grafiku, atsiranda galimybė palyginti laiką, kaštus bei vertės nesuteikiantį laiką ir kaštus;
- integravus laiku grįstą valdymą ir valdymo apskaitą, regioninė įmonė turi galimybę planuoti bei realiame laike kontroliuoti užsakymų vykdymo laiką ir kaštus įgyjant konkurencinį pranašumą.

Pagrindiniai žodžiai: laiku grįstas valdymas, kaštų apskaitos sistema, konkurencija ir regionai.