

WHAT FACTORS CONTRIBUTE TO SUCCESS IN PERFORMANCE MANAGEMENT IN THE PUBLIC SECTOR? AN INTERNATIONAL COMPARATIVE STUDY OF TWO LARGE DEFENSE ORGANIZATIONS

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ABSTRACT

This article contributes to the empirical literature on public performance management by comparing two international military organizations to examine factors that enhance or hinder implementation of performance-based management systems. Using the cases of the Italian Army and a component of the U.S. Navy, we study motivations for performance management and factors relating to technical competency, the integration of performance and other internal systems, and how stakeholders interact with the performance management system. We provide evidence on the importance of specific factors that have been shown to affect performance-based management implementation and use. We use an approach called for by previous researchers, and despite methodological differences, our main findings are generally consistent with prior studies based on other approaches. We suggest that other public organizations experience similar issues, and that our work may be helpful in a wider context to help public organizations implement performance-based management.

Keywords - Performance management, Performance based management systems, Performance information, Performance measurement, Results-based management.

INTRODUCTION

Government leaders¹ worldwide and the taxpayers to whom they are accountable have increasingly called for the collection and use of performance information to obtain better results (Micheli and Neely 2010). In the past 30 years, public reforms of OECD countries focused principally on performance evaluation and management inspired largely by New Public Management (NPM) (Hood 1991), which promoted the use of performance measurement and management to increase the efficiency and effectiveness of public organizations under the slogan “value for money” (Osborne and Gaebler 1992). NPM was a driving force behind the Government Results and Performance Act, GPRA, 1993 and GPRA Modernization Act of 2010, GPRAMA in the U.S. and the Cassese, Bassanini, and Brunetta Reforms in Italy (Van Dooren, Bouckaert, and Halligan 2010; Cepiku and Meneguzzo 2011). National governments of the U.S. and Italy have required all ministries or departments, including the military, to develop and implement perfor-

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mance-based management (PBM).

This article contributes to the empirical literature on public performance management by comparing the production of performance information and its use and performance-based management (PBM) systems, which are integrated information structures that provide performance information, in the Italian Army (IA), and the U.S. Navy Surface Force. The U.S. Navy uses the term Surface Warfare Enterprise (SWE) to refer to the Surface Force organization in terms of efficient and effective accomplishment of its mission to deliver ready ships. We examine factors that enhance or hinder implementation of performance-based management in each case, and through a comparative case study, observe factors in common in both organizations despite the organizations' different motivations for undertaking PBM. We find as Hatry (2006) did that the actual use of performance information is the best indicator of where public organizations find success in implementing PBM. Perhaps most important, we find that the legal, governmental, and organizational motivations and processes for undertaking PBM drive systems in predictable, if not completely successful ways, and that where they do not apply, barriers to implementation get in the way. Specifically, we find that leadership commitment, employee and stakeholder involvement, managerial instruments and capacity, training, elements of organization culture, and allocating resources to PBM can enhance the implementation process; and issues of lack of data or poor quality of data, missing information infrastructure including IT systems, other elements of organizational culture, contradictory goals for performance information use, and possibly hierarchical management (rather than rational), can hamper PBM and may result in sub-optimizing and gaming behaviors.

We characterize the organizations examined in this study as complex, bureaucratic and hierarchical public organizations. Complex, in this sense, means organizations "that have many levels, many units on each level, and many connections vertically and horizontally" (Christensen, Lægreid, Roness, and Røvik, 2007, 27; see also O'Toole and Meier 2015). Christensen et al. (2007, 24) further explain a Weberian bureaucratic organization as one "marked by hierarchy, division of labour and routines", which have clear lines of authority, and superior and subordinate positions that constrain how work is accomplished. They further note that in "central governments of many representative democracies, vertical coordination is expressed in the principle of ministerial responsibility" and that even alternative or supplementary types of organizational forms, such as matrix structures or even flat structures that rely on collegial relationships (such as cabinet ministers acting together), are forms of network structure that supplement the bureaucratