

MENTAL MODELS AND COGNITIVE DISCOMFORT OF PUBLIC MANAGERS IN RUSSIA: WHY DO USERS REJECT EVEN A SMALL CHANGE IN ACCOUNTING

Anatoli Bourmistrov

Nord University Business School, Bodø, Norway

Abstract

Purpose – The purpose of the study is to examine whether public servants as users of accounting information are responsive to changes in the content of an accounting report and, if so, how responsive they are.

Design/methodology/approach – The study applies a theoretical framework, linking accounting information and accounting use by focusing on users' "mental models". The empirical context for the study is a municipality located in Northwest Russia. Three public servants were followed over several days for the purpose of studying their use of a formal accounting report. Later, those users were also presented with a different version of the same accounting report that was re-constructed by the researcher based on normative accounting theory. The study documents the responses of public servants and presents those in a narrative form.

Findings – The study reveals that though the original formal financial accounting report is extensively used, the public servants mostly reject the usefulness of the modified version of the report. The modified accounting report puts public servants in a "discomfort" zone, where the users' mental models come in conflict with the information in the modified report. Following that, the study uncovers that the use of the traditional accounting report is based on three different mental models developed by users over time and guiding the use of accounting. Those mental models are described by three metaphors: "balanced matrix", "water tank" and "fair rules".

Originality/value – There is an unreasonable expectation that change in the public sector accounting system from cash toward accrual information will improve the quality of decision-making by public servants. The claim needs evidence that change in the accounting information supply will actually lead to change in information use. The paper demonstrates that change in use requires more substantial change in the users' mental models. This change is difficult, time-demanding and requires the development of tailor-made training programs. The paper is also a response to van Helden's (2016) call for more observational studies that can give a more accurate picture of use.

Keywords: Accounting use, Mental models, Public servants, Accounting reforms

Paper type: Research paper

INTRODUCTION

Accrual-based accounting, introduced in public sector organizations around the world, promises improved quality of accounting information and, consequently, of decision-making by public servants (e.g. Carlin, 2005; Wynne, 2007). New Public Management and New Public Financial Management reforms argue that the introduction of accrual accounting in the public sector would benefit public servants in terms of better quality of information, resulting in better decisions and better performance (Groot and Budding, 2008). It is generally recognized that financial reporting is a purposeful activity, e.g. to satisfy users' needs for useful financial information (Shapiro, 1997; Lukka, 1990; Davis *et al.*, 1982). However, as regards government

accounting reforms, it seems that the effects of this change in accounting information on users and their needs for accounting information have only recently been brought into the focus of research (van Helden, 2016; Askim, 2007; Mellempvik and Olson, 1996; Olson *et al.*, 1995). The promise of quality improvement presupposes that public officials would be quite responsive to changes in the accounting system and the financial accounting reports it produces.

The purpose of the study is to examine whether and how public servants are responsive to changes in the content of financial accounting reports. Especially, this study's motivation is to find out how individual user characteristics can explain reluctance to accept changes in the structure of the financial accounting report. Previous studies of both financial accounting and non-financial performance information have demonstrated that individual, organizational and contextual factors do affect the use of accounting and performance information in the public sector (e.g. Grossi *et al.*, 2016; Nogueira and Jorge, 2016; Moynihan and Pandey, 2010). However, as van Helden (2016) argues, many previous studies have put too much faith in the survey-based methodology and therefore, in their focus on operationalizing the "appreciation" and "perceived usefulness" of information, probably overestimated the "actual use" of information by public servants. Van Helden (2016) calls for more in-depth case studies, based on observations combined with semi-structured interviews, that can give a more accurate picture of actual information use by public servants. This call fits well with a general interest in the accounting research to focus more on an understanding of accounting practices at the individual level of analysis, e.g. by examining relations between accounting practices and individual psychological processes (Hall, 2016).

This study follows those ideas by studying three public servants in concrete decision-making situations. The study applies a theoretical framework of users' "mental models" to link financial accounting information and accounting use. The study contributes to a better understanding of how users' mental models are related to reluctance to change the use of accounting information and why. Empirical data is collected in a municipality located in Northwest Russia, where three public servants were followed over several days for the purpose of studying their day-to-day use of accounting information. At a later stage in the study, an intervention was performed, in which respondents were presented with a different version of the same financial accounting report they otherwise usually employed in their daily activity. Observations, conversations and respondents' reactions are described in three narrative stories.

The focal point in the analysis is that all three respondents were reluctant to accept the modified accounting report for use. The relation between changes in the content of the financial accounting report and the perceived negative use of the new report is analyzed, based on the respondents' three different mental models, summarized by three metaphors: "water tank", "balanced matrix" and "fair rules". Those mental models were developed and refined by many years of practical work and the experience of using particular financial accounting information to guide their decision-making and control their activities. Only when presented with an unfamiliar report do those mental models become more or less articulated.

The article is structured in the following way. Firstly, a literature review is presented that focuses on the links between the content of accounting reports and the characteristics of users of information. A summary of research on mental models is also presented. Secondly, the method and data collection of the study is described. Thirdly, the narrative stories of three

public servants are described and summarized. These are followed by the discussion and conclusion sections.

LITERATURE REVIEW: RELUCTANCE TO CHANGE THE USE OF FINANCIAL ACCOUNTING INFORMATION

Previous normative financial accounting research has focused much on how accounting information becomes useful from the perspective of communication, i.e. the match between information supplied and the characteristics of users. The rationale for accounting activities is to satisfy users' needs for useful financial information (Shapiro, 1997; Lukka, 1990; Davis *et al.*, 1982; AAA, 1977). A financial accounting report is a tool for communicating economic reality to accounting users (Hines, 1988; Davis *et al.*, 1982). In order to create meaning from the information communicated, the user should be able to process the information. This ability depends, on the one hand, on the quantity and nature of the accounting information disclosed in accounting reports (e.g. Shields, 1983). The way in which accounting data is presented to individuals (e.g. written, graphically, orally) influences understandability (O'Reilly, 1985). On the other hand, the ability to interpret economic information depends on user characteristics (Shields, 1983; Dyckma *et al.*, 1978; Cyert and Ijiri, 1974), meaning that different individual users have different capabilities to process, understand, interpret and analyze accounting information (Macintosh, 1985). This individual ability is influenced by e.g. education in economics and knowledge of accounting concepts. Users' individual understandability of accounting information might also differ in respect to characteristics other than education, e.g. job experience, position, competence, time pressure, age (e.g. Grønhaug and Mellemvik, 1998). Indeed, the features of individual actors in public sector institutions impact the use of financial accounting and performance information in the public sector, e.g. qualification and experience with information, positions, public service motivation and cognitive features of individual actors (Grossi *et al.*, 2016).

In public sector accounting and public administration literature, the issue of reluctance to change to the use of new accounting and performance management information has been mostly examined with the help of neo-institutional theory and theories of organizational behavior. For instance, theories of organizational behavior (e.g. Moynihan and Pandey, 2010) explain that public service motivation, leadership role, information availability, organizational culture and administrative flexibility affect performance information use. In contrast, neo-institutional theory explains reluctance (or lack of change) in use because use is strongly institutionalized in organizational traditions, cultures and rules (e.g. Di Maggio and Powell, 1983; Scott, 1995). Guided by the logic of appropriation rather than the logic of consequentiality (March, 1994), public servants might be reluctant to change use because it is considered to be inappropriate for their beliefs, traditions and cultures. Grossi *et al.* (2016) report that traditions and cultures matter in explaining the reluctance to use new performance information in Germany (cameralist accounting tradition) and Italy (cash-oriented mentality). Similarly, Vakkuri (2010) reports that social norms affect the ability of public servants as users to see both the potential and the limits of performance information in the case of Finnish municipalities. Studies conclude that such reluctance will diminish over time and with more intensive training.

