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Risk Management and Viability of Public Organizations. Development of a Risk Measurement Tool: The Case of Greece.

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ARTICLE INFO	ABSTRACT
<p>Article History</p> <p>Received 10th December 2016; Accepted 20th February 2017</p> <p><i>JEL Classifications</i> H3, M10</p> <p>Keywords: Risk, economic risk, operational risk, Public sector organizations</p>	<p>Purpose: This paper provides an important contribution towards the development of a valid, reliable and cost-effective instrument that reduces operational and economic risk levels in public sector organizations.</p> <p>Design/methodology/approach: A quantitative methodology based on the collection of primary data via a questionnaire has been adopted in this research.</p> <p>Findings: The research results showed that the measurement tool selected, applied, presented and proposed is comprised of three (3) scales. The reliability analysis proved that all three scales are reliable; therefore, they are suitable for use as a risk measurement instrument.</p> <p>Research limitations/implications: The study's academic contribution is the application and testing of the aforementioned measurement instruments, which can now be utilised by researchers in the field of risk management, to further advance the study of risk management in public organizations in Greece. On the empirical level, the implementation of these three measurement instruments can assist public organizations in Greece via an easy and fast assessment of economic and operational risks.</p> <p>Originality/value : This tool can help public organizations gain insight into the level of risk they face at any given point in time in order plan their actions accordingly. At the same time, central state administration will have the necessary tools to monitor and support the organizations it evaluates.</p>

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1. Introduction

Some years ago, Osborne and Gaebler gave their supported for the modification and re-invention of public administration, rather than its abolishment, in order to remove bureaucracy and to create structures that will enable it to adjust quickly and effectively to change. (Osborne and Gaebler, 1992).

This transformation, which should be achieved through a change in aims, incentives, responsibility, structure and culture (Osborne and Plastrik, 1997), will thereby lead to the creation of an entrepreneurial spirit and mindset.

Greece is among those countries where the dissemination and the adoption of New Public Management (NPM) methods in the Public Sector is still

slow. Through a review of the relevant literature, one can see that the attempted reform efforts in the Greek Public Sector are still ongoing, while previous attempts to apply the NPM principles were only moderately successful or not at all (Philippidou et al., 2004; Zeppou and Sotirakou, 2003; GIPA, 2014).

In this context, this article contains the following sections: In the first section, the Greek Public Sector is described. The second section of the article presents the literature review on risk. The third section, *Method*, includes an outline of the present study's aims, its contribution to current research, the description of the questionnaire development methodology, the design of the measuring instrument, and a description of the research sample. The two final sections of the article are: the *Findings* where the reliability analysis is presented, and the conclusions.

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2. The Greek Public Sector and the Need of Instilling a Culture of Risk

The Greek public administration presents a strong bureaucratic dysfunction, the characteristics of which can be broken down into two main categories:

First, the trend of concentration of decisive force and influence in the political system and secondly, structural or structural failure, inadequacy or reduced ability of the administrative machinery of the country. Specifically, with respect to the first set of characteristics of administrative dysfunction a tendency towards concentration of the decisive power, influence and power grows in multiple successive levels (Ioannou, 2013):

- a) the executive administration, inside of the political system
- b) the Prime Minister and the government, within the executive administration
- c) the political leadership within the public administration
- d) the leading managerial levels, in public services and organizations

Among the immediate consequences and effects of the trend of centralization include limiting the transfer and devolution of responsibilities and powers, the politicization of almost all administrative decisions and actions, the reduction of functional differentiation and relative autonomy of the administrative system. The concentration, moreover, of the decisive power and influence at the top of the executive political leadership is positively associated with increasing trends politicization of the leading tier in the administrative pyramid.

Another facet of the leading party management is the transfer of the target. Any reform, in theory and in practice, can only proceed to the extent that it affects the required party. The reform objectives of universally identified purposes (promotion of general interest) are converted into instruments to promote party interests.

3. Risk Management

Risk management is a central core of each organization's strategic management. It is the process whereby organizations methodically approach the risks associated with their activities, in order to achieve sustainable benefits..

