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Investigating Government Accounting Reform in the Greek National Health Service: Some Preliminary Evidence

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Abstract

Over the last few decades, several countries have introduced financial management reforms as part of New Public Management (NPM). In some countries this has included transforming traditional budgetary cash accounting systems with accrual accounting. For example, in 1997 the Greek government introduced an accrual based accounting system (ABAS) and double-entry book-keeping in its public hospitals.

The first goal of the paper is to provide an overview of the Greek government reform initiatives and evidence regarding the rate of adoption of the new accounting system in the health sector. The second goal is to present the perceived usefulness of the accounting information provided by the accounting reform and some implementation problems.

Our analysis is based on the results of a survey undertaken in 2008. A structured questionnaire was prepared and sent to the Finance Directors of all 132 Greek public hospitals.

Keywords: Accrual Accounting, Public Sector Accounting, success, benefits Public Hospitals, New Public Management.

Introduction

Over the last few decades, the public demand for radical improvement of public sector activities resulted in a wave of organizational, managerial and accounting reform in the public sector worldwide (Christiaens, 2008). Many of these reforms show a number of characteristics often summarized under the term New Public Management (NPM¹). NPM is a management philosophy used by governments to transform and modernize their public sector in order to enhance the efficiency, effectiveness and accountability of public services delivery by transplanting private sector management practices and techniques to the public sector (Lapsley, 1988; Potter, 2002; Van Helden, 2005).

According to Hood (1995), the NPM focuses on reducing the differences between the public and the private sectors by moving public sector practice closer to private sector practice, thus shifting the emphasis from process accountability towards a greater accountability in terms of outcomes and results.

Within the context of NPM, several countries have adopted financial accounting reforms at one or more levels of government sector by replacing or transforming their traditional budgetary cash accounting systems into systems that support accruals, an accounting basis that is widely used by business-like organizations, in order to increase their financial accountability and transparency and improve measurement of government sector performance (Pessina and Steccolini, 2007; Blidisel and Tudor, 2007; Brusca, 1997; Christiaens, 1999, 2001; Christiaens and Rommel, 2008; Christiaens and Peteghem, 2004; Hoque and Moll, 2001; Johnsen, 1999; Lapsley, 1994;

Montesinos and Vela, 2000; Paulsson, 2006; Pallot, 1997, 2001; Pettersen, 1999; Richardson and Cullen, 2000; Venieris and Choen, 2004; Ouda, 2002).

This change in public accounting towards accrual accounting seems necessary as the traditional budgetary cash accounting system is perceived nowadays as no longer satisfactory, mainly due to the lack of presenting an accurate financial picture and providing useful and adequate accounting information to facilitate the control, planning and performance evaluation process (Koen, 2007; Lapsley, 1999).

According to Christiaens et al. (2004, 2007) governmental accounting reform has often been the first step of government reform and that is why it can be considered as an important condition and prerequisite for the success of other consequent governmental reforms under the transformation wave of NPM, such as organizational and managerial reforms. Therefore, effective and successful implementation of the accounting reform plays an important and dominant role in the implementation and success of other NPM practices and techniques within public organizations. Without an adequate and successful implementation, all the anticipated gains, the presupposed objectives and expectations of the reform will be lost due to the fact that the new accounting system will not be able to provide relevant and accurate managerial and financial information to support it. (Christiaens and VanPeteghem, 2007).

Typically, a system's implementation is perceived as successful when the system is accepted and used (Lucus, 1975; Robey, 1979; McGowan and Klammer, 1997); or when user satisfaction increases (Balley and Pearson, 1983; Ives et al., 1983; Doll and Torkzadeh, 1988). As Cerullo (1980) and Chong (2008) point out:

“from the practitioner's perspective, users' satisfaction, as an attitude towards the system change, may be the most important and widely used success factor because it will drive changes in decision making and use patterns.”

Within the context of NPM and following the example of numerous other countries in Europe and worldwide, the Greek public sector has encountered a number of financial accounting changes and reforms over the last ten years. As a result, in 1997 the Greek government started introducing the accrual based accounting system and double-entry bookkeeping method to some specific sectors of government activities in order to modernize its governmental accounting system. The most important examples of the Greek public sector entities where an accounting reform took place towards accrual accounting are: Social Securities funds (1997), Public law entities (1998), local government institutions; Municipalities, (1999) and finally public owned hospitals (2003).

In the international public sector accounting literature, the accrual accounting initiative is claimed to have a number of benefits, which can be grouped and summarised as follows: (i) identification of total cost of government programs and activities; better measurement of costs and revenues; enhancement of control process and transparency (ii) greater focus on outputs; focus on the long-term impact of decisions (iii) more efficient and effective use and management of resources and greater accountability (iv) reduction and better measurement of public expenditures (v) better presentation of the financial position of the public sector organizations

(vi) better financial management; improvement of performance measurements and greater comparability of managerial performance between periods and organizations by calculating indicators on the basis of comprehensive and consistent financial and operational data (vii) greater attention to assets and more complete information on public organizations' liabilities through better assets and liabilities management. (Mellett, 2002; and Olsen et al., 2001; Barrett, 1993; Evans, 1995; Pallot, 2000; Mellor, 1996; Brusca, 1997; Funnel and Cooper, 1998; Ryan, 1998; Chan, 2003; Guthrie, 1998; Jones, 2004; Barzelay, 1992; Moe, 1994; Venieris and Choen, 2004; Choen et al., 2007; Aucoin, 1995; Pessina and Steccolini, 2007; OECD, 2005; International Federation of Accountants - Public Sector Committee, 2000, 2002).

Yet reservations remain by a considerable body of researchers concerning the adoption of this accrual based accounting system (ABAS) by public organizations and believe that its implementation is often accompanied by a plethora of drawbacks and problems which eventually overcome its anticipated benefits; For them, the transition from the cash to accrual accounting system will only succeed in the coming years in business-like parts of government activities, such as Health Care organizations (Christiaens and Rommel, 2008). These problems may arise due to vague accounting objectives, standards and treatments that usually derive from unclear aspects of accounting legislation, such as assets identification and valuation, measurement of depreciation of physical assets and amortization of intangible assets, recognition of income and expenses, identification of opening balances (Christiaens, 2001; and Hepworth, 2003; Christiaens and Rommel, 2008; Jones and Pendlebury, 1991; Choen, Kaimenaki and Zorgios 2007; Ouda, 2008).

