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COST OF ACTIVITIES IN PUBLIC UTILITY FLEETS

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With each day more present tendencies in business systems to focus on core processes, the position of the transport activity and the vehicle fleet within is imperatively examined: is it an activity creating an added value to the core system or a mere unavoidable cost-maker. A decisive role is attributed to the manner of defining the vehicle utilisation and the way of realisation of fleet related activities. Therefore, a link between activity based costing and the transport department (subsystem) has been presented in this paper. This link is especially important in public utility fleets. The legislation adopted in this respect announces changes in the corporate environment and conditions of public utility companies. As large fleets represent an integral part of the public utility systems, new conditions will cause a need for fleet cost allocation improvement, and therefore activity based costing. Will this engender the need for the creation of city fleets?

Keywords: fleet management, cost efficiency, fleet activities, activity based costing

INTRODUCTION

Road transport fleets except in their core activity - public transport, are present in majority of other activities as well. In different forms of ownership, they are owned by companies, state authorities and institutions, complex public systems and other organisations. Total number of vehicles in such fleets is largely greater than in public transport fleets. Besides state authority and commercial fleets an important place is given to complex public systems' fleets, i.e. large public companies [9]. They denote public utilities, activities of electricity, thermal power and gas production and distribution. In larger and more developed countries those fleets are composed of several thousands of vehicles while in our country they consist of few dozens to several hundreds, and very few of more than thousand vehicles. Those systems' fleets are extremely heterogeneous by structure - composed mainly from passenger cars, light and heavy goods vehicles, as well as special vehicles, of different makes and different construction-operational characteristics. The worth of vehicles in fleets of certain public companies is very important.

Fleet Department has the task to assure the transport needs of an organisation on certain territory. In complex public systems the task of the transport department is to effectively support the core processes, which means to assure the transport needs consistent with requested volumes and quality, cost efficient usage of vehicles, vehicle availability, vehicle maintenance as well as to minimize their negative environmental impact. The fleet-transport department organisation depends on the organisation of the parent entity, which incorporates it, and on the fleet size.In this paper the link between Activity Based Costing and the transport department has been demonstrated. That link is especially important in Public Utility Fleets. The legislation adopted in this respect announces changes in the corporate environment and conditions of public utility companies. As large fleets represent an integral part of the public utility systems, new conditions will cause a need for fleet cost allocation improvement, and therefore activity based costing.

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REASONS TO USE ACTIVITY BASED COSTING

In practice there are three reason to use the system of cost accounting:

- the obligation to deliver the financial reports,
- management needs information for the cost assessment of activities', services' and users',
- management requires information on process efficiency.

Although those requests have always existed, only recently it has been observed a significant growth of interest for the implementation of Activity based costing [3,4]. Direct costs are rather straightforward to understand and compensate. Overhead and/or indirect costs are significantly more difficult to define and allocate. Those costs show a growing trend in current business conditions. Therefore it is indispensable to implement a more complex cost accounting system.

Activity based costing system allows to determine more precisely the state of a business system by better cost monitoring and allocation. As such, it could be implemented as an additional tool for strategic decision-making as well as a business process state indicator, permitting more efficient resource allocation and, therefore, cost reduction.Essentially, a suitably defined Activity based costing system represents a financial plan of the entity defining activity costs upon products, services and users.

The need for such systems appears in organisation systems of complex structures. In an organisation system owning a homogeneous fleet where vehicles approximately travel the same annual mileage, where the users' attitude toward vehicle usage and technical condition is nearly at the same level, and where all vehicles have similar costs this method is pointless. The overhead of each service and for each user would, in such case, be identical and cost allocation would be straightforward.

Since in reality fleets are mostly heterogeneous, as well as vehicle miles travelled, their operation time varies, and users differently take care of the vehicle condition - it will certainly mean that some vehicles and specific vehicle groups will have different costs.