However, these two theoretical schools treat the process of use as a "black box". Analyzing the past and present research on public sector servants' use of accounting information, van Helden (2016) elaborates on the missing link in the previous research: how the context and drivers for

information needs (e.g. challenges, problems, concerns of users) are actually translated into information-seeking behavior. One possibility is to examine how individuals can be reluctant to change their information use (reject new information) by exploring the users' mental models (cognitive styles).

Users and their mental models

Markus (1983) demonstrated that, when focusing on the individual factors, differences in cognitive styles affect resistance to change in management information systems, e.g. individuals with a more analytical style accept changes, while individuals with a more intuitive style resist changes. Previous research related to public sector organization has distinguished several categories, articulating differences in the mental models of public servants. One category is laymen (nonprofessionals) vs. experts (e.g. Bessette *et al.*, 2017). Laymen tend to be more reluctant to use new information because of their limited capacity to comprehend complex economic information, due to e.g. their lack of formal economic education, while experts (with accounting and economic education) are less reluctant to change. Lack of appropriate knowledge and training can explain the reluctance to use new information (Antipova and Bourmistrov, 2013; Nogueira and Jorge, 2016). Previous research has also distinguished between politicians (in general more skeptical about using new performance information) and managers (more positive about using performance information) (Grossi *et al.*, 2016).

Thus, previous research has indirectly addressed mental models and cognitive styles. In this article, the intention is to extend previous research by looking more deeply into the concept of the mental models of public servants. Calori *et al.* (1994) argue that concepts such as "mental maps", "mate-learning", "mindset" and "cognitive maps" can sometimes be treated as similar concepts. More generally, a mental model is a personal internal representation of external reality that people use to interact with the world around them (Jones *et al.*, 2011). It is a way in which a decision-maker (user of information) performs reflective thinking and problem solving that represents their subjective individual world (Eden, 2004). The mental model is, thus, a mental construct that humans use to understand and to know their environment by simplifying, codifying and ordering the complex world of human interaction with their environment (Kitchin, 1994). The mental models are essential in understanding how decision-makers anticipate events, provide reasons, form explanations and, thus, describe, explain and predict behavior (Rouse and Morris, 1986).

Information is essential in forming mental models. For instance, managers engage in different information-acquisition strategies to maintain or to build the mental models needed for managerial purposes (Vandenbosch and Higgins, 1996). In this sense, managers can be seen as "active scientists", who are constantly trying to make sense of the complex world around them in order to act within and upon that world by constructing a mental model, reflecting a belief, e.g. about causality between different events and outcomes (Fiol and Huff, 1992). In doing so, individual unique life experience, education, perceptions and changing understanding of the world contribute to the construction of the cognitive structure, representing the mental model. Thus, mental models, as cognitive structures, are incomplete and inaccurate representations of reality. They should, therefore, be treated as simplified models that are grounded on the cognitive limitation of humans. Consequently, mental models should be regarded as dynamically evolving through learning and adapting all the time to changing circumstances. In

this sense, a mental model functions as a working memory, allowing for the simulation testing of different possibilities before acting, and permits people to describe, explain, and predict a system and test causal knowledge about how systems work (Jones *et al.*, 2011).

Use of accounting reports and mental models of users

Previous studies have tried to link users' mental models and the use of financial accounting information, albeit indirectly, for the most part. In particular, Walker and Llewellyn (2000) and Northcott and Doolin (2000) examined the use of accounting information by households, while Thaler (1999) examined the use of mental accounting in private situations. This article has a different focus on mental models in the context of the professional work of public servants. Driver and Mock (1975) relate decision-makers' cognitive make-up, articulated through four possible decision styles (decisive, flexible, integrative and hierarchic), to a preference for and use of accounting information. Hedberg and Jönsson (1978) argue that the degree of environmental complexity may influence the degree of cognitive complexity, necessitating a mediating role for accounting. Burchell *et al.* (1980) demonstrate how the use of accounting information varies between practice and normative rational decision-making theory, due to differences in assumption about decision-makers' mental models. In turn, O'Donnell and David (2000) show how information from accounting systems influences, through the use of mental concepts, managers' perception of economic reality and their understanding of economic events.

When it comes to the public sector, Vakkuri (2010) reported five different mental models (or "practice theories") that guided the use of performance management information in Finnish municipalities, i.e. need-based, evidence-based, practice-based, process-based and result-based. In another study, Storkholm *et al.* (2017) show four mental models of staff and managers in a hospital in Denmark. These vary across two major themes – change drivers and economic considerations: "professional ethos", "socio-political discourses", "you-get-what-you-pay-for" and "more-bang-for-the-buck". The conclusion is that none of those models is more or less appropriate for the situations or better than the others. Individual actors in public sector organizations have different cognitive styles and therefore adopt and enact different "practice theories" to solve performance problems.

Complementary to those studies, this study seeks to examine whether and how public servants, as users of accounting information, are responsive to changes in the content of financial accounting reports. In particular, this study's motivation is to find out how mental models of users can explain reluctance to accept changes in the structure of the financial accounting report. The assumption is that the mental models of public servants do interact with the accounting information provided; the question is: how? In this study, the goal is to know more about how different financial accounting reports fit or contradict the established mental models of decision-makers. In this sense, this study also follows Dunn and Grabski's (2001) argument that superior performance can often be related to a "cognitive fit" between the task decision-makers face and the information presented to them, e.g. between their "mental models" and "accounting reports". This gives an opportunity to test how users react to alternative accounting models (reports), for instance by studying whether users experience "cognitive comfort" or "cognitive discomfort".

METHOD

The empirical data comes from a series of research projects performed in the empirical setting of the Russian Federation. In general, the Russian Federation represents an interesting empirical setting for research, due to the nature of its transitional economy and its ambitious attempts to reform its public sector since the middle of the 1990s. Many of those reforms have been inspired by an intention to reinvent the Russian public sector, based on the global ideas of New Public Management (NPM) and New Public Financial Management (NPFM) (see e.g. Guthrie et.al, 1999; Chan, 2003). Particularly, one aim in Russia was to eliminate the inefficient public bureaucracies by making service production by governmental organizations more like business (see e.g. Timoshenko and Adhikari, 2009, 2010). As the previous research on Russian accounting and public sector reforms indicate (Timoshenko, 2008; Timoshenko and Adhikari, 2009, 2010; Bourmistrov, 2006), Russia has been also trying to modernize its budgetary and accounting system, based primarily on the ideas and expertise from the IMF and the WB, including the introduction of accrual accounting and multiyear budgeting. This includes reforms aiming to improve the transparency and openness of annual budgets at all levels of government (federal, regional, and local), new accountability forms for public organizations and agencies and, finally, the introduction of Program Based Budgeting (since 2012). However, after several decades of reforms, the present process of launching international budgeting and accounting concepts in Russia can at best be characterized by *adaption* and not by *adoption*, because “a hybrid” budgeting and accounting system was observed in practice, combining the ideas of old Russian and new international practices (Antipova and Bourmistrov, 2013).