Except for overcoming and tackling these specific accounting issues, a second group of problems during the transition process is related to organizational and procedural factors (Cohen, 2007). Examples of these factors may include the (in)adequacy of information technology capability, the lack of experienced personnel resources to implement accrual accounting, the lack of accounting training resources, the absence of motivation and incentives for accrual accounting adoption and the insufficient political and Top Management Support and commitment, (Cohen et al., 2007; Pallot, 1997; Pendlebury and Karbhari, 1998; Guthrie, 1998; Stanton and Stanton, 1998; Newberry, 2002; Carlin and Guthrie, 2003; Hodges and Mellett, 2003; Brusca, 1997) .

In order to reap the full benefits of switching to accrual accounting it is important to take into account the above frequently cited problems and shortcomings of public accounting reform in order to control and resolve them. Otherwise, the adoption and implementation of the ABAS may be delayed or impeded.

The purpose of this paper is to examine the accounting and finance officers' perceptions of the Greek public hospitals regarding the implementation of the new accounting system based on accruals in the Health sector.

Our study investigates the accounting benefits, problems and satisfaction level regarding the adoption and implementation of this new accounting system into the Greek public hospitals and is based on empirical evidence.

The importance of this paper derives from the fact that there has been limited empirical research examining the views and attitudes of practising accountants and finance officers of public hospitals entities regarding this initiative worldwide and especially in the Greek health sector.

The remainder of the paper proceeds as follows. The next section presents a short description of the Greek National Health System (NHS) and the financial accounting reforms that took place during the last twenty years. The third section presents the research questions and describes the methodology applied in this study. The presentation of the research results is found in section four. The conclusions drawn from the research are set out in the final section.\

The Greek National Health Service (NHS)

Greek public hospitals have experienced a plethora of organizational, administrative and financial reforms since the mid-1980s in the name of improved efficiency, effectiveness, and accountability.

The Greek health care system can be characterised as a mixed system in which the National Health System (NHS), a compulsory social insurance scheme, and the voluntary private health insurance system co-exist². The Greek NHS was founded in 1983 by the Law 1397/83 which declared that health is a “*social good*” and all citizens should have the right to be offered high quality health care. Therefore, the objective of NHS was to provide free, equitable and universal health care coverage to all citizens, based on the principles of equity, equal access to health services and solidarity.

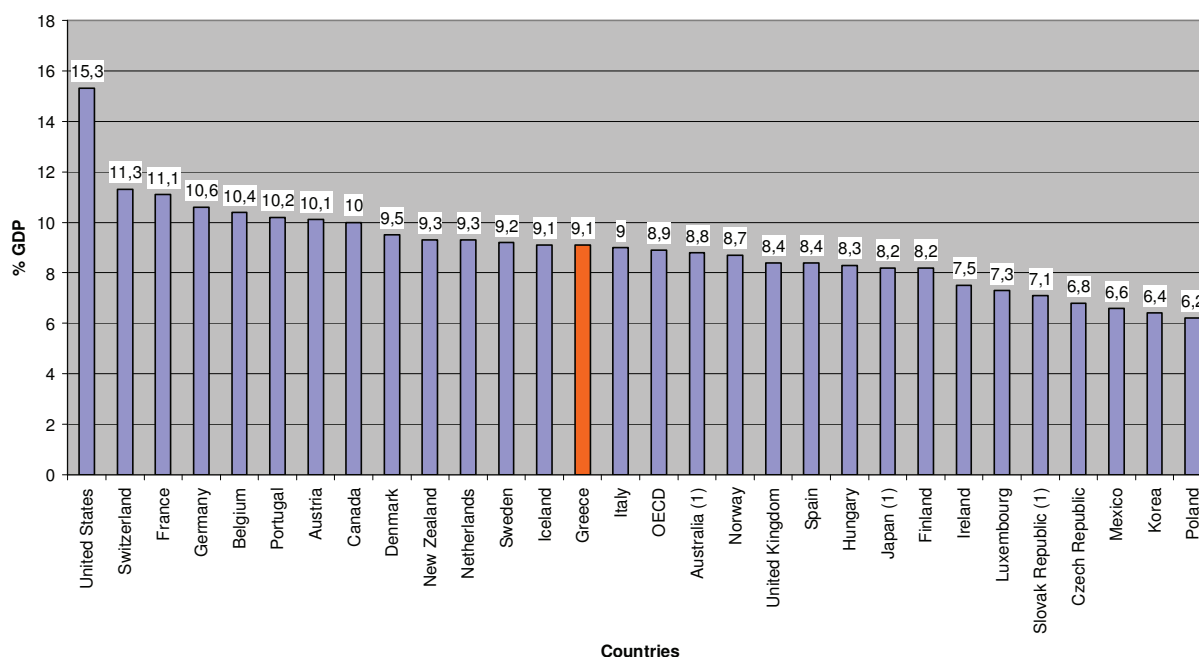
At the level of central government, the Ministry of Health and Social Cohesion (MHSC) is responsible for the provision of health care and the development and implementation of a national strategy for health. More specifically, the MHSC sets strategic priorities at a national level, defines the extent of funding for proposed activities, allocates the necessary resources, proposes legislative framework changes and undertakes the implementation of laws.

Despite the number of significant advances and improvements brought by the establishment of the NHS in 1983, still several challenges remain, such as the draft of a national action plan for public health, tackling high level pharmaceutical expenditures, the integration of primary care services, the modernization of hospital management by introducing market mechanisms, the decentralisation of the system and quality assessment. As a result, most of these proposals were enacted in a new organizational and administrative NHS reformation law 2889/01 in 2001. Several structural changes are included in this reform, such as the introduction of professional hospital Managers, the operation of 17 Regional Health Authorities (Pe.S.Y.P.) and the establishment of new managerial structures and businesslike (private-sector) efficiency tools and techniques in public hospitals like cost-improvement programmes, performance indicators, financial management information systems (FIS) and closed budgets to every department of the hospital separately (WHO, 2005). Under the spirit of NHS decentralisation the 17 Pe.S.Y.P.³ are responsible for implementing national health policies at the regional level, coordinating regional activities and organizing and managing the delivery of health care and welfare services within their geographical area through the respective health care and welfare units (Hospitals, Health Centres, social care units, etc).

