

THE ROLE OF TECHNICAL CONSUMPTION CALCULATION MODELS ON ACCOUNTING INFORMATION SYSTEMS OF PUBLIC UTILITIES SERVICES OPERATORS

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Abstract:

After studying how the operators' management works, an influence of the specific activities of public utilities on their financial accounting system can be noticed. The asymmetry of these systems is also present, resulting from organization and specific services, which implies a close link between the financial accounting system and the specialized technical department. The research methodology consists in observing specific activities of public utility operators and their influence on information system and analysis views presented in the context of published work in some journals. It analyses the impact of technical computing models used by public utility community services on the financial statements and therefore the information provided by accounting information system stakeholders.

Key words: *information system, financial-accounting system, circuit information, public service operators.*

JEL classification: H 83, M11, M41.

1. INTRODUCTION

The management of public service utilities is carried out by companies, independent administrations or specialized departments within local councils. Because of this, the organization of financial accounting systems of operators has elements that distinguish them, although the purpose of activities is the same, namely public utility services to the standards SR EN ISO 9001:2001, SR EN ISO 14001:2005 SR OHSAS 180001:2008, meaning quality, environment, health, and these standards being achieved through an integrated management system.

Because of these organization forms of public utility service operators, certain asymmetries of the financial-accounting systems arise. These are presented because of public accounting and financial accounting particularities, but also due to the specific managed service, whether we refer to sanitation, water-sewerage, public lighting, local transport or heating. Also, an operator who manages several public utilities has a more complex integrated financial-accounting system, particularly at organization level and informational support to the serving system. Technical calculation models have a significant impact on determining operational revenues and thus upon financial statements. Financial accounting system operators must be adapted to specific operational activities of public utilities.

The public institutions provide public utility services through the specialized departments directly subordinated to local councils or directly to the Mayor. Thus, if they do not have legal personality and financial autonomy, records management is held following the public accounting of the financial-accounting department of the public institution concerned, using specific chart of accounts of public institutions.

Although this chart of account is common to all public institutions presented by general government components, between the accounts that reflect the public institution financing system, funded from the state budget and the local budget on the other hand, there are important differences, particularly in terms of highlighting the

establishment of public resources through which they are financed, as well as the conditions that must be met regarding the limit to which the often used house payments can be made, in the case of public utility services.

There are also essential differences regarding the clearance of expenditure operated within public institutions financed from the budget funds and those financed from extra-budgetary resources. If in the first case, the expense accounts are closed by financing accounts, in the case of institutions financed from extra-budgetary resources (self-financed) – this being also the situation of public utilities, their clearance is made through their results, which closes the income accounts, the system closer to the financial accounting (Turnerand, L. & Weickgenannt, A. (2009), p.648).

2. THE INFLUENCE OF SPECIFIC ACTIVITIES OF PUBLIC UTILITIES ON THEIR FINANCIAL ACCOUNTING SYSTEM

A key difference accounting for public institutions that manage public services to financial accounting businesses that meet the quality of public service operators is the record value of fixed assets and inventory items, which, in the case of public institutions, is recorded directly as expenses to purchase them. In the case of public institutions, the terms of wear and depreciation of fixed assets or inventory items are not used, as it is in economic accounting.

The management of utilities in the specialized departments of public institutions is highlighted through their financial-accounting system (Jitaru, C.I. (2006)). The public institution is required double entry book-keeping with accounts provided in the general accounting plan, approved by the Minister of Public Finance, and it is harmonized with international accounting standards and the financial regulation applicable to the general budget of the Community in Europe.

Through these accounts, the public institution must register financial and economic operations when generating the claim rights or obligations (accrual principle), as required. By applying the principle of accrual accounting, the public accounting system in Romania has aligned with European accounting systems, and in the future, with the international accounting standards for public sector IPSASs7. Financial and accounting information systems operators must ghideza by these standards and also to process the information provided technical information system operators.

It should be noted that the International Accounting Standards for Public Sector have as a starting point the International Financial Reporting Standards. Thus, there is an approach of public accounting to the private one (Beke, J. (2010) pp. 36-43)). In addition, in Europe, the financial reporting system in every country is considered an essential condition for an economic development (Beke, J., (2011), p.125-132). Therefore, the following measures for the management of public utilities and organization of the financial- accounting system must be taken:

- separation of accounting officer's powers of duties from the accountant's or the financial-accounting worker's;
- the public clerk becomes public manager;
- adoption of International Accounting Standards for Public Sector;
- strengthening financial discipline in public institutions, and therefore the public services managed directly;
- creating a support for analysis, decision and control to various hierarchical levels;
- commitment of expenditure shall be made only within approved budget appropriations;
- daily monitoring of the budget available funds and accounting to date.