Empirical data for this article comes from an old research project performed at the beginning of 2000 (Bourmistrov, 2001). This article is based on the empirical information obtained for that project. The reason for revising the old data came from a series of observations in a more recently performed research project – that accounting users seemed to be reluctant to use new accounting information articulated by reforms. This has created a feeling of *déjà vu* in the researcher – that similar responses were observed in earlier stages of reforms. Therefore, the previously collected data were revisited and scrutinized anew, based on the new theoretical frame of reference.

The empirical setting is represented by Leningrad (*oblast'*) county administration in the Russian Federation. It was previously chosen because of the good institutional contacts already established between the researcher and the administration. The major parts of the empirical work were conducted during several trips to Russia during a one-year period (1999–2000).

At that time, the formal accounting statement of budget implementation was central to users and therefore chosen for further research. Because the formal accounting statements in the Russian local government studied were cash-oriented, the idea was to change the formal accounting statement of budget implementation in the direction of a more “clean” cash-flow report. The experience gained from Western local government organizations was applied in the modification of the original report (e.g. Pauli, 1999; Olson *et al.*, 1995; Olson, 1987). As the traditional report was a cash flow report, the modifications were made in respect of cash flow models applied in the normative accounting literature. Thus, two different accounting statements were presented (further called the “traditional” (see Appendix 1) and “modified” reports (see Appendix 2), respectively) and followed by interviews. All three participants in this study were given exactly the same “traditional” and “modified” accounting reports, without any alterations or attempts to tailor them to each individual actor.

To obtain variability in users' opinions, interviews were conducted with three persons holding different political and administrative positions in Leningrad county (*oblast'*). The project initially had access to approximately 20 respondents. However, only three respondents of those 20 were appropriate for this study because they alone expressed willingness to provide open access for the researcher to observe what they do during their workdays over several days. To put it simply, those three respondents were quite open-minded. The author accepted an invitation to resume a kind of trainee position, meaning that he had legitimized open access to respondents during the workday (and after working hours). Given the opportunity, those public servants were each followed by the researcher over several days for the purpose of studying their day-to-day activity, to see what kind of accounting information was used, for what purpose and how, as well as to gain an understanding of the decision-making context for each respondent. For instance, public servants were approached several times during the working day and asked to explain what they were doing and why. Special focus was placed on the use of accounting information. On one of the days, formal interviews were conducted with each of the respondents to ask about possible uses of the traditional and also the modified reports. In the course of the interview (or, rather, structured conversation – for items discussed, see Appendix 3), which on average lasted for about 1.5–2 hours, the traditional report was firstly discussed. After this discussion was completed, the modified report was revealed to the interviewee. Because "...[users] expressed needs may simply reflect marginal improvements on what they have already been receiving" (Jones and Pendlenbury, 1996, p. 112), the idea was to motivate the users to make a comparison and choose one of the alternatives.

The choice of observations and interviews was natural because questionnaires are not usually well-suited to the study of decision-makers' mental models in natural settings. It was not an easy task because mental models exist in the minds of decision-makers and are unavailable for direct inspection and measurement. Thus, according to Carley and Palmquist (1992), language is the only window through which we can access the mental models because mental models are semantic structures, i.e. verbal statements containing concepts and the relationships between those concepts. In this sense, there are many limitations regarding the objectivity of the mental models' descriptions (Rouse and Morris, 1986), involving e.g. issues of accessibility and credibility. There are possible biases because the conceptualization of mental models depends on the researcher's own mental understanding of the situation, which can lead to misrepresentation. To deal with this and by following Klein and Cooper (1982), proper attention was given to the terms and concepts that decision-makers themselves were using. In presenting the findings about mental models, the empirical text was developed and presented as a narrative because it provides clues about perceived causes and effects, as revealed by subjects (Bower and Morrow, 1990). Readers of the narratives can also construct their own mental representation of the situation (model) and actions being described, which improves the credibility of the story.

THREE NARRATIVE STORIES: PUBLIC SERVANTS AND RELUCTANCE TO CHANGE TO NEW ACCOUNTING INFORMATION

In the following sections, three narrative stories are presented concerning the use of the traditional accounting statement and its modification, according to the normative Western accounting theory, i.e. the modification following a classical cash-flow disposition appearing for instance in many Western textbooks. Towards the end of the section, the results of the interviews are summarized.

Narrative 1: Conversation with an Adviser to a Senior Politician in the Legislative Council of County Administration

The first conversation was with the respondent who was an adviser to the vice-chairman of the legislative council of the county administration, responsible for issues of budgeting, accounting and finance. The nature of his job was to interact continuously with different politicians and, thus, he was quite knowledgeable about how politicians in the legislative council work. He had worked for many years as an officer in the Department of Finance in the county administration and, therefore, had received extensive training and additional education, organized by the Federal Ministry of Finance. Our previous interviews were primarily about the technical aspects of the accounting system in the county administration.

We talked about how the traditional report was used by politicians and what he found of importance in it. The traditional report was not easy to understand for some politicians. Some of the council politicians, perhaps, would experience problems in applying economic information they could not understand. But, in the opinion of my respondent, that did not matter. He commented as follows:

“Do you want to understand current reports? Hire an expert, adviser, or simply get yourself better educated. We [in the Department of Finance when preparing accounting information] cannot deviate from the instructions of the Ministry of Finance because they stand for the quality of reporting. They guarantee that accounting information presentation is standardized and we can, thus, talk about reliable and comparable information.”

I then introduced my respondent to the modified report. He looked at it with interest and respect. However, I soon realized that this was an expression of courtesy to my efforts in executing modifications rather than his true opinion about the usefulness of the modified report. Then, he surprised me...

“Look. You have a mistake in the report.”

I was astonished. I had taken a couple of days to work out how the traditional report could be modified and I thought that I had checked the calculations thoroughly. Apparently not... I expressed my surprise and asked my respondent to explain how he had discovered my miscalculations. The ideas and knowledge he had learned during the seminars organized by the Ministry of Finance, while he worked in the county's Department of Finance, was clearly mobilized for that purpose.

“The tricky part is that each accounting statement in the instructions of the Ministry of Finance has been constructed according to a special balancing principle. This principle is based on the fact that accounting, budgeting and variance figures in the statement are linked with each other... you add or subtract some figures from other figures. You have a kind of mathematical matrix, in which the figures are mutually dependent...and... should always be in some kind of a balance... This principle was violated in the variance column of your statement.”

In the opinion of my respondent, the new report would be less meaningful to politicians as it did not allow discussions about the allocation of resources. Politicians would be reluctant to use

this new report because there was no functional classification of expenditures or percentage showing the budget implementation in the modified report. He commented in the following way:

“Ask yourself: What do politicians do in the legislative council? They allocate [resources]. Allocation is, thus, power. During the Soviet period, the state allocated resources. Today it is different... Accounting is used to control whether the planned allocation of resources has been achieved and how different functions have been performed. In situations where collected revenue is lower than budgeted, the accounting figures help to identify priorities for financing. Usually, in such a situation, politicians have to cut expenditures, but the question is which of them?... The old statement at least allows us to have such discussions. The new statement does not allow this.”