However, the decentralization efforts of the public hospital system under this reform have only focused upon the devolution of autonomy in terms of political and operational authority to Pe.S.Y.P, but not upon the devolution of financial authority to them. As a result, Pe.S.Y.P are not considered to be self-financed entities, as they do not have individual budgets to manage, and are primarily financed via the annual state budget. The MHSC continues to validate and approve all financial transactions and events, including health care expenses and revenues, leaving Pe.S.Y.P with no essential financial and decisive authority.

Health care expenditures in Greece are funded mainly through the central annual government budget (general taxation 30.4%), the numerous state insurance funds (compulsory employer and insured people contributions 25.9%), private health insurance schemes (voluntary payments 2.3%) and out-of-pocket payments (for the remaining 41.6%) . In 2006, Greece's total spending on health accounted for 9.1% of GDP, slightly above the median of 8.9% in OECD⁴ countries as portrayed graphically in Figure 1, of which an extremely high 4.1% accounted for private health spending. Yet its per capita GDP is one of the lowest and its citizens the least satisfied with the health services they are provided (OECD, 2002).

Figure 1. Health Expenditure as a Share of GDP, OECD Countries 2006 GDP



Regarding the public health care system funding, the NHS budget is set annually by the General Accounting Office (GAO) of the Ministry of Economy and Finance, which is the central budget authority in Greece, based on historical data. Taxes (direct and indirect) finance about the 70% of all public hospital funding, whereas the remaining 30% is derived from a mixture of social security contributions and out-of-pocket payments. Tax revenue is often used to fill the gap between the officially determined level of social security funding (by fixed per diem or per-case reimbursement fees) and the actual cost of the provided services. Primary health care centres are financed through the budget of the hospital to which they belong administratively.

Hence, the Greek NHS can be characterised as a “dual-mixed” system, in which elements from both the Bismarck (increased importance of social insurance in funding health care) and the Beveridge (health care primarily funded by state budget) models co-exist.

Health care services in the public sector (mainly secondary and tertiary health care) are provided in 132 general and specialized public hospitals⁵ that operate within the NHS. The public owned hospitals of NHS have a total capacity of 34,134 beds according to data presented in Table 1.

Moreover, 195 Health Centres operate in rural areas. Rural Surgeries, attached to the Health Centres, provide primary health care services. The Health Centres also provide emergency services, short hospitalisation and follow up of recovering patients, dental treatment, family planning services, vaccinations, and health education.

Table 1. Number of NHS hospitals per Regional Health Authorities in Greece

Regional Health authorities	No of Beds	No of Hospitals	(%)	No of Health centers	(%)	No of social care units	(%)	No of Employees
1 ⁿ	9.291	27	20.45%	8	4.10%	6	6.52%	27.567
2 ⁿ	5.421	20	15.15%	23	11.79%	14	15.22%	13.977
3 ⁿ	4.044	17	12.88%	17	8.72%	8	8.70%	10.340
4 ⁿ	4.919	15	11.36%	34	17.44%	16	17.39%	13.806
5 ⁿ	2.420	13	9.85%	32	16.41%	13	14.13%	9.032
6 ⁿ	5.725	31	23.48%	67	34.36%	26	28.26%	16.749
7 ⁿ	2.314	9	6.82%	14	7.18%	9	9.78%	6.747
Total	34.134	132	100%	195	100%	92	100%	98.218

Accounting Reform in the Greek Public Health Sector

Traditionally, Greek governmental budgeting and accounting systems at all three levels of public governance – central, regional and local – is regulated by law and not by an independent standard-setting professional body and is still being based upon the cash principle of accounting.

Similarly, the governmental accounting regulations applying to Greek public hospitals – which date back to 1974 with the legislative decree 496/74 – were also based on an old budgetary and single-entry book-keeping accounting system and had a primarily cash basis accounting approach.

More specifically, the main purpose and concern of the public hospitals’ budgetary cash accounting system was to recognize transactions and other events only when cash was received or paid, to record them in the authorised budgets, driven by budgetary principles, and finally to control the execution of the budget approved by the governmental decision makers. On the other hand, little attention was given to providing a complete picture of the financial position and financial performance of public hospitals.

The Greek management literature has long pointed out the need for reforming this budgetary cash accounting system in the health public sector and has indeed supported the switch to accrual accounting⁵ (Ballas and Tsoukas, 2000; Venieris and Koen, 2003). Traditional budgetary cash accounting has long been viewed as ‘outdated’, no longer satisfactory and making a significant contribution to the inefficiency and ineffectiveness of the Greek public sector because it does not permit the disclosure of the full picture of the economic activity and financial position of the public hospitals (Lüder and Jones, 2003).

The initial efforts of introducing the accrual basis of accounting in public hospitals in Greece commenced in 1997 under the Law 2519/97. This Law presented for the first time the government’s attempt and intention to introduce a double-entry bookkeeping accounting system and cost management methodologies in public hospitals based on the accrual basis.

For this purpose, the development and preparation of an Official Health Sector Accounting Plan (HSAP), aimed at developing the conceptual framework for accrual accounting in public hospitals, was assigned by the Ministry of Economy and Finance to the national Council of Accounting (ESYL) and to the Chamber of Finance (OEE).

The HSAP mainly included broad guidelines regarding principles for accrual basis accounting implementation, similar to those applied to the private sector, the charts of accounts, asset classification, examples of journal entries, templates of the layout and the content of the published financial statements (i.e. balance sheet, income statement, cash flow statement, The Statement of Income Distribution, Budget report and Actual report) and some suggested financial ratios (Venieris and Koen, 2004).

Furthermore, a pilot implementation project, under the experimentation clauses of the HSAP, commenced in 1999 in order to test the suitability of the new accounting system and its readiness for full implementation. Five public owned hospitals that would implement the HSAP as pioneers were selected.