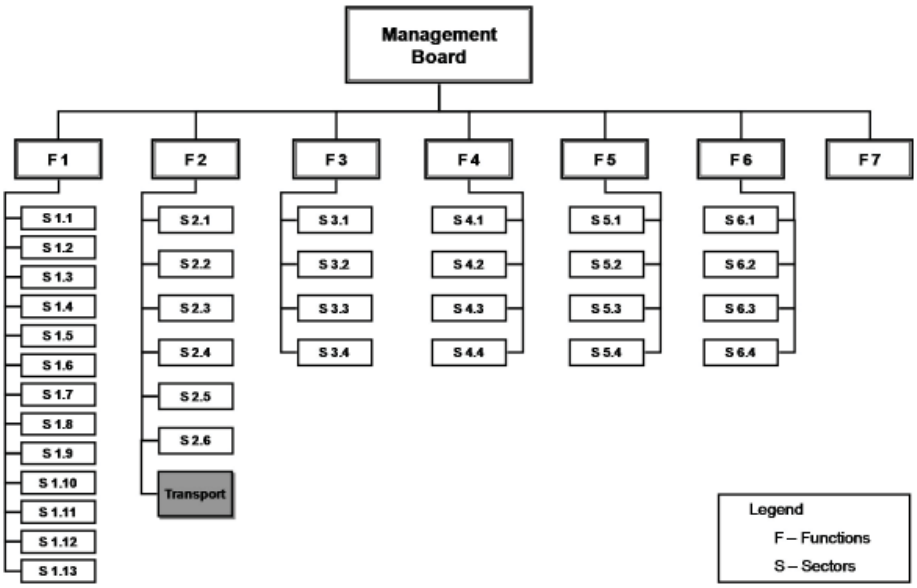

Figure1 :Example of one Public Utility Company organisation

In such cases, the need for activity based costing in terms of allocation of actual costs that should be charged to different users and for different services offered by the transport organisational unit (transport department) is obvious. The organisation of a Public utility company and the position of the Transport department within this organisation chart are shown in Figure 1.

In accounting, the costs are displayed by categories of costs, such as Salaries, costs of Assets, Utility costs and so on, and not upon activities or functions, which certainly reveal the practicality of such cost breakdown method. Cost categories could be allocated to specific activities (Table 1), which represents a substantial difference in cost breakdown method.

Table 1: Difference in cost breakdown methods

Accounting cost breakown		Activity based costing cost breakdown	
Salaries	610.000€	Fleet Management	410.000€
Costs of Assets	230.000€	Fuel Management	25.000€
Utility costs	160.000€	Fleet Maintenance Management	475.000€
		Driver Training	90.000€
Total	***1.000.000€***	***Total***	***1.000.000€***

ACTIVITY BASED COSTING IN FLEET MANAGEMENT

The advantages of Activity based costing implementation could be really emphasised especially when the entity is engaged in giving complex and varied services, such as in most of Transport department activities, so as to define four phases [1,8] of this system implementation:

- identification of activities,
- determination of each activity's cost,
- determination of service users and types of services offered by Transport department,
- selection of activity cost drivers that associate activity costs to services and users.

Identification of activities

Activity based costing is focused on the question why are entities spending the funds. They spend their funds in order to accomplish key activities [2]. The first step in this system development is determination of all those activities that must be accomplished and with what resources. Definition of activities, being the first step in the development of the system, equally representing the system foundation, should be realised with particular caution. From the point of Transport department, as an illustration of the problem, following activities could be potentially selected (Table 2):

- fleet management,
- fuel management,
- fleet maintenance management,
- driver training, etc.

Depending on the fleet operation complexity, the activities defined in this way may not be sufficiently accurate, so they could be additionally subdivided.

In this phase, two problems are noticed. The first being too general definition of activities, in opposite to the second - too detailed definition, which indicates the complexity of this step.

Table 2: Fleet Department Activities

Fleet Management	Fuel Management	Fleet Maintenance Management	Driver Training programme realisation
Vehicle operation planning and monitoring	Fuel supplying	Maintenance interventions planning	Driver operation monitoring and control
Vehicle procurement	Fuelling station maintenance	Preventive maintenance programme monitoring and control	Driver training realisation
Planning of transport demand accomplishment	Bills payment	Billing for repair	Driver stimulation monitoring and control etc.
Used vehicles' write-offs and sales etc.	Dealing with fuel cards etc.	monitoring and control of warranty period etc.	