He continued to tear apart my creation. According to his interpretation, he would be reluctant to use this report because of the difficulty of considering it reliable. The report was not prepared according to rules and standards laid down by the Federal Ministry of Finance. At the end of our conversation, he “torpedoed” the whole creation by saying:

“In the Soviet Union, the Department of Finance presented budget and accounting reports in a simple form, which deviated from the strict instructions of the Ministry of Finance. I know that this independent presentation helped the local administration and the state to hide real allocation and use of financial resources from the eyes of the people’s deputies. Today, on the contrary, the budgets and accounts are transparent, particularly because you must follow all instructions... In this sense, your new report is a step back to the Soviet period.”

Our conversation was over. I had not expected that my respondent would show reluctance to use the modified report – a Western theory inspired report – reluctance that is well summarized in calling the change a step back to the Soviet period.

Narrative 2: Conversation with the Mayor of One City Municipality in the County

I arranged to come to the municipality and “shadow” the city mayor for a day. This would give me firsthand data about how a top politician was using accounting information in her day-to-day work. When we came to the office, the first important problem the mayor had to deal with was the budget proposal for the next year, recently put forward by the governor of the county administration. In the governor’s proposal, the city had lost one important source of local income, i.e. personal income tax. Cash collected as personal income tax in the territory of the city would no longer be paid to the city treasury directly (as it had been during the current and previous years) but accounted for by (transferred to) the county administration budget. The city would lose almost 30% of its present total revenue base.

While she was explaining the situation to me, the second problem suddenly appeared during our conversation. One person asked for permission to come in and address the mayor. This was the moment when the city budget lost an additional 10% of its potential income. The city planned to invest in a factory, which allowed the generation of additional income to the city in the form of profit tax, as well as providing additional jobs for the local population. The only thing needed was to get a signature for a loan guarantee from the governor of the county.

However, for some reason or another, he had cancelled his previous agreement and refused to sign the guarantee.

The mayor had to make important decisions, e.g. what should the town do – fight the decisions of the governor or find other sources of reduced revenues? Maybe cutting some expenditures would be an inevitable alternative? The city was never “poor”, with respect to local economic resources, and could afford to spend much on local welfare. Should the town administration change its spending pattern now?

Considering the town’s future, it was important for the mayor to articulate several relevant accounting concepts in this particular decision-making situation, i.e. the potential cash inflows into the budget, the possible level of cash outflows and how many monetary resources would be left, i.e. a potential surplus. I asked her why cash flow seemed to be “the king”. She pointed out the following:

“What is extremely important for my municipal administration is to guarantee uninterrupted financing of municipal services... Each day I check that we finance what we have to finance and that we have enough cash for the next day. That is why I closely monitor cash inflows, cash paid to finance municipal services and money left in our bank account.”

Then, she added a very interesting metaphor. Her concern was likened to an image of keeping water in a water tank. There were pipes connected to the tank, supplying it with fresh water. There were other pipes allowing water to run out of the tank. The job was to get enough water into the tank and/or to manage outflows in such a way that the water tank never ran dry. She illustrated:

“A good mayor pays pensions and salaries without delay. Even though I would deal with the same volume of cash in profit tax, I prefer to have the same volume in personal income tax. It provides continuity in financing. Even with a larger share of profit tax, I doubt that I can guarantee such continuity.”

Her concerns made sense to me. In theory, many alternatives could be considered for raising short-term finance. For instance, interruptions in cash inflows could be financed by short-term borrowing from banks. However, when I suggested this alternative, she commented as follows:

“It is quite impossible to take a short-term loan from the bank, even from the same bank in which the city has its bank account... The bank does not even give interest on money we have in our bank account. Certainly, they use this money to earn profit. It sounds absurd, but it is true.”

Our discussions led me to a better understanding of a mayor’s decision-making situation and her mission as a cash manager, i.e. to control and manage the town’s resources in a metaphorical “water tank”. When we discussed the traditional report (e.g. statement of budget implementation), it was very useful for her job. The statement was meant to reflect all the flows of monetary resources for some time.

We turned then to the modified report. She looked through it quite attentively and replied that the modified report could be meaningful. Especially, the use of the concept “investment activities” was very important for the town, and the level of net cash inflows from the investment activities would usually be high. Moreover, positive net cash inflows from the

investment activities would help to balance net cash outflows on operations. The traditional report did not address this issue. However, this report, in her opinion, would never be a substitute for the traditional accounting report. She seemed to be reluctant to take the new report into use because the new statement did not provide accounting information about how well local government functions were performed. Without figures on the budget implementation, the mayor would lose control of the stream of financial resources. She summarized her reluctance to use this report by wondering whether such a report would be more natural in the West rather than in Russia. While driving in the car, she expressed her point as follows:

“I was travelling in a car on a highway in Germany. The car driver seemed to be very relaxed and I asked him if indeed it was so easy to drive the car. He replied jokingly that he was not actually driving but holding his hands on the wheel for one purpose only – not to fall on the floor... Your new report might be used by Western politicians, who work in conditions of certainty, have a large number of advisers and can afford to be relaxed. Russia is different. You cannot relax here. Trust nobody. As a result, we need detailed knowledge to control and manage the finances.”

Narrative 3: Conversation with an Administrative Officer Responsible for Budgeting in the Economic Department of the County Administration

My next respondent had relatively long work experience in the county administration, i.e. firstly as a people’s deputy in the county Soviet and, since 1991, as an officer in the budgeting area, employed in the economic department. In this sense, my interview with him was intended to clarify the use of accounting reports for the purpose of making next year’s budget. His primary job was to design methods and rules for compiling the county budget. In Russia, the county’s and the municipalities’ budgets were mutually dependent. In order to finance their operations, some municipalities were provided with cash transfers from the upper level budgets and a share of some direct taxes, accumulated by the county budget, in addition to local tax revenues.

In his opinion, this system of distribution of expenditures and revenues between different levels of budget based on social standards functioned quite well. The system allowed for the distribution of financial resources in a fair way, on the one hand, between the county government and its municipalities, and, on the other hand, between “poor” and “rich” municipalities.

However, the budget preparation procedures had changed quite recently. Through a decision of the county governor, the responsibility for budget preparation had been taken away from the Economic Department and given to the Department of Finance. In his opinion, the Department of Finance had violated these “fair” rules and made the budget proposal for next year, based on unknown principles.

I showed him the traditional report and asked how it was useful in his work. The report was an important input for his ordinary job, particularly the statement showing budget implementation for a complete year (i.e. annual report) for the county government, as well as for all separate municipalities in the county. The interviewee had worked continuously with these reports since 1991 and proudly regarded himself as an expert. The idea was to use those reports for a comprehensive analysis of several years of these expenditures and revenues before you could prepare the budget proposal for the next year. By analyzing how resources were divided and

spent, it was possible to make a prognosis for new budget figures. In his work, the uniform budget classification was a key that provided valuable assistance in performing such an analysis.

However, the traditional report should not be regarded as unproblematic. Some of the concepts applied in the traditional statement were very difficult. For instance, money transfers between governmental levels (county vs. municipalities) could appear in the report either as so-called subvention, as a subsidy or as an ear-marked transfer. It was sometimes difficult to comprehend the difference.

We then moved to the modified report. In the opinion of my respondent, the modified report could be used, but only as a complementary report. The new report had an advantage because there were no unclear concepts as in the former one; e.g. transactions were clearly positioned as cash inflows and cash outflows. The new report also informed about change in the cash position of the county government in a comprehensive and compressed manner.