The governmental efforts to reform the accounting system of the health sector escalated in 2003, after taking the pilot implementation experiences into account and making the necessary modification and amendments to the HSAP, when a law, the Presidential Decree 146/03 (P.D. 146/03), was passed. The P.D. 146/03 enforced the mandatory adoption of the new accounting system, based on accrual accounting, to all public hospitals that are part of the Greek NHS and established the necessary guidelines and accounting standards for financial reporting. However, the previous traditional budgetary cash accounting system was not totally abandoned but instead, the public hospitals just added the ABAS separately and most of the budgetary accounting principles were maintained (Christiaens, 2001). The new accounting framework of the P.D. 146/03 defined three accounting systems that should work in parallel under three independent accounting cycles, the financial accounting cycle, the budgeting cycle and the cost accounting cycle, within the same general ledger and while each one would still retain its autonomy. The legislator believed that the solution of introducing this combined approach for accrual accounting and double-entry budgetary cash accounting through three separate accounting systems should be the most beneficial in order to reap the best of the two accounting principles, as each one has its own strengths and weaknesses. The simultaneous existence of the two accounting bases,

accrual and cash, was evaluated as necessary due to different accounting objectives and processes of the three accounting systems. The financial accounting system is aiming at reporting the financial position and the yearly profit and loss of hospitals, the budgeting system is aiming at authorizing and controlling the public spending (Christiaens and Rommel, 2008) and the cost accounting system is aiming at collecting, measuring, calculating and presenting the cost of different organizational functions and services by using the accounting data of the financial accounting cycle.

The P.D. 146/03 pointed out that the deadline for the implementation of accrual financial accounting in public hospitals was the 1st of January 2005, while the deadline for cost accounting introduction was the 1st of January 2006.

The last government accounting reform took place with the Law 3599 that was issued in 2007 and enforced the compulsory adoption of the accounting principles which are internationally accepted (IPSAS⁷) in public hospitals. The Law 3599/07 encourages public hospitals to harmonize national requirements with the IPSAS in order to prepare and present its financial accounting statements under the principles and accounting standards of IPSAS started from the fiscal year of 2008, but without presenting any specific guidelines and details about the compliance.

Research Objectives

In order for the new accounting system to be effectively used in public hospitals, a better understanding of the derived accounting benefits, satisfaction, problems as well as reasons for non-adoption need to be investigated and developed. Therefore the following five research questions will be studied:

RQ1: To what extent have Greek public health care organizations implemented the new accounting system set out in the PD 146/03?

RQ2: What are the reasons for not yet adopting the new mandatory accounting system set out in the PD 146/03?

RQ3: What are the accounting benefits and implementation problems regarding the adoption of accrual-based accounting system?

RQ4: Are the accounting and finance officers satisfied with the new accounting system implementation?

RQ5: Is there a relation between satisfaction, accounting benefits, problems, accrual implementation cost, years of accrual accounting adoption, education level of accounting staff and hospital size?

Methodology

The principal area of investigation is to present the status quo of accounting reform adoption in Greek Public hospitals as well as the implementation problems and the perceived usefulness of the enhanced financial information provided by ABAS for decision-making purposes. To determine all the above a survey using questionnaires was conducted during 2008 in all Greek public hospitals in order to gather the necessary data. The questionnaire was sent by e-mail and Fax to 132 finance directors working within the public hospitals accounting and finance departments, on the understanding that they are users who know in depth how the new accounting system is used and operated in their organizations. Eventually, out of 132 distributed questionnaires, 54 were returned. As a result the response rate was 41% covering all the regions of the country (see Table 2).

Fifty-four finance directors returned the questionnaire, yielding a total response rate of 41%. Responses of the questions included in the questionnaire form were provided either on a yes/no type or on a five-point Likert scale ranging from 1 to 5, with (1) indicating “full disagreement” and (5) indicating “full agreement”, and (3) “neither agree nor disagree“ being at the midpoint. (In some cases 1 corresponds to the lowest degree and five to the highest). SPSS version 17 was used, in order to analyze the data collected via the survey questionnaire, as the most common statistical package. Moreover, it is important to note that the sample representativeness was tested and the result of the statistical test, chi-square, goodness-of-fit, show that the sample’s distribution is not significantly different from the distribution within the total population of 132 Greek hospitals. (Chi-square: 2.0; p = 0.91)

Table 2. Coverage Ratio of answered questionnaires per Regional Health Authorities

<i>Regional Health Authorities</i>	<i>Total Number of Hospitals</i>	<i>No of Hospitals answered the questionnaire</i>	<i>% of Hospitals answered the questionnaire</i>
1 st Attiki	27	11	(40.7%)
2 nd Peiraia- Aigaio	20	8	(40%)
3 rd Makedonia	17	10	(59%)
4 th Anat. Makedonia & Thraki	15	5	(33%)
5 th Thessalia - Sterea Ellada	13	4	(31%)
6 th Peloponnisos - Ionia Nisia - Dytiki Ellada	31	13	(42%)
7 th Kriti	9	3	(42%)
Total number	132	55	(41%)

Prior to the presentation of the research findings, we would like to refer to the demographic characteristics of the public hospitals that are comprised in the sample. Table 3 shows the hospitals profile, such as, geographical, financial turnover, number of employees, number of beds and finally type of Health organization.

Table 3. Demographic Characteristics of public hospitals sample

Geographical Area	Number of Hospitals	
	Frequency	(%)
Attiki - Peiraia- Aigaio	19	(35.18)
Makedonia & Thraki	15	(27.7)
Thessalia - Sterea Ellada	4	(7.4)

Peloponnisos - Ionia Nisia - Dytiki Ellada	13	(24.7)
Kriti	3	(5.5)
Total	54	(100)
Financial Turnover (€ Thousands)		
Up to 3,000	15	(27.7)
3,000 – 15,000	14	(25.9)
15,000 – 30,000	6	(11.1)
30,000 – 50,000	2	(3.7)
Over 50,000	17	(31.4)
Total	54	(100)
No of beds		
Up to 200	23	(42.6)
201 - 400	12	(22.2)
Over 400	19	(35.2)
Total	54	(100)
Number of employees		
Up to 100	9	(16.6)
100 – 400	12	(22.2)
400 – 700	12	(22.2)
Over 700	21	(38.8)
Total	54	(100)
Type of Health Organization		
General Hospitals	39	(72.2)
Speciality Hospitals	10	(18.5)
Other	5	(9.3)
Total	54	(100)

Survey Results

Implementation rate of Accrual Based Accounting Systems (ABAS)

The survey revealed that the financial ABAS has been adopted and used by 45 out of 54 (83.3%) public hospitals, which is a quite satisfactory adoption rate. On the other hand, the introduction of management accounting practices has not yet seriously progressed, as only 10 out of 54 (18.5%) hospitals have developed and implemented an operating cost accrual accounting system. According to our survey data, another 32 (60%) hospitals are in the process of developing and implementing a cost accounting system that will be completed by the year 2010. Despite the fact that the deadline, imposed by the Presidential Decree 146/03, concerning cost accrual accounting system implementation was formally the 1st January, 2006, the remaining 12 (23%) hospitals answered that the introduction of such an accounting system was not an option for them even in their future plans (Table 4).