A common characteristic of companies and public institutions is the possibility of under the law of outsourcing the accounting. Thus, the public institutions where the accounting is not organized in distinct compartments or don't have individual contract employees, by the law, may enter into service contracts for management accounting and for quarterly and yearly financial statements, with accounting expertise companies or individuals authorized by law.

The conclusion of contracts is subject to regulations on public procurement of goods and services. Service payment is made from public funds for this purpose. However, this accounting management is not used for water supply services and sewerage, heating or local public transport for cities or towns, where they need a financial accounting system and related qualified personnel to meet the effective management of these services.

The complexity of public entities, the nature of services provided, the limit of public resources together with the increasing and diversifying demands for quality service are the prerequisites of definition and performance concept measurement in public sector (Țurlea, E. & Ștefănescu, A. (2009)). In the current context, characterised by slowing economic growth while increasing income disparity, as effects of economic recession deeply felt worldwide and national, the information on public sector entities presents a growing interest. The fulfilment of the obligation from the state (and its entities) as a guarantor of quality public service in the situation of limited financial resources requires alternative financing and partnerships with private sector entities, both internally and externally.

The need for public entities to provide relevant, reliable and comparable information concerning their performance becomes a reality. Thus, the International Accounting Standards for Public Sector represent the basis of performance reporting and statutory audit reference standards. In this way, the good public governance and control are enhanced, but also the trust between public entities, providers of resources and different users (Țurlea, E. & Ștefănescu, A. (2009)).

3. THE ROLE OF TECHNICAL CONSUMPTION CALCULATION MODELS ON ACCOUNTING INFORMATION SYSTEM

Local governments are meant to ensure companies and public utilities in administrative-territorial area. For their efficient management, choosing the best forms of management of public utility services is subject for discussion. As any other form of management – direct or authorized, there are, of course, some advantages and disadvantages. Their analysis is based on financial-accounting and technical information related to the infrastructure and provision of necessary equipment, information which are often used in management decisions by public service operators. One of the advantages of public service management by the local council through a specialized department is a better financing and investment activity, especially health services and public lighting.

But most of the times their management is ineffective for the water supply services, sewerage or heating systems, where complex management systems, specialized personnel and a financial-accounting system are necessary to meet the requirements of an integrated management system quality-environment-health, as well as a management adapted to the market economic requirements. In these situations, respectively in the case of these public utility services, a management through autonomous administration is preferred, particularly by companies with major state capital.

The influence of politics in these autonomous administrations or companies remains, so is the subsidizing certain fees or contributions to capital to ensure financial resources, respectively for co-financing to attract European funds.

The major difference represents the necessity to implement a more efficient financing-accounting information system, based on general accounting, a system that interacts with the other systems and compartments of the operator. The result of this situation is the fulfilment of the requirements for the quality of the services provided, of regulatory and monitoring requirements, a management based on economic performance and, not the least, a specialized management able to make medium and long-term decisions, well economic based, which are according to the beneficiaries' future need. These decisions, based on financial-accounting information, refer to priority investments in the future, investments that can be financed and that will lead to an increased efficiency of the provided services.

But in the case of operators organized as companies, there is the disadvantage of direct receipt of the counter services. In addition to technical support costs and related pay desk personnel or other forms of collection and billing, the problem of no-collection arises. This is specific to our country and is most often found when providing heat and hot water, where most operators have large debts to the state budget and suppliers. This is due to poor management of some heating stations, non-payment of bills from population or companies, despite the state subsidy gigacalories. If we refer to the heating, water distribution and sewerage services, we deal with the problem of billing the amount of water supplied and heat produced. The financial and accounting systems of operators in these areas must be adapted in terms of technical infrastructure and specialization of personnel, the specific recording and the provided service related income.