However, the respondent seemed to be reluctant to use the new statement because the report was not detailed enough to perform an analysis that the respondent needed. The detailed classification of cash inflows and cash outflows, showing how governmental functions were performed, were missing in the report. He, thus, concluded our meeting in the following way:

“Perhaps we need both reports: one for allocating, controlling and making detailed analyses of resources [i.e. the traditional report] and another for understanding the overall economic situation in county government presented in a compressed form [i.e. the modified report]”.

A summary of narratives

The narratives presented indicate several important aspects of accounting in use, see Table 1. Firstly, they illuminate how the traditional report is meaningful for different users, despite being understood, interpreted and put to use differently. The first user considers an accounting report as a “mathematical matrix” (Narrative 1). Another user interprets it through the prism of day-to-day cash management expressed through the “water tank” metaphor (Narrative 2). The third user considers the report as a mean for maintaining “fair” rules of budget preparation (Narrative 3).

INSERT TABLE 1 HERE

Secondly, the narratives show that all respondents were quite reluctant to change their usage. The use of the new report, inspired by “outside” accounting solutions, was in many ways rejected as a complete substitute for the traditional report. This is an interesting finding because, even though the modified report changes the ways in which accounting information is presented, this change is not very dramatic. The report is still a cash-flow report; it only becomes “cleaner” in terms of normative (textbook) accounting theory.

DISCUSSION

The purpose of the study was to examine how public servants, as users of accounting information, are responsive to changes in the content of accounting reports. Below, findings from the study are discussed, based on the application of the mental models to accounting information use.

Different mental models result in different interpretations of the same accounting reports

The above narratives suggest that a similar report gives rise to a collection of different understandings and interpretations. Public servants seem to use a similar report in different ways, and each user finds an application for different purposes, based on their mental models, e.g. for making allocations, for cash management or for the design of “fair” budgetary rules. Links between uses of accounting reports and mental models can be described by different metaphors (Morgan, 1988). The study reveals that three public servants use accounting reports based on three different mental models that can be metaphorically termed as “balanced matrix”, “water tank”, and “fair rules”.

The mental model of a “balanced matrix” is based on the understanding of accounting use for the purpose of following the accounting regulations. The mental model is articulated as a concern for information quality by following central governmental accounting procedures. There is a notion that accounting procedures are there to be mechanically applied in accounting practices, and the role of an adviser is to follow a strict procedure. The “balanced matrix” is thus a mathematically inspired mental model that engages accounting as a convenient technique for balancing accounting figures in columns and rows for the sake of making statistics right and picking up deviations.

The “water tank” mental model focuses on the management of flows of short-term financial resources, particularly cash. As the metaphor suggests, it is similar to when we want to keep water in the tank – we concentrate on controlling water inflows and outflows. The supply system, i.e. taxation rules and centrally given provisions, influence the resources’ availability. The “tank” itself, and especially the “pressure” from several parties to empty the “tank”, influences the use of resources. In the same vein, accounting activities are very much spending-grounded; it is the control of spending on financing public services in local government which makes accounting important. For that reason, we mark the financial “pipes” going out of the tank: accounting statements allow an overview of the purposes of spending, i.e. local government functions, and the sources of “fresh” resources.

The “fair rules” mental model states that resource management is about establishing and maintaining the resource allocation rules that link time and space in the organization: the past and the future allocations, as well as allocations between organizational units on different levels. In this mental model, accounting is becoming a device to search and argue for improving “fairness” in resource allocations by incremental analytical work and gradual improvements in analytical models.

To sum up, there is no surprise that respondents exhibit no “right” or “true” way of reading the same accounting statement; i.e. the same accounting report means what its readers make it mean (Boland, 1993). However, the study contributes to the provision of a more nuanced picture of why meanings attached to a similar report by different users are different. Particularly, this study adds to previous studies on the use of accounting information and mental models (e.g. Vakkuri, 2010; Storkholm *et al.*, 2017). Differences in use are related to how the financial accounting report is aligned with the different users’ mental models, shaped by individual experience, education and the users’ perceived work situation and roles.

Reluctance to change the use of accounting information due to “cognitive discomfort” in mental models

Similarly, the idea of replacing the traditional report by the modified report has ended in failure because the modified report has come in conflict with the existing mental models. This “conflict” was visible in the more or less articulated “cognitive discomfort” expressed by respondents. The traditional report was structurally modified by using normative “textbook” accounting literature (e.g. Belkaoui, 1993; Lee, 1984). However, the structure of the modified cash flow report was considered to be irrelevant, and all three public servants were reluctant to consider the new report as useful. This is an interesting finding because it corroborates the proposition of van Helden (2016) that use depends on 1) types of alternative information sources and 2) the appropriate point of reference. This study has examined two alternative sources of financial accounting information (traditional vs. modified report) and users’ mental models as a point of reference.

Users see in the accounting report what they expect to see, based on their interpretation, guided by their mental models (Vakkuri, 2010). In this study, expectations about the statement structure reinforced by the users’ private experience came into dissonance with the structure of the new (modified) report. There is, thus, a gap between the assumptions behind the construction of the new report, on the one side, and users’ expectations and habits, on the other side. When looking into the new report, users do not recognize the old structure carved in their mental models. Changes in the report, in which users have established confidence, lead to “cognitive discomfort” and, consequently, rejection of the alternative. Asked to consider substituting the modified report for the traditional one, the public servants would experience ambiguity in how to secure quality of information (Narrative 1), control financial resource flows (Narrative 2) or prepare next year’s “fair” budget (Narrative 3). The current mental models prevented users from finding fully relevant applications for the modified report. Thus, the normative “textbook” accounting theory driven modification comes into conflict with existing mental models. The “cognitive discomfort” is expressed in arguments that clearly discredit the modified report in the face of the mental model used.

Another observation is that responses on the provider side (Narratives 1 and 3) and the user side (Narrative 2) are not so different, in their reluctance to accept the modified report, as could have been expected from previous findings (Grossi *et al.*, 2016). For instance, there are no apparent differences in the roles of the politician, on one side, and both the adviser and the officer, on the other. Even though there is evidence of the importance of external legitimacy in respect of the local constituency, expressed by the mayor (in Narrative 2, e.g. paying pensions on time), the “water tank” metaphor highlights the greater importance of operational consideration in administering cash flows. There is not much difference, therefore, between the mayor’s concerns for administering internal matters and the concerns of the other two respondents. This may mean that it is not the role of the actor as such (e.g. politician vs. manager) but rather the nature of the mental model that better defines the use.

However, there is some hope for the modified report, even though it is discredited, demonstrating that the mental models are dynamic and can have the capacity to gradually change (Jones *et al.*, 2011). Although the new report is not accepted as a complete substitute, the modified report finds potential use as an additional statement, e.g. as an indicator of investment activities (2) and a change in the overall cash position (2 and 3).

CONCLUSION

The purpose of the paper was to examine whether and how public servants, as users of accounting information, are responsive to changes in the content of financial accounting reports. Three public servants in the regional government of Northwest Russia were involved in the study, in which they were presented with a different version of a commonly used financial accounting report. The study reveals that public servants were reluctant to use a new version of the accounting report because it contradicted their well-established mental models, which were summarized as the following metaphors: “water tank”, “balanced matrix” and “fair rules”.

The paper concludes that, when reforming public sector accounting, it is much easier to change the accounting system (supply side) than to ensure that new information will be used according to the intended purposes of the reforms. The argument of this article is that change in use firstly requires changes/adjustments in users’ mental models. This change seems to be more difficult and time-demanding.