Table 4. Implementation Rate of accrual accounting systems

	YES	NO	Total
Financial accrual accounting system (N = 54)	45 (83.3%)	9 (16.7%)	54 (100%)
Cost accrual accounting system (N = 54)	10 (18.5%)	44 (81.5%)	54 (100%)

Reasons for not implementing Accrual Based Accounting Systems (ABAS)

Although, the international literature suggests (Lawson, 2005; Cardinaels et al., 2004; Begun et al., 2003) that complex-dynamic organizations, such as hospitals, may especially benefit more from an accurate and refined cost system for cost reduction efforts, that is not the case for Greece (implementation rate = only 18.5%).

The low reform capacity exhibited by the Greek public hospitals regarding the ABAS and mainly the cost ABAS can be explained by the following eight reasons cited in Table 5. Respondents were asked to indicate the extent to which they agreed with each of the following statements on a five point Likert scale, with a response of one (1) indicating strong disagreement and a response of five (5) indicating strong agreement.

Table 5. Results of respondents regarding reasons for non-adoption of Accrual based Accounting System (ABAS)

**Notes: scale 1= strongly Disagree to 5 = strongly Agree*

Reasons for non-adoption	Mean	St deviation	Ranking
Lack of adequate resources	4.00	1.118	1
Current Funding and Reimbursement system	3.89	1.269	2
Absence of fines for non-adoption	3.78	0.972	3
High legal framework complexity	3.56	0.882	4
High designing and implementation cost	3.44	1.333	5
Lack of IT systems	3.00	1.425	6
Lack of Top Management commitment	2.63	1.323	7
Satisfaction with existing accounting system	2.33	1.414	8

Survey respondents have quoted a number of reasons for non-adoption of accruals by their healthcare entities. As indicated in Table 5, the most important appear to be first the “Lack of adequate resources” (Mean 4.00) as the development of such a system is labour-intensive and a time-consuming process that requires strong financial and human resources. Secondly, the “Current re-imburement system” (Mean 3.89) in the Greek public health sector is another obstacle contributing to the delay of the ABAS adoption. The reimbursement system can be classified as retrospective and output-based, de-motivating the hospital’s management to reflect actual cost in patient billings. Cost data and information are not an important factor in pricing decisions due to the fact that the health care payers (government, insurance funds) simply pay back not the true cost of health services provided but a fixed per diem price based on a pre-defined legal pricing scheme. Furthermore, another leading reason that has an effect on the low adoption level of ABAS implementation is the absence of an enforcement system to impose fines in case of non-compliance with the adoption timetables set out by the legislation (Mean 3.78). Last but not least, another reason explaining the low adoption rate of accrual accounting system by Greek public hospital entities, is the perceived high complexity of the imposed legal accounting framework by establishing two accounting regimes, accrual and cash accounting, as well as the cost of running these two accounting systems in parallel (Mean 3.56 and 3.44 respectively).

In contrast, the reasons that do not seem to have a strong influential impact on the delay of ABAS implementation are the need to create a new IT system in order to process accruals data (Mean 3.00), the support and commitment of hospitals' Top Management team (Mean 2.63), and finally, the satisfaction of employees with the traditional budgetary cash accounting system (Mean 2.33).

Perceived Benefits of Accrual Based Accounting Systems (ABAS)

Table 6 presents the perceptions of financial managers and chief accountants regarding the usefulness of the new accounting system in producing and presenting adequate accounting information for decision-making purposes.

Respondents were asked to indicate the extent to which they agreed with each of the statements on a five point Likert scale, with a response of one (1) indicating strong disagreement and a response of five (5) indicating strong agreement.

Table 6. Results of respondents' perception regarding the usefulness of the financial information provided by Accrual based Accounting System (ABAS)

Perceived Benefits	Percentage of Hospitals					Mean	St deviation	Ranking
	1*	2	3	4	5			
Improved Monitoring of assets and liabilities	0.0%	0.0%	8.9%	55.6%	35.6%	4.27	0.618	1
Improved financial disclosure and measurement of the true and accurate financial position	0.0%	2.2%	11.1%	44.4%	42.2%	4.25	0.751	2
Improve the consistency and comparability of financial information reported	4.4%	2.2%	15.6%	42.2%	35.6%	4.02	1.011	3
Improved Decisions-making process based on accurate, relevant, and reliable information	2.2%	13.9%	6.7%	37.8%	40.0%	3.98	1.108	4
Provides enough financial data to facilitate the control process	2.2%	11.1%	20.0%	40.0%	26.7%	3.87	1.079	5
Improved financial transparency and accountability	2.2%	13.3%	26.7%	24.5%	28.9%	3.62	1.173	6
Improved resource planning and allocation	6.7%	17.8%	26.7%	24.4%	24.4%	3.42	1.234	7
Better measurement of financial performance	13.3%	11.1%	22.2%	31.1%	22.2%	3.38	1.319	8

Provides useful product costing information	20.0 %	8.9%	15.6%	31.1%	24.4%	3.31	1.459	9
Reduction and better measurement of public expenditures	13.3 %	22.2%	28.9%	28.9%	6.7%	2.93	1.156	10

**Notes: measured on scale 1= strongly disagree to 5 = strongly agree*

Respondents have quoted a number of benefits regarding the accrual accounting adoption. As indicated in Table 6, the most important perceived benefits of the new accounting system appear to be the “Improved Monitoring of assets and liabilities” (Mean 4.27), the “Improved disclosure of the true and accurate financial position” (Mean 4.25), the “Improved consistency and comparability of financial information reported” (Mean 4.02) the “Improved decisions based on accurate, relevant, and reliable information” (Mean 3.98) and the “Improved financial transparency and accountability” (Mean 3.62).

Conversely, the merits that do not seem to have influenced the respondents to a great extent and received the lowest rating are: the “Improved resource planning and allocation” (Mean 3.38), the “Better measurement of financial performance” (Mean 3.38), the “provision of useful product costing information” (Mean 3.31), and finally, the “Reduction of public expenditures” (Mean 2.93).