The prices for drinking water and heat are subject to endorsement and approval by ANRSC and local or county councils in the administrative- territorial area for the rendered services. The proposal for the modification of prices comes from the public service operators, which, based on the processed form of cost indicators set price per cubic meter for water and sanitation and the rate per gigacalory(Gcal) for heat. The financial and accounting systems of these public services, namely water, sewerage and heating, become this way more complex than the accounting systems of the other public utilities. As for the local transport services, public lighting and sanitation, the recording of revenues is achieved in a more simplistic way. The health service is such an example, where the fees are collected in conjunction with other local taxes, the specialized compartments of public councils, while for the companies it goes according to the contract of delegation – the tax for the supplied services is paid either by the local council or directly from the beneficiaries, through a waste collection, transport and storage fee.

For establishing and billing the amount of water supplied and discharged into the sewage network, the financial-accounting system is closely related to the technical section that established the water consumption and waste water discharged in the sewer, respecting regulations and using specific calculation costs and meter reading. The quantity of water supplied and discharged into the public sewerage network is based on indications of branching meter installed in homes, where single users are branched, and on indications of consumed meters, where the branching is serving condominiums that all beneficiaries of condominium services performed consumption separations.

The operator provides regular meter reading every three months. For two consecutive months, the monthly billing can be made based on the consumption index communicated by the user, or estimated, based on average consumption billed in the last three months, so that in the third month, after the meter reading branching/separation of consumption to make the adjustment if necessary. In the case of users with monitoring cost equipments, the monthly invoiced quantities of water

shall be based on indications of volume integrator that records impulses transmitted to the branch counter.

Periodically, every three months, the reading of the branching meter shall be also made, for possible adjustments if necessary. When reading the branching/separation meter, the index shall be written in minutes or in the user's record sheet according with Government Emergency Ordinance no.13 of February 20, 2008, amending and supplementing the Law of community services for public utilities no.51/2006 and the Law for water providing and sewerage no.241/2006.

The amount of water taken into the sewer system and billed is set on the fixed mounted connection to public sewers discharge, and if there is no connection, then 100% of the volume of water billed for home users, institutions and economic operators that do not include water in the finished product, equal to the amount of water consumed, less the amount of water left embedded in the finished product for the economic operators that include water in the finished product and 100% of the water volume established in the contractual system for the home users' own source water. If it is found that there is a failure on the user's internal network, from which the water drained into the soil without being taken over by the sewerage system, an act of finding shall be signed by appropriate representatives of both parties. The amount of used billed water shall be established as the average amount invoiced to the channel in the 3 months prior to the failure.

If users have installed their meter on the evacuating connection for waste and meteoric water that leads to the unified network, the amount of water registered on the meter connection shall be billed entirely at the rate of domestic channel, so that the price for collecting meteoric water shall no longer be billed. The quantity of meteoric water taken into the sewer system is determined by multiplying the specific amount of meteoric water specified by the National Environment Agency for the month prior to the invoice released, with total areas of the premises built and undeveloped, declared by each user, and with the flow coefficients recommended by SR 1846-2:2006, namely:

- 0,9 – for metal, glass, tile and tar paper roofs, and terraces covered with asphalt and asphalted and concrete pavements;

- 0,12 – for sport fields, gardens, precincts and unpaved courtyards, agricultural lands (cultivated).

Using the analytic calculation formula: $Q_m = (S_1 \times 0,9 + S_2 \times 0,12) \times k$, where:

Q_m = the monthly amount of meteoric water

S_1 = the surface of glass, tile and tar paper roofs, as well as the asphalted terraces and asphalted or concrete pavements;

S_2 = the surface of sport fields, gardens, precincts and courtyards unpaved agricultural lands (cultivated)

k = the amount of specific meteoric water specified by A.N.M. for the month prior to the invoice released.

An example of calculating the invoiced meteoric water is the model used by SC Compania de Apa Oradea SA (Invoicing methodology), where for invoices, the coefficient k is calculated by the National Meteorological Authority for Oradea. When signing the contract for providing services with SC Compania de Apa Oradea SA, the beneficiary presents documents attesting the situation in the endowment lands (S_1 – paved field which comprises the built surface of the house, any annexes, asphalted lands and pavements, and S_2 – unpaved field). The National Environment Agency shall specify monthly to the operator which is the specific meteoric amount for the month prior to invoice. For Oradea, the coefficient K was 86.3 litres/square meter in November 2009, while in December 2009 the coefficient was 55.6 l/sqm. Therefore, for a user having the surfaces $S_1 = 100$ sqm and $S_2 = 150$ sqm, the billing of the meteoric water is made this way:

In December 2009 we have:

$$Q_m = (S_1 \times 0,9 + S_2 \times 0,12) \times k = \\ = (100 \times 0,9 + 150 \times 0,12) \times 86,3 = 9.320 \text{ litres} = 9,3 \text{ mc}$$

Present price = 0,35 lei/mc (VTA free)

Value: $9,3 \text{ mc} \times 0,35 \text{ lei/mc} = 3,26 \text{ lei}$ (VTA free) In January 2010:

$$Q_m = (S_1 \times 0,9 + S_2 \times 0,12) \times k = \\ = (100 \times 0,9 + 150 \times 0,12) \times 55,6 = 6.005 \text{ litres} = 6 \text{ mc}$$

Present price = 0,35 lei/mc (VTA free)

Value: $6 \text{ mc} \times 0,35 \text{ lei/mc} = 2,1 \text{ lei}$ (VTA free)

From the example above, it means that the invoiced meteoric water is influenced by the coefficient K (which in 2009 was $8,4 \div 97,6$ litres/ sqm in Oradea), as well as the surfaces on the beneficiary's property. The results of these calculation models have a role in determining the turnover of operators, which creates the need to adjust financial accounting information system to the requirements of the technical calculations of the effective management of water and sewerage services. For management it is important to establish differences between the amount of water supplied or the heat produced and the quantities and volumes invoiced to raise awareness of the impact of network losses and productive system deficiencies on the financial position and on the financial and economic return of managed services.

Thus, the financial-accounting compartment of operators performing in the heating domain, based the technical and economic data, and in accordance with the law, establishes, adjusts and changes the local rates and charges for supplying public services with centrally produced heating and obtains necessary approvals and recommendations for their practice, both for population and companies, for all types of fuel used to produce heat setting, adjusting the rate for addition water, based on technical data provided by the technical system.

All these being presented, the need to manage these services by companies or autonomous administrations is obvious, situation that is not always true if we refer to the sanitation service. In particular, sanitation operators in small towns meet difficulties in collecting bills for collecting, transportation and disposal of garbage. This way, they practice the payment method under the contract of delegation of management of the local council payment of an amount established for each company providing these services, then the population and companies pay the sanitation tax with other taxes and fees.

Accounting information is used differently depending on the priorities set by the system operators' management of public utilities services. If we refer to public institutions having the capacity of public service operator, the management decision is often influenced by political intervention, which requires less management based on accounting information and more on social problems facing the community. However, long-term effectiveness of public services depends on a specialized management whose decisions are made based on information provided through statements and reports issued by financial and accounting information system (Nicola, I.(2003)).

4. CONCLUSIONS

This paper highlights the impact of technical calculations governed by NAM (National Agency for Metrology) on outcomes of service operators operating water supply and sewerage. Also, we considered necessary to introduce legal provision that allows operators to adapt their computer models with the specific technical situations of their activities. Accounting information must comply with the requirements of the decisional system of the public community utility services, in terms of image it gives about service management. Thus, the financial accounting system must

be adapted to the operators' specific activities and to have qualified personnel and an information system to interact with other technical information systems.

From the information presented in this report we understand the central position occupied by the financial accounting information system within the functioning scheme of a service provider, whether it is an autonomous administration, a company or a department or service within the local councils. This system has specific characteristics of organization and nature of the provided services. The regulations also require operators the realization of a documentation showing financial capacity for an efficient management in terms of economic returns of public utilities. In this respect, the financial accounting system provides accounting information as required by ANRSC, by filling in forms, tables and records of account charges. These types of reports are made on the basis of accounting used in the procedure for ongoing monitoring of management, and maintaining license depends heavily on maintaining financial profitability under conditions of regulated tariffs and quality of services. Technical calculations recorded consumption affects the turnover and operating results of operator default.

Financial accounting information system should be evaluated by highlighting its performance and limitations in relation to the requirements of the management system, whether it is a specific management to public institution, or an adapted management to the market conditions, with particular emphasis on evaluating the quality of information, namely accuracy and frequency of dissemination of accounting. These are some of the reasons for the local or county administrations to establish autonomous administrations or company with majority state capital to provide direct management of public utility services or to organize service concession auctions delegated to management. This ensures a better management to meet the quality standards of public utilities under efficiency and economic profitability.

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