The paper seeks to contribute to the literature on the use of accounting information in the public sector and public sector accounting reforms (e.g. Groot and Budding, 2008; Askim, 2007; Carlin, 2005), focusing on how mental models can constitute a barrier to changes and a source of users’ reluctance to make use of new information (Grossi *et al.*, 2016; Vakkuri, 2010).

Previous studies have argued that reluctance to adopt new information would diminish over time and with more intensive training (Grossi *et al.*, 2016). Time will always be an important component because it allows mental models to adjust as new experience is gained. The implication of this study for practice would be that more intensive training alone would probably not be enough. To make a real case for change in the use of financial accounting and performance information, all training should properly address users’ mental models. This would probably require quite different types of training activities that can clearly demonstrate how new financial accounting information can fit to individual actors’ mental models and how those actors can benefit from this information in their political and management realities. The possible fact that different public servants may have very different mental models can represent quite a big challenge for educators and consultants. At least, as this study demonstrates, agents of change should probably avoid normative “textbook” constructions and, thus, go beyond normative theories to find what reports and accounting concepts are needed to fit users’ “mental models” and/or even how to change “mental models”. This calls for better cooperation between accounting academia and public servants. There are good examples of how accounting researchers can make an impact and change practices by e.g. being involved in action research projects (ter Bogt and van Helden, 2011; van Helden *et al.*, 2010; Mellempvik and Olson, 1996).

The clear limitation of this study is the impossibility to generalize from only three narratives. However, as the studies of Vakkuri (2010), Willems (2016) and Bessette *et al.* (2017) have indicated, mental models are not necessarily only an individual phenomenon. People in organizations have a tendency to develop some commonly shared understandings of their organizational realities and a shared way of interpretative thinking. This means that identification of those groups with more or less common/shared “mental models” would be important work for designing training programs.

In this sense, further research can examine those issues, based on the application of cognitive theories to individuals and groups (Bourmistrov and Kaarbøe, 2013; Hall, 2016). In future studies, use of cognitive theories can be helpful in identifying the nuances of how psychological

processes influence the design and use of accounting information in the public sector organizations.

REFERENCES

AAA, American Accounting Association. (1977), *Statement of Accounting Theory and Theory Acceptance*.

Antipova, T. and Bourmistrov, A. (2013), "Is Russian public sector accounting in the process of modernization? An analysis of accounting reforms in Russia", *Financial Accountability & Management*, Vol. 29 No. 4, pp. 442-478.

Askim, J. (2007), "How do politicians use performance information? An analysis of the Norwegian local government experience", *International Review of Administrative Sciences*, Vol. 73 No. 3, pp. 453-472.

Belkaoui, A. (1993), *Accounting Theory*, Academic Press, London.

Besette, D.L., Mayer, L.A., Cwik, B., Vezér, M., Keller, K., Lempert, R.J. and Tuana, N. (2017), "Building a values-informed mental model for New Orleans climate risk management", *Risk Analysis*.

Boland, R. (1993), "Accounting and the interpretative act", *Accounting, Organizations and Society*, Vol. 18 Nos. 2/3, pp. 125-146.

Bourmistrov, A. (2001), *Accounting and Transition: A Study of Russian Local Government Accounting*, PhD dissertation, Norwegian School of Economics and Business Administration, Norway.

Bourmistrov, A. (2006), "Reforming central government accounting: A comparative study of Norway and Russia", in Lande, E. and Scheid, J.-C. (Eds), *Accounting Reform in the Public Sector: Mimicry, Fad or Necessity*, La Revue Du Trésor & Ecm (Expert-Comptable Media).

Bourmistrov, A. and Kaarbøe, K. (2013), "From comfort to stretch zones: A field study of two multinational companies applying 'beyond budgeting' ideas", *Management Accounting Research*, Vol. 24 No. 3, pp. 196-211.

Bower, G. and Morrow, D. (1990), "Mental models in narrative comprehension", *Science*, Vol. 247, pp. 44-48.

Burchell, S., Clubb, C., Hopwood, A., Hughes, J. and Nahapiet, J. (1980), "The roles of accounting in organizations and society", *Accounting, Organizations and Society*, Vol. 5, pp. 5-27.

Calori, R., Johnson, G. and Sanin, P. (1994), "CEO's cognitive maps and the scope of the organization", *Strategic Management Journal*, Vol. 15 No. 6, pp. 437-457.

Carley, K. and Palmquist, M. (1992), "Extracting, representing and analyzing mental models", *Social Forces*, Vol. 70 No. 3, pp. 601-636.

Carlin T.M. (2005), "Debating the impact of accrual accounting and reporting in the public sector", *Financial Accountability & Management*, Vol. 21 No. 3, pp. 309-336. Chan, J.L. (2003), "Government accounting: an assessment of theory, purposes and standards", *Public Money & Management*, Vol. 23, No. 1, pp.13-20.

- Cyert, R. and Ijiri, Y. (1974), "Problems with implementing the Trueblood Objectives Report", *Journal of Accounting Research*, Supplement to Vol. 12, pp. 29-42.
- Davis, S., Menon, K. and Morgan, G. (1982), "The images that have shaped accounting", *Accounting, Organizations and Society*, Vol. 7 No. 4, pp. 307-318.
- DiMaggio, P. and Powell, W. (1983), "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, 147.
- Driver, M. and Mock, T. (1975), "Human information processing, decision style theory and accounting information systems", *The Accounting Review*, Vol. 50 No. 3, pp. 490-508.
- Dunn, C. and Grabski, S. (2001), "An investigation of localization as an element of cognitive fit in accounting model representations", *Decision Sciences*, Vol. 32 No. 1, pp. 55-94.
- Dyckma, T., Gibbins, M. and Swieringa, R. (1978), "Experimental and survey research in financial accounting: A review and evaluation", in Adbel-khailik, A. and Keller, T. (Eds.), *The Impact of Accounting Research on Practice and Disclosure*, Duke University Press, pp. 48-105.
- Eden, C. (2004), "Analyzing cognitive maps to help structure issues or problems", *European Journal of Operational Research*, Vol. 159, pp. 673-686.
- Fiol, C.M. and Huff, A.S. (1992), "Maps for managers: where are we? Where do we go from here?", *Journal of Management Studies*, Vol. 29 No. 3, pp. 267-285
- Groot, T. and Budding, T. (2008), "New public management's current issues and future prospects", *Financial Accountability & Management*, Vol. 24 No. 1, pp. 1-13.
- Grossi, G., Reichard, C. and Ruggiero, P. (2016), "Appropriateness and use of performance information in the budgeting process: Some experiences from German and Italian municipalities", *Public Performance & Management Review*, Vol. 39 No. 3, pp. 581-606.
- Grønhaug, K. and Mellemvik, F. (1998), "The municipal report in use", *Management Journal of Contemporary Management Issues*, Vol. 3, pp. 93-111
- Guthrie, G., Olson, O. and Humphrey, C. (1999) "Debating Developments in New Public Financial Management: The Limits of Global Theorising and Some New Ways Forward", *Financial Accountability and Management*, Vol. 15, Iss. 3-4, pp. 209-228.
- Hall, M. (2016), "Realizing the richness of psychology theory in contingency-based management accounting research", *Management Accounting Research*, Vol. 31, pp. 63-74.
- Hedberg, B. and Jönsson, S. (1978), "Designing semi-confusing information systems for organizations in changing environments", *Accounting, Organizations and Society*, Vol. 3 No. 1, pp. 47-64.
- Hines, R. (1988), "Financial accounting: In communicating reality we construct reality", *Accounting, Organizations and Society*, Vol. 13 No. 3, pp. 251-261.
- Jones, N., Ross, H., Lynam, T., Perez, P. and Leitch, A. (2011), "Mental models: An interdisciplinary synthesis of theory and methods", *Ecology and Society*, Vol. 16 No. 1, p. 46.
- Jones, R. and Pendlebury, M. (1996), *Public Sector Accounting*, Pitman, London.
- Kitchin, R. (1994), "Cognitive maps: What are they and why study them?", *Journal of Environmental Psychology*, Vol. 14, pp. 1-19.