Firstly, these low scores are due to the fact that the current budgeting system can be labeled as incremental, based on historical data, without fostering a strategic allocation of resources; secondly, that most of the hospitals examined in this paper have not yet implemented some kind of management accounting practice based on the accrual principle; and thirdly, that the simultaneous operation and coexistence of cash and accrual principles in a new system, where the cash accounting still dominates in the major function of decision making while accrual accounting follows, has resulted in many data inconsistencies and conflicts in the hospitals context.

Finally, statistically significant differences exist between the responses of healthcare entities that use accrual accounting systems and those that do not. The average response by ABAS adopters (Mean 3.72) was significantly ($p = 0.01$; $t = 4.62$) higher than for non-adopters (Mean 3.21). As might be expected, ABAS adopters and users more strongly agreed as to the benefits of those systems than non-users.

Obstacles faced in implementing of Accrual Based Accounting Systems (ABAS)

Although, the general perception, discussed earlier, is that deployment of accrual accounting systems brings substantial benefits to public healthcare entities, the analysis of the empirical evidence showed that the majority of the survey’s respondents (62.2%) stated, as displayed in table 7, that the implementation process of the new accounting system was very difficult and a time consuming project accompanied by many organizational difficulties and implementation obstacles.

Table 7. Results of respondents' perception regarding the difficulties encountered in designing and implementing Accrual based Accounting System (ABAS)

	Percentage of Hospitals					Mean	St deviation
	1*	2	3	4	5		
The implementation process of ABAS (N=45)	40.0%	22.2%	28.9%	4.4%	4.4%	2.11	1.133
	(18)	(10)	(13)	(2)	(2)		

*Notes: measured on scale 1 = very difficult to 5 = Very easy.

More specifically, following the results of the empirical survey, the most frequent problems and obstacles faced by the public hospitals regarding the ABAS implementation are the ones presented in Table 8 below.

Table 8. Results of respondents' perception regarding problems and difficulties of adopting and implementing Accrual based Accounting System (ABAS)

Problems	Percentage of Hospitals			Mean	St. deviation	Ranking
	1*	2	3			
Lack of adequate resources and manpower	15.6%	40.0%	44.4%	2.29	0.733	1
Data collection regarding accrual implementation	13.3%	48.9%	37.8%	2.24	0.679	2
Lack of knowledge and expertise to implement such a system	20.0%	37.8%	42.2%	2.22	0.765	3
Personnel's reluctance to change	13.3%	53.3%	33.3%	2.20	0.661	4
Lack of accounting training	17.8%	48.9%	33.3%	2.16	0.706	5
Overrun of initial estimated cost of implementation	17.8%	51.1%	31.3%	2.13	0.694	6
Absence of clear accounting objectives, standards	22.2%	46.7%	31.1%	2.09	0.733	7
Lack of staff motivation and financial incentives	20.0%	73.3%	6.7%	1.87	0.505	8

Insufficient political commitment and Top Management Support	35.6%	46.7%	17.8%	1.82	0.716	9
Lack of accounting information system (software)	42.2%	48.9%	8.9%	1.67	0.640	10

*Notes: measured on scale 1= no problems encountered to 3 = significant problems encountered

The results in Table 8 confirm the main findings reported in the existing literature, and reveal that the most highly-rated problems regarding the adoption of the accrual basis of accounting appeared to be the “Adequacy of requested resources” (Mean 2.31), the “Lack of knowledge and expertise to implement such a system” (Mean 2.22) and the “Personnel’s reluctance and resistance to change” (Mean 2.20). The areas that were indicated by the public hospitals sample as the ones being the less problematic are the “Insufficient political and Top Management Support and commitment” (Mean 1.82) and the “Selection of the appropriate accounting software” (Mean 1.67).

The above mentioned difficulties, hampering the implementation process of the accrual based accounting system in the Greek public health sector, are also found in the public sectors of other developed countries (Christiaens, 2001; Hepworth, 2003; Brusca, 1997; Pendlebury and Karbhari, 1998; Jones and Puglisi, 1997; Guthrie, 1998; Pallot, 1997; Montesinos and Vela, 2000; Monsen, 2002; Stanton and Stanton, 1998; Newberry, 2002; Goldman and Brashares, 1991; Hodges and Mellet, 2003; Hoque and Moll, 2001; Cohen et al., 2007).

Satisfaction with of Accrual Based Accounting Systems (ABAS)

In order to answer our third research question, “*Are the accounting and finance officers satisfied with the new accounting system implementation?*” we examined the following hypothesis:

H1: Individuals report positive attitudes towards the implementation of accrual accounting system

In order to measure the degree of employees’ *satisfaction* with their new accrual accounting system two questions were used with answers being either of the yes/no type or provided on a 5-point Likert scale ranging from “strongly unfavourable” (1) to “strongly favourable” (5) with “neither agree nor disagree” (3) being at the midpoint.

Table 9. Results of respondents' perception regarding satisfaction levels with implementation of Accrual based Accounting Systems (ABAS)

	Percentage of respondents	Frequency of respondents
Was the accrual accounting system initiative worthy for your organization?		
YES	(80%)	36
NO	(20%)	9
Total	(100%)	45
Are you satisfied with accrual accounting system implementation?		
YES		
3*	(2.2%)	1
4	(44.4%)	20
5	(33.3%)	15
Total	(80%)	36
NO		
1	(6.7%)	3
2	(13.3%)	6
Total	(20%)	9
Satisfaction degree with accrual accounting system (mean)	3.84	3.84
Satisfaction degree with accrual accounting system (st.deviation)	1.224	1.224

**Notes: measured on scale 1= strongly unfavourable to 5 = strongly favourable*

As shown in Table 9, eighty percent (80%) of the respondents stated that the implementation of the new accounting system was worth-pursuing for their health care entities. This also explains why the variable “satisfaction with the accrual accounting adoption” was rated highly with a mean of 3.84 (standard deviation 1.224) on a five-point scale.

Typically, system implementation is perceived as successful when the system is accepted and used (Lucas, 1975; Robey, 1979; McGowan and Klammer, 1997), or when user satisfaction level increases (Balley and Pearson, 1983; Ives et al., 1983; Doll and Torkzadeh, 1988).