The focus of successful risk management is the identification and handling of these risks. The objective is to add maximum sustainable value to all the body's activities. The scope is the understanding of the potential benefits (upside) and threats (downside) of all those factors that can affect the organization. It increases the likelihood of success, and reduces both the probability of failure and the uncertainty of achieving the overall objectives of the organization (Drennan et al., 2014).

The definitions of the term 'risk' vary, mostly due to the multiple techniques used to approach and overcome risk. However, a common denominator is the notion that risk is a combination of the probability of an event occurring, and its consequences. According to Borge (2008), risk is finding oneself exposed to the possibility of

an unfavourable outcome. A more comprehensive approach to the term maintains that risk is the potential variation of an event that could result in either a positive or a negative outcome (ICE, 2002). Alternatively, risk can be defined as a state in which every alternative aspect of the activity of an organization or business leads to a cluster of consequences, each of which is, in all probability, known to the person making that specific decision (Kiohos et al., 2003).

An effective risk measurement system, working in tandem with an effective policy and the managers' operation programme, risk management, can serve as a valuable tool in defining and supplementing the operation of a public organization. Although it would be impossible for managers to monitor every possible risk factor, they do try to contain risk effectively; the latter target could be reached through adaptation and modification of organizational culture, through internal processes, and the use of technology (Eleftheriadis, 2011).

Therefore, these models are not suitable for the needs of measuring risk in a public-sector organization. Instead, a social science approach that measures risk perceptions of public organization managers can measure financial or operational risk without the need for hard financial data, and can provide comparable results among the diverse types of public organizations. As the study of international theoretical literature and research reveals, one can safely assume that risk measurement through the use of questionnaires is a well-documented practice and yields reliable results (Akerboom and Maes, 2007; Bell et al., 2000; Eilifsen et al., 2001; Knechel, 2007; Mitchell, 1995; Ciavarelli et al., 2001). Specifically, the aforementioned researchers utilised quantitative questionnaires to measure perceived risk in a variety of contexts. The results of these studies indicated that the collected data exhibited good reliability and validity. Therefore, one can safely assume that the closed type questionnaire can be a reliable instrument to measure risk perceptions.

4, Method

A quantitative methodology undertaken via the collection of primary data through a questionnaire is utilized. The questionnaire was chosen for two reasons: firstly, the questionnaire is characterized by an exceptional balance between cost, validity and effectiveness in data collection. Secondly, experiments and observation have important limitations. In the field of management, the scientific questionnaire is clearly dominant in frequency, as well as in effectiveness (Saunders et al., 2003).

In this context, and according to the literature on the issue under investigation, it follows that the most suitable research methodology for the measurement and management of risk in the Greek Public Sector is the quantitative method for the following reasons: a) the large data bank that can be accessed, b) possibility for standardization of the data, c) the suitability of the data for statistical processing, d) the objectivity and generalizability of the conclusions and e) the potential for further analysis by other researchers.

The respondents are called to rate the course of these organizational variables two times: one during the recent years and a second one on how they expect these variables

to evolve (increase, decrease or remain as they were) in the years to come. Therefore, there are two operational risk scales; the first that measures "present risk" by recording how key organizational variables have evolved during recent years, and the second, that measures "future risk" by recording how the managers think those variables will evolve in the future.

The initial concept of the operational risk scale included 17 organizational variables, which were selected after studying Akerboom and Maes's (2007) work, as well as a series of other publications focusing on organizational risk perceptions (Bell et al., 2000; Eilifsen et al., 2001; Knechel, 2007; Mitchell, 1995; Ciavarelli et al., 2001).