- Klein, J. and Cooper, D. (1982), "Cognitive maps of decision-makers in a complex game", *The Journal of the Operational Research Society*, Vol. 33 No. 1, pp. 63-71.
- Lee, T. (1984), *Cash Flow Accounting*, Van Nostrand Reinhold, London.
- Lukka, K. (1990), "Ontology and accounting: The concept of profit", *Critical Perspectives on Accounting*, Vol. 1, pp. 239-261.
- Macintosh, N. (1985), *Social Software of Accounting and Information Systems*, Wiley, Chichester.
- March, J. (1994), *A Primer on Decision Making. How Decisions Happen*, The Free Press, New York.
- Markus, M. (1983), "Power, politics, and MIS implementation", *Communications of the ACM*, Vol. 26 No. 6, pp. 430-444.
- Mellemvik, F. and Olson, O. (1996), *Regnskap i Forandring*, Cappelen Akademisk Forlag, Oslo.
- Morgan, G. (1988), "Accounting as reality construction: Towards a new epistemology for accounting practice", *Accounting, Organizations and Society*, Vol. 13, pp. 477-485.
- Moynihan, D. and Pandey, S. (2010), "The big question for performance management: Why do managers use performance information?", *Journal of Public Administration Research and Theory*, Vol. 20 No. 4, pp. 849-866.
- Nogueira, S. and Jorge, S. (2016), "Explanatory factors for the use of the financial report in decision-making: Evidence from local government in Portugal", *Revista de Contabilidade*, Vol. 19 No. 2, pp. 216-226.
- Northcott, D. and Doolin, B. (2000), "Home accountants: Exploring their practices", *Accounting, Auditing and Accountability Journal*, Vol. 13 No. 4, pp. 475-501.
- O'Donnell, E. and David, J. (2000), "How information systems influence user decisions: A research framework and literature review", *International Journal of Accounting Information Systems*, Vol. 1, pp. 178-203.
- Olson, O. (1987), *Den Kommunale Årsrapporten – Om Utvikling til nå og et alternativ*, Bedriftsøkonomens forlag, Oslo.
- Olson, O., Falkman, P. and Pauli, S. (1995), *Betalings-flödes-rapportering – Om Konsten att Rapportera Fakta I Redovisningen*, Nerenius & Santerius Förlaget, Stockholm.
- O'Reilly, C. (1985), "The use of information in organizational decision making: A model and some propositions", in Cummings, L. and Staw, B. (Eds.), *Research in Organizational Behavior*, Jai Press, Greenwich, 5, pp. 10-139.
- Pauli, S. (1999), *Politiker och Kassflödesrapportering – en studie av kommunpolitikens val av redovisningsinformasjon*, Förvaltningshögskolan, Göteborg.
- Rouse, W. and Morris, N. (1986), "On looking into the black box: Prospects and limits in the search for mental models", *Psychological Bulletin*, Vol. 100 No. 3, pp. 349-363.
- Scott, W. (1995), *Institutions and Organizations*, SAGE Publications, London.
- Shapiro, B. (1997), "Objectivity, realism, and truth in external financial reporting: What's really at stake in the dispute?", *Accounting, Organizations and Society*, Vol. 22, pp. 165-185.

- Shields, M. (1983), "Effects of information supply and demand on judgement accuracy: Evidence from corporate managers", *The Accounting Review*, Vol. LVIII No. 2, pp. 284-303.
- Storkholm, M., Mazzocato, P., Savage, M. and Savage, C. (2017), "Money's (not) on my mind: A qualitative study of how staff and managers understand health care's triple aim", *BMC Health Services Research*, Vol. 17 No. 1, 98, pp. 1-9.
- ter Bogt, H.J. and van Helden, G. (2011), "The role of consultant-researchers in the design and implementation process of a programme budget in a local government organization", *Management Accounting Research*, Vol. 22, pp. 56-64.
- Thaler, R. (1999), "Mental accounting matters", *Journal of Behavior Decision Making*, Vol. 12 No. 3, pp. 183-206.
- Timoshenko, K. (2008), "Russian public sector reform: The impact on university accounting", *Journal of Business Economics and Management*, Vol. 9 No. 2, pp. 133-144.
- Timoshenko, K. and Adhikari, P. (2009), "Exploring Russian central government accounting in its context", *Journal of Accounting and Organizational Change*, Vol. 5 No. 4, pp. 490-513.
- Timoshenko, K. and Adhikari, P. (2010), "A two-country comparison of public sector accounting reforms: Same ideas, different paths?", *Journal of Public Budgeting, Accounting and Financial Management*, Vol. 22 No. 4, pp. 449-486.
- Vakkuri, J. (2010), "Struggling with ambiguity: Public managers as users of NPM-oriented management instruments", *Public Administration*, Vol. 88 No. 4, pp. 999-1024.
- Vandenbosch, B. and Higgins, C. (1996), "Information acquisition and mental models: An investigation into the relationship between behavior and learning", *Information System Research*, Vol. 7 No. 2, pp. 198-214.
- Van Helden, G. J., Aardema, H., ter Bogt, H.J. and Groot, T.L.C.M. (2010), "Knowledge creation for practice in public sector management accounting by consultants and academics: Preliminary findings and direction for further research", *Management Accounting Research*, Vol. 21, pp. 83-94.
- Van Helden, J. (2016), "Literature review and challenging research agenda on politicians' use of accounting information", *Public Money & Management*, Vol. 36, p. 7.
- Walker, S. and Llewellyn, S. (2000), "Accounting at home: Some interdisciplinary perspectives", *Accounting, Auditing and Accountability Journal*, Vol. 13 No. 4, pp. 425-449.
- Willems, J. (2016), "Organizational crisis resistance: Examining leadership mental models of necessary practices to resist crises and the role of organizational context", *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, Vol. 27 No. 6, pp. 2807-2832.
- Wynne, A. (2007), "Is the move to accrual based accounting a real priority for public sector accounting?", *Public Fund Digest*, Vol. 6, p. 1.