The approach that Shields (1995) has adopted was to allow the user to rate the degree of success with whatever definition they themselves deemed relevant. It has been argued, for example, that if a user perceives satisfaction with an information system *per se*, then the system is successful, consequently user satisfaction can be a proxy for system success (McGowan and Klammer, 1997; McGowan, 1998).

Moreover, McGowan (1998) has argued that if users' attitudes towards a system are unfavourable, it is likely that they will not accept it nor use it. He posited that: “*measures that describe the users' reactions to the innovation, such as attitudes and satisfaction, are appropriate surrogates for assessing the success of an information system*”. This perception of the notion of system success has provided the most robust basis for Accounting Information Systems (AIS) success measurement in research up to date (including management accounting practises such as Activity Based-costing system), and is therefore the one adopted in this study.

The results presented in Table 10 indicate support for Hypothesis 1. The one-sample t-test suggests that, on average, the participants of this study report favorable attitude towards the implementation of ABAS (Mean. 3.84) at a 0.01 level of significance (t = 4.62). The mean attitude towards accrual accounting success level is significantly higher than the median response of three (3).

Table 10. Attitude toward Accruals implementation

Hypothesis number	Dependent Variable ^a	N	Mean	Std. Dev.	t-value ^b
1	Attitude	45	3.84	1.224	4.628*

*significant at the 0.01 level

^a Variable scaling (1= strongly favorable, 5 = strongly unfavorable)

^b Test value (mean < 3)

The high cost of implementing an accounting system is considered to be a top concern to many researchers regarding the successful implementation of a new accounting system (Lawson, 2005; Udpa, 1996; Canby, 1995).

Furthermore, with regards to the factor of the “cost” of implementing an accrual based accounting system, the majority of the respondents (75.6 %) to this survey did consider that the benefits of the accrual accounting information are equal or superior to the cost of elaborating it. In comparison, only 24.4 percent of the respondents indicated that the implementation cost of the new accounting system was high or very high.

Table 11. Results of respondents’ perception regarding the cost of implementing the ABAS

	Percentage of Hospitals					Mean	St deviation
	1*	2	3	4	5		
The cost accrual accounting system (N=45)	33.3% (15)	31.1% (14)	11.1% (5)	22.2% (10)	2.2% (1)	2.29	1.218

*Notes: measured on scale 1 = very low to 5 = very high.

Moreover, public hospitals that have at least two years experience with the new accounting system are assumed to have gathered the relevant experience necessary to be familiar with the accrual concept. These hospitals are expected to have resolved most of the accounting and implementation problems emerged during the accrual accounting system installation and to have progressively overcome most of these difficulties as they are getting familiarized with it. Thus, hospitals with “long-term experience” in accrual accounting are assumed to exhibit a higher satisfaction level with the new accounting system. As shown in Table 12, 57.8 percent of the respondents replied that they have just introduced the new accounting system in their organizations, compared to 42.2 percent of hospitals with experience of more than two years of accrual accounting adoption. The number of years since adoption is included in our study as a variable in order to capture at least some of the variation due to timing issues (Christiaens, 2001; Cohen et al., 2007).

Table 12. Length of time using ABAS

Years	Number of Hospitals	
	Frequency	(%)
1	7	15.6
2	19	42.2
3	5	11.1
4	4	8.9
5	3	6.7
6	2	4.4
7	1	2.2
8	2	4.4
9	2	4.4
Total	45	100

The last two factors of the RQ4, *education level*, indicating general professionalism of accounting staff, and *hospital size*, are described as implementation barriers affecting the successful implementation of accounting systems at Lüders's (1990) contingency model. Accordingly, these factors are included in our study in order to quantify its impact and effect on the implementation success of accrual accounting.

Table 13. Accounting Dept. personnel's education type and level

	Secondary Education	Post-secondary Education		Total
		Undergraduate studies	Postgraduates studies	
Education Type	57.8%	39.2%	2.2 %	100 %
Education Level	Low	Medium	High	(N=45)

As displayed in Table 13, the “*education*” variable has been categorized in two types: secondary education comprising high schools, secondary schools and post-secondary education or higher education, which includes undergraduates and postgraduate studies provided by colleges, universities and institutes of technology.

Findings of this survey indicate that the education level of the majority of the accounting department employees in the hospitals examined is quite low. Indeed, most of the accounting employees (57.8 percent) within these hospitals are graduates of the secondary education level – only 2.2 percent hold a postgraduate degree, such as Master's or Ph.D (high education level).

Finally, the variable “*size*” is included in our study in order to examine its impact on the satisfaction level of accrual accounting implementation. This variable has been incorporated in other referenced governmental accounting studies without exhibiting clearly its exact impact on accrual accounting implementation processes. Some researchers believe that larger public organizations are positively associated with the level of system implementation success (Christiaens, 1999, 2001). Other studies have found no significant relation whatsoever (Evans and Patton, 1983; Robbins and Austin, 1986). Contrary, there have even been studies where a negative relationship has been observed. (Luder, 1990; Cohen and Kaimenakis, 2007). In our study, the number of beds has been chosen as indicative of the size of the hospital in question, in contrast to the total amount of revenues, assets or number of employees. This is due to the different nature of the public organizations' goals and objectives when compared with those of private sector (see table 14).

Table 14. The number of Hospitals by size using ABAS

Hospitals size	Number of Hospitals	
	Frequency	%
Small hospital	18	40.0
Medium hospital	11	24.4
Large hospital	16	35.6
Total	45	100

In order to answer our last research question (*Is there a relation between satisfaction, accounting benefits, problems, accrual implementation cost, years of accrual accounting adoption, education level of accounting staff and hospital size?*), we have constructed a correlation matrix to examine if statistically significant correlations and associations exist between the above mentioned variables (see Table 15).

From the analysis of the bivariate correlation it is evident that accounting benefits, implementation problems, implementation cost, size and education level are significantly highly⁸ correlated with the satisfaction variable. More specifically, the correlation among satisfaction and accounting benefits exhibits a positive high level Pearson correlation coefficient of $r = 0.804$ ($p < .001$). However, the correlations among satisfaction and implementation problems and the cost of accrual accounting system reveal a high level negative and statistically significant Pearson correlations coefficients of $r = -0.506$ ($p < .001$) and $r = -0.750$ ($p < .001$) respectively.