Determination of activity's cost

This phase involves determination of spending of funds for salaries, assets, utilities and others, as well as linking these costs to the activities identified in the previous phase by way of cost drivers. This is a complicated process and it must be done throughout the entire organisation system, and may be simplified by:

- interviewing employees in order to determine the share of employees' working time dedi-

cated to specific activity or share of resources spent on a particular purpose,

- using existing information, if possible (e.g. if a sophisticated employees working time recording system is in place, particular activities that the employees have been engaged on could be established),
- assessing, if no other data is available, provided that the assessment should be adjusted if the exact data become available further on. For example, existing data on consumed fuel could be used for assessing indirect costs that burden each user.

Cost determination process can be very complex, therefore in complex organisation structures this process automation is indispensable.

Determination of service users and types of services

In this phase, the reason why organisation systems are linked to activities is determined. In terms of this section's issues, first the types of services offered by the Transport department and their users are defined. Subsequently, the share of particular service types and users is assessed in total amount of performed activities.
Transport department may provide services to internal or external users. Internal users may be individual employees or organisational units of the parent entity, meanwhile external users may be all other legal or natural persons. Services provided to internal users are fleet operation management, fuel supply, vehicle maintenance, driver training, carriage, etc. External users may require carriage services and certain services specific to specialised vehicle superstructure (waste materials removal, cargo lifting and so on).

Selection of activity cost drivers

The final phase combines all previous, and within the selection of activity cost drivers is performed, which will link activity costs to services and to users that generate those costs. For example, "fleet maintenance management" activity cost driver may be employees' working hours or utilisation time of specialised equipment used for maintenance interventions on certain vehicles and for particular users. Recorded time may be associated with the activity "fleet maintenance management". By using this cost driver, the activity "fleet maintenance management" is linked to particular services or users through employees' or equipment's working hour price. Equally, "fuel management" activity cost causer/driver may be number of invoices for refuelling on external fuelling station or number of fuel consumption report.

However, a special care should be given to the implementation of this phase because along with increasing the accuracy increase also the costs of calculations. Determination of the optimum ratio of accuracy costs and calculation costs is one of the most important elements for this system implementation.

The Activity based costing system employs a process that allowing resource cost allocation to activities and their linking by means of activity drivers to the cost objects.
Information obtained from this system may be used for performance measurement over activities and business process. Performance data may be used for better decision-making related to the process improvement [5]. Entire information may be applied to the cost planning process (budgeting). Regarding fleets, complexity and variety of activities is resulting from different vehicle operation practices, in other words different services for internal and external users. Future research trends in this field could consist in improving the method for services' cost determination, related to determining activities' unit costs for supplied services.

ACTIVITY BASED INDIRECT COST ALLOCATION METHOD

Organisational units for transport in our public companies can be considered as small entities with a limited number of employees. Therefore, the proposed method represents a modified method suitable for small production companies with three products in the production programme [10]. Since Transport department provides services, the modification was absolutely necessary. The proposed method for indirect cost allocation onto vehicles, services and fleet users consists of six steps [7]:

1st step - Identifying Main Activities
In this step, essential activities of the Transport department are researched and determined as well as cost objects (vehicle groups, users, types of services).

2nd step - Determining Costs Categories
This step consist of determining categories, i.e. types of costs that should be allocated to vehicle groups, users and types of services.

3rd step - Determining Dependence of Costs and Activities

In this step the activities causing particular cost categories are to be identified. If dependence is determined, it should be indicated within the matrix of costs' and activities' dependence. Matrix columns represent cost categories, while activities determined in the 2nd step are shown in rows. If the activity i causes costs from category j, it should be referred in the cell i, j.

4th step - Identifying Expenditures on Resources

In case of challenging data collection (or if they are impossible to collect), the share of resources spent on certain activity may be determined by expert assessment or by survey (interview). In the matrix of costs' and activities' dependence are input the percentages referring to the degree of resources spent by each activity.

5th step - Determining Activities Costs

Once determined the percentage (share) of activities in resources' "expenditures", the following step is to calculate costs of activities, which can be expressed as follows:

where:

TA (i) – total costs of activity i

$$TA(i) = \sum_{j=1}^{M} Cost\ category\ (j) \cdot ZAT(i,j)$$

M – total number of cost categories

Cost category (j) – amount of costs of category j

ZAT (i,j) – value from the matrix of costs' and activities' dependence.