TABLE 1. SUMMARY OF NARRATIVES

	Narrative 1	Narrative 2	Narrative 3
Metaphor of the “mental model”	“Mathematical matrix”	“Water tank”	“Fair rules”
Articulation of the mental model	Concern for mathematical balance between figures in the columns and rows	Concern for balancing cash inflows and outflows in the report	Concern for designing “fare rules” of budgetary allocations
Use is driven by	Following accounting procedures’ to guarantee reporting quality	Control that cash-outflows do not exceed cash-inflows	Improving the model for allocating financial resources both in time and space
Reasons for rejecting the “modified” report	Lack of reliability due to clear deviation from the established accounting procedures	Lack of the detailed overview over cash outflow and inflow items	Not detailed enough for the analytical purposes

APPENDIX 1. THE STANDARD ACCOUNTING REPORT

Article	Budget for the year XXXX	Implemented by 01.05. XXXX	Implementation (%)
Income (in billions of Rubles)			
Tax income	1 017 557	751 002	73,80
Non-tax income	25 495	64 496	253
Transfers	62 562	36 551	58,42
Income from restricted budgetary funds	474 849	276 531	58,24
TOTAL INCOME	1 580 463	1 128 580	71,41
Expenditures (in billions of Rubles)			
County administration	83 608	41 856	50,06
Courts	596	187	31,38
Police and security	73 713	41 706	56,58
Industry, power generation and construction	22 630	12 821	56,65
Agriculture	63 644	34 680	54,49
Environmental protection and protection of natural resources	7 930	1 675	21,12
Transportation, road maintenance, communication and logistics	29 792	7 609	25,54
Housing and administration of municipal infrastructure	65 347	29 569	45,25
Handling consequences of disasters	4 675	2 170	46,42
Education	75 089	36 007	47,95
Culture and arts	21 218	11 902	56,09
Mass media	15 770	9 602	60,89
Health	251 715	117 303	46,60
Social policy	131 952	67 069	50,83
Handling interest on debts	203 293	65 995	32,46
Financial support of municipalities	251 336	208 065	82,78
Other expenditures (including giving loans)	17 326	62 289	356
Expenditures from restricted budgetary funds	474 849	262 632	55,31
TOTAL EXPENDITURES	1 794 483	1 013 137	56,46
POSITIVE DIFFERENCE BETWEEN INCOME AND EXPENDITURES (OR DEFICIT)	- 214 020	115 443	
NATIONAL SOURCES OF FINANCING THE DEFICIT			
Change of national currency in bank account	0	-58 166	
County bonds	0	-5 611	
Loans from the county budget	42 000	42 000	
Other source of national financing	155 588	-70 699	
Sale of property	25 000	2 445	
TOTAL NATIONAL SOURCES OF DEFICIT FINANCE	222 588	-90 031	
INTERNATIONAL SOURCES OF FINANCING THE DEFICIT			
Change of international currency in bank account	0	-5 595	
Loans from international banks	-8 568	61 480	
Exchange rate difference	0	-81 297	
TOTAL INTERNATIONAL SOURCES OF DEFICIT FINANCE	- 8 568	-25 412	
TOTAL SOURCES OF FINANCING OF THE DEFICIT	214 020	-115 443	

APPENDIX 2. THE MODIFIED ACCOUNTING REPORT

Article	Budget for the year XXXX (A)	Implemented by 01.05. XXXX (B)	Variance (A-B)
MAIN (CURRENT) ACTIVITY			
CASH INFLOW FROM OPERATIONS			
Taxes	1 017 557	751 002	-266 555
Cash inflow from other budgets (NOTE 1)	62 562	36 551	-26 011
Other non-tax cash inflows	24 775	63 311	38 536
Cash inflows, restricted funds	474 849	276 531	-198 318
TOTAL CASH INFLOW FROM OPERATIONS	1 579 743	1 127 395	-452 348
CASH OUTFLOWS ON OPERATIONS			
Current activities (NOTE 2)	-1 125 322	-907 741	-217 581
Interest on loans, bonds and other securities	-203 293	-147 292	-56 001
Total cash outflow on operations	-1 328 615	-1 055 033	-273 582
A. NET CASH INFLOW/OUTFLOW FROM OPERATIONS	251 128	72 362	-178 766
INVESTMENT ACTIVITY			
Cash inflow from investment activity (including sale of property)	25 720	3 630	-22 090
Cash outflow on investment activity (including purchase of fixed assets)	-86 190	-17 404	-68 786
B. NET CASH INFLOW/OUTFLOW FROM INVESTMENT ACTIVITIES	-60 470	-13 774	-178 766
FINANCIAL ACTIVITY			
BORROWINGS			
Cash inflow (NOTE 3)	327 205	184 698	-142 507
Cash outflow (NOTE 4)	-138 185	-157 528	19 343
LENDING			
Cash inflow (NOTE 5)	0	43 832	43 832
Cash outflow (NOTE 6)	0	-65 829	-65 829
C. NET CASH INFLOW/OUTFLOW FROM FINANCIAL ACTIVITIES	189 020	5 173	-183 847
A+B+C. NET CASH INFLOW/OUTFLOW	0	63 761	63 761
Opening balance of cash (NOTE 7)	31 159	31 159	0
Closing balance of cash (NOTE 8)	31 159	94 920	63 761
D= A+B+C. NET CASH INFLOW/OUTFLOW	0	63 761	63 761

NOTES:

	Budget	Accounts
1. Cash inflow from other budgets		
In accounting of the reciprocal payments	0	827
Other cash inflows (e.g. transfers)	62 562	35 724
Total	62 562	36 551
2. Cash outflow on current activities		
Salary	153 484	85 449
Financial support to other budgets (subsidies)	251 336	208 065
Cash outflows of restricted budgetary funds	474 849	262 632
Other cash outflows on current activities	245 653	351 595
Total	1 125 322	907 741
3. Cash inflow from borrowings		
Budgetary loans	50 000	50 000
National bank loans	277 205	51 698
International bank loans	0	83 000

Governmental bonds	0	0
Total	327 205	184 698
4. Cash outflow from borrowings		
Repayment of budgetary loans	- 8 000	- 8 000
Repayment of national bank loans	- 121 617	- 122 397
Repayment of international bank loans	- 8 568	- 21 520
Repayment of governmental bonds	- 0	- 5 611
Total	- 138 185	- 157 528
5. Cash inflow from lending activity		
Repayment of budgetary loans given	0	579
Repayment of loans given to state organizations	0	43 253
Total	0	43 832
6. Cash outflow for lending activity		
Budgetary loans	0	- 34 115
Loans to state organizations	0	- 31 714
Total	0	- 65 829
7. Cash opening balance		
National currency	30 487	30 487
International currency	672	672
Total	31 159	31 159
8. Cash closing balance		
National currency	30 487	88 653
International currency	672	6 267
Total	31 159	94 920

APPENDIX 3. DISCUSSION POINTS DURING THE INTERVIEWS

ABOUT THE RESPONDENT

- Could you tell about yourself, e.g. education, experience, age, position?
- What do you do at work and what kind of economic information do you apply?
- What kind of decision-making situations are common for you during your working day?

ABOUT THE TRADITIONAL REPORT (APPENDIX 1)

- Have you seen this report before?
- For what kind of purposes is this report used?
- How do you use this report?
- Is it difficult to understand this report?
- Is it complex/too detailed/employing unclear concepts?
- Do you need expert help to interpret the report?
- Do you know, is this report used for discussions?
- For what kind of decision-making situations is this report useful?
- Do you feel confident that this report reflects all economic events?
- Could you say that the information presented in the report is unbiased and valid?

ABOUT THE MODIFIED REPORT (APPENDIX 2)

- For what kind of purposes this report might be used?
- How might you use this report?
- Is it difficult to understand this report?
- Is it complex/too detailed/employing unclear concepts?
- Do you need expert help to interpret the report?
- Do you know, if this report might be used for discussions?
- For what kind of decision-making situations might this report be useful?
- Do you feel confident that this report might reflect all economic events?
- Could you say that the information presented in the report is unbiased and valid?