Regarding the variables of hospital size (measured in terms of bed size) and education level of accounting employees, a statistically significantly mid level positive correlation can be observed with the satisfaction variable (with $r = 0.371$ ($p < .005$) and $r = 0.306$ ($p < .005$) respectively).

These findings further confirm the strong relation among the above-mentioned variables in the context up to date. However, a negative path coefficient – without exhibiting any statistically significant correlation – can be observed between the years of accrual accounting experience and satisfaction.

The same conclusions can be drawn from the analysis of *Spearman* correlation coefficients.

Table 15. Pearson and Spearman correlation matrix for all the variables.

Variables (N = 45)	Satisfaction	Benefits	Shortcomings	Size	Cost	Years	Education
Satisfaction	1.000	0.672**	-0.505**	0.371*	-0.678**	-0.135	0.310*
Benefits	0.804**	1.000	-0.410*	0.495**	-0.574**	-0.054	0.157
Shortcomings	-0.506**	-0.468*	1.000	-0.357*	0.611**	0.063	-0.091
Size	0.371*	0.493**	-0.354*	1.000	-0.259	0.023	-0.186
Cost	-0.750**	-0.690**	0.633**	-0.266	1.000	0.004	-0.111
Years	-0.135	-0.063	0.068	0.023	0.014	1.000	0.116
Education	0.306*	0.242	-0.124	-0.191	-0.122	0.110	1.000

Notes : The correlations above the diagonal correspond to Spearman two-tailed correlations. The correlations below the diagonal correspond to Pearson two-tailed correlations.

* * Significance at 1% level (two-tailed); * Significance at 5% level (2-tailed)

Conclusions

In this paper we have presented the “journey” of introducing and implementing an accounting and management reform in the Greek NHS and examined its diffusion rate. When it comes to the financial transaction cycle of the accrual accounting system, our findings, based on a sample of 54 public hospitals, indicate that the adoption rate (83%) of accruals is quite satisfactory. However, the adoption rate (18.5%) of the accrual based cost accounting system has not yet seriously progressed 6 years after the declared NHS accounting reform (P.D. 146/03), despite the steep rise in the cost of providing healthcare services in Greece during the last ten years and the pressure to identify the causes of this increase. The highest ranked reasons for non-adoption of ABAS are: the absence of an enforcement system by the state, the lack of adequate resources to support the implementation process of accruals, the current health sector reimbursement system which results in deviations between the true cost of services and price (provoking huge deficits to the public health sector), and last but not least the complexity and high cost of running two accounting systems in parallel, resulting in matching problems between them.

Furthermore, the present study investigates the accrual accounting benefits and drawbacks derived from accrual accounting system implementation. More specifically, the majority of the respondents agree that the ABAS is useful in producing adequate information regarding the overall financial picture to users and stakeholders, the evaluation of hospital performance, the real level of liabilities, the determination of the full costs of services delivered, improvement in hospital fixed assets management and the decision making process.

On the other hand, according to our survey results, a number of difficulties have been identified in the implementation of ABAS of which the most important are the adequacy of resources, the personnel’s shortage of knowledge on accrual accounting principles and standards, the personnel’s resistance to change, the lack of adequate training and the absence of financial incentives for the adoption of accrual basis accounting.

Moreover, regarding the relationship amongst satisfaction and accounting benefits, problems, accrual implementation cost, years of accrual accounting adoption, education level of accounting staff and hospital size our findings reveal that Greek public healthcare entities are more likely to exhibit higher satisfaction levels with accruals if they are of a significant size, employ accounting staff of a higher educational level, encountered fewer obstacles and problems during implementation and have a general perception that accruals brings substantial benefits to a healthcare entity organization without a high cost.

The healthcare entities with long-term experience in accrual accounting were not found to have any significant impact on satisfaction level, maybe due to time fluctuations.

Finally, in order to meet the economic challenges faced by the health industry, and to provide low-cost and high-quality services, healthcare entities need to develop stringent control over their operations. Essential tools for accomplishing this goal are the financial and cost accrual accounting systems.

Notes

1. New Public Management is a management philosophy used by governments since the 1980s to modernize its public sector. New Public management is a broad and very complex term used to describe the wave of public sector reforms throughout the world since the 1980s. The main hypothesis in the NPM-reform wave is that more market orientation in the public sector will lead to greater cost-efficiency for governments, without having negative side effects on other objectives and considerations (*WIKIPEDIA*).
2. There are three major categories of health providers :
 - a) The National Health System with its public hospitals, health centers, rural surgeries, and emergency pre hospital care.
 - b) The insurance funds health services with their representative units and polyclinics
 - c) The private sector providing health services through its private hospitals, diagnostic centers, independent practices, surgeries and laboratories.
3. Each Pe.S.Y.P is a public entity, managed by a administrative board and chaired by a Director appointed by the Minister of Health and Social Cohesion. The Director is responsible to control and supervise all the health care units within its catchment area. The law 3329/05 changed the 17 Pe.S.Y.P. and created 17 Administrations of Health Regions (D.Y.PE.). After two years, under the Law 3529/07, the number of the D.Y.Pe was reduced from seventeen (17) to seven (7).
4. Organization for Economic Co-operation and Development
5. Public hospitals outside the NHS include 13 military hospitals financed by the Ministry of Defence, 5 hospitals Social Security Institution (IKA) financed by the Ministry of Employment and Social Security and 2 university teaching hospitals financed by Ministry of Education and operated under the authority of the National & Kapodistrian University of Athens..
6. IFAC PSC defines accrual accounting in the following way in its Handbook of International Public Sector Accounting Pronouncements (IFAC, 2002): “A basis of accounting under which transactions and other events are recognized when they occur and not only when cash or its equivalent is received or paid. Therefore, the transactions and events are recorded in the accounting records and recognized in the financial statements of the periods to which they relate. The elements recognized under accrual accounting are assets, liabilities, net assets/equity, revenue and expenses” (p. 679).
7. The International Federation of Accountants – International Public Sector Accounting Standards Board (the IPSASB) develops accounting standards for public sector entities referred to as International Public Sector Accounting Standards (IPSASs).
8. Gupta (1999) used the following definitions to determine the level of correlation:
 - A high level of correlation is implied by a correlation coefficient that is greater than 0.5 in absolute terms.
 - A mid level of correlation is implied if the absolute value of the coefficient is 0.2 0.5.

- A low level of correlation is implied if the absolute value of the coefficient is less than 0.2.

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