The Organizational Risk Factor Questionnaire (ORFQ) of Akerboom and Maes (2007) includes 52 items split into 6 factors: Staffing Resources, Communication, Social Hindrance, Job Skills, Training Opportunities, and Material Resources. Because these factors were designed to fit the private business sector, they would not be suitable for measuring risk factors in public sector organizations without large-scale adaptation and customization. It was therefore deemed as more productive to use Akerboom and Maes (2007) scale as a general basis upon which to base a largely prototypical scale. In order to create the measurement instrument, the following process was followed:

- A group of 5 Greek Public sector managers with good knowledge of English was drafted via random sampling from a list of 30 Greek Public Sector managers.
- The managers received a copy of Akerboom and Maes (2007) publication as well as summaries of other relevant publications, (Bell et al.,2000; Eilifsen et al.,2001; Knechel, 2007; Mitchell, 1995; Ciavarelli et al., 2001) and were given one week to study the material.
- An open discussion session ensued in which each manager was free to report variables that he/she thought were indicative of a public organization's operational risk. All variables on which more than 50% of the participants agreed were included in the new instrument.
- The final list included 17 items. The exact wording of each was agreed upon by all participants.

More specifically, the 17 variables the respondents were asked to rate are:

Table 1: Perceived operational Risk scale. Akerboom and Maes (2007): Modified

The number of citizens served by the organization.
The importance of the operation / services provided by the organization for the general public administration
The importance of operations / services for the general public.
The likelihood of outsourcing some operations / services to a private organization or reassigning operations / services to another state organization.

The range of operations / services provided by the organization.
The total number of people employed by the organization.
The adequacy of the comprehensive income of the organization to cover its running costs
The debt of the organization to a third party (reverse coding)
The adequacy and quality of the capital equipment (machinery, computers, etc.)
The availability of consumables (stationery, medicine, etc.)
The adequacy of available facilities.
The amount of state funding.
The degree to which aims and targets set for the organization are met.
The quality (education, training, efficiency) of the members of staff.
The promptness with which managerial decisions are met and the speed with which they are executed. The efficiency and operational adequacy of administrative organization.
General Public opinion of the organization i.e whether the public feels that the organization is useful, beneficial and efficient

Economic risk: The questionnaire uses the scale proposed by the AGA (Association of Government Accountants in the United States of America) to measure economic risk. AGA is an official body which established the Partnership for Intergovernmental Management and Accountability, with the purpose of detecting and prioritising critical economic issues or threats, and suggesting measures or actions to approach these issues (AGA, 2009). Because the AGA scale was specifically tailored for the US public sector, it was again deemed necessary, as in the case of operational risk, to develop a new instrument specifically modified so as to fit the Greek public sector. In order to do so, the same methodology was followed as in the case of operational risk. The resulting economic risk assessment scale comprised of the following fifteen (15) questions:

Table 2: Economic Scale. AGA (2007)

Annual state funding is sufficient to cover the running costs of the organization (reverse coding). Expenses exceed the budget. Expenditures exceed tolerable rates. The organization has resorted to other funding programmes or loans to cover its needs for cash. The organization's financial reports reveal that cash flow is problematic.

The organization's financial reports (e.g. budget) has undergone a series of corrections, reforms or changes.

The organization has failed to meet set goals as far as collecting revenue needed to cover its running costs. (e.g. fees, taxes, deposits)

The income of the organization is less than that predicted in the budget.

The debt of the organization to third parties has grown.

The organization's fixed assets performance has decreased.

The value and performance of the organization's intangible assets (shares, bonds, income on interest) has decreased.

At the end of the fiscal year, there is an amount of budget carryover, with funds and resources returned to the State, or transferred for utilisation in the next year.

The organization's ability to raise funds through borrowing or loans has grown.

The funding of the organization is below tolerance levels.

The organization is timely in submitting its financial statements.

The answers range from 1 (= never) to 7 (= always) (seven-point scale). Following a reliability analysis, and in order to increase reliability, a number of questions were reduced to eleven (11) questions.

5. Sampling

In the final stage of the evaluation of the questionnaire, twenty-three (23) questionnaires were distributed to managers of Greek state organizations, and other public or parastatal bodies. Of the twenty-three (23) questionnaires, fifteen (15) were answered and returned (ten after a face-to-face interview and five via e-mail), constituting a percentage of 65%. The sample is considered sufficient for the statistical processing and reliability analysis of the measurement scale used in the present survey. More specifically, the statistical analysis of the pilot test included:

- Missing Values Analysis
- Reliability Analysis-Cronbach's alpha (α)

6. Results

Operational Risk Scale

General Operational Risk Scale (Present)

The general operational risk measurement scale (present) contains 17 questions. The reliability analysis was conducted through calculation of Cronbach's α coefficient and, as is evident in the following table, the score was high ($\alpha = 0.869$). This score shows that the validity level of the scale is acceptable, and as a consequence, the initial 17-question scale can be used for the purposes of this survey.

General Operational Risk Scale (Future). The general operational risk measurement scale (future) contains 17 questions. The reliability analysis was again based on the

calculation of Cronbach's α coefficient and, as is evident in the following table, the score ($\alpha = 0.821$) indicates that the validity level of the scale is acceptable. As a result, the initial 17-question scale can be safely implemented to serve the purposes of this survey.

Economic risk scale

Table 4: Reliability Analysis-Scale 1

N of Items	Cronbach's Alpha ^a	Reliability
15	-1.005	Unacceptable
14	0.162	Unacceptable
13	0.494	Unacceptable
12	0.668	Inconclusive
11	0.808	Very Good

As outlined above the initial economic risk measurement scale consisted of 15 questions. Reliability analysis of this scale was conducted using Cronbach's α coefficient, however, with $\alpha = -1.005$, the reliability of the 15-question scale was considered unacceptable. In light of this score, further analysis was conducted, to ensure that the format and formulation of the questions did not contain any errors. As explained above, the next step would be to determine Cronbach's α scores when one omits one of the questions in the questionnaire, and the same process was followed for each of the questions. Of the 15 α scores calculated, the best results were obtained by the omission of the question 'The organization is timely in submitting its financial statements' ($\alpha = 0.162$), which was however, still not acceptable. As a result, the process of calculating α was replicated, in order to spot the question whose omission would improve questionnaire reliability. Out of the 14 different scores calculated, the most optimal was obtained by the exclusion of the question 'The funding of the organization is below tolerance levels' ($\alpha = 0.494$), which in turn was lower than the minimum requirement of 0.7. Therefore, this question was also omitted and the new, 13-question questionnaire was put up for further analysis. This step revealed that, if the question 'the organization's ability to raise funds through borrowing or loans has grown' were to be edited out, the α score would be significantly better ($\alpha = 0.668$), a fact which indicated, however, that the scale would still be unreliable. For this reason, we considered that the analysis process would have to be repeated, omitting yet another question from the scale. The ensuing 12 α scores showed that the exclusion of the question 'At the end of the fiscal year, there is an amount of budget carryover, with funds and resources returned to the State, or transferred for utilisation in the next year', produced an alpha score of 0.808 ($\alpha = 0.808$). After the omission of four questions, this score of 0.808 clearly indicates that the scale can be regarded as reliable, and as a result, the final version of the economic risk scale, comprising 11 questions, can be safely implemented for the purposes of the survey.

Comprehensive Reliability Report

Table 5: Original Research Tool: Reliability Analysis

SCALE	Cronbach's Alpha	EVALUATION

ECONOMIC RISK-11 QUESTIONS	0,808	GOOD RELIABILIT Y
OPERATION AL RISK-PRESENT	0,869	GOOD RELIABILIT Y
OPERATION AL RISK-FUTURE	0,821	GOOD RELIABILIT Y

7. Conclusions

The measurement tool presented and proposed in this work comprises three (3) scales: The economic risk scale, which after analysis and due amendments, consists of eleven (11) questions, and the operational risk measurement scale, both present and future, which contains seventeen (17) items.

The study's academic contribution is the development and testing of the aforementioned measurement instruments, which can now be utilised by researchers in the field of risk management to further advance the study of risk management in public organizations. On the empirical level, the implementation of these three measurement instruments can assist public organizations in undertaking and quick and easy assessment of economic and operational risks. This tool can help public organizations gain insight into the level of risk they face at any given point in time in order to plan their actions accordingly. At the same time, central state administration will have the necessary tools to monitor and support the organizations it evaluates.

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