6th step - Cost Assignment to Cost Objects

In this step are determined the activity cost drivers, followed by cost assignment to activities by means of those drivers, in other words using fees for activities' "expenditures".

The described method is shown on Figure 2, and may be implemented by means of standard software applications for operations with tables.

The proposed method, incorporating direct costs, will provide the actual vehicle unit costs (€/km) that designate the vehicle utilisation rate. According to the determined cost structure is obtained a foundation for:

- management of fleet cost efficiency, involving also tax management and environmental protection [6],
- more efficient vehicle utilisation by users,
- decision-making regarding activities that should be performed by the Transport department.

This method may be used as an analytical tool for selection of fleet activities that should be subcontracted and those that should be kept.

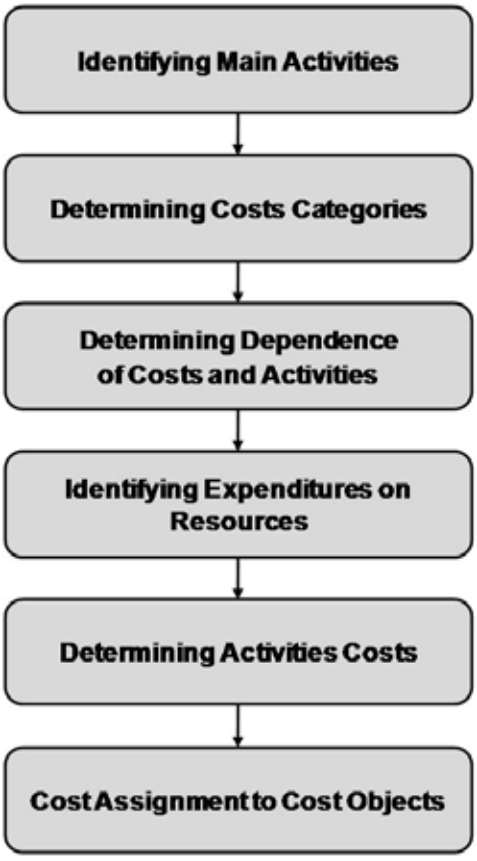

Figure 2: Procedure for transport indirect allocation

CITY FLEET

Determined activities of public utility companies' fleets indicate a need to analyse the possibility for integrating those activities on the territory of cities and municipalities. Such activities initiate the creation of an organisational unit named City fleet, integrating fleets of all public utility companies and authorities on the territory of the city or of the municipality. In the Republic of Serbia and surrounding countries, those fleets would consist from several dozens to several hundreds of vehicles, while in the largest cities even several thousands of vehicles. It is obvious that formation of such a separate organisational unit would increase fleet cost efficiency, which will positively reflect the budget of municipalities and cities. Activity based costing is a convenient tool for decision-making upon City fleet creation.

City fleet, organisational unit incorporating fleets'

activities of all companies and authorities financed from the local government budget, provides a good basis for improved vehicle utilisation in cities and municipalities.

CONCLUSIONS

Costs of activities provide powerful insight on fleet resources utilisation effectiveness and on the extent of contribution of important activities within costs of services. Such information is a key for decision-making on potential restructuring of the Transport department (organisational unit) or outsourcing certain activities from Transport's domain.

Since existing cost accounting systems do not provide adequate basis for cost management, it is indispensable to introduce a new costing system involving certain financial investments and time-consuming effort. Activity based costing require organisation changes, wide acceptance by employees, investments in software and computer equipment, ata collection equipment and so on. Despite the fact that activity based costing was "successfully" implemented in many large companies in developed countries, there are no guarantees that the investments will be returned soon.

Using the proposed method for cost assessment, the risk of transition from the traditional cost accounting system to the new activity based costing may be significantly reduced. Since it does not require substantial investments in sophisticated data collection systems and serious organisational changes, the proposed method can be considered suitable for implementation in large fleets of our public companies, as an intermediate step for the gradual implementation of the activity based costing system, whereas the assessed data will be replaced by actual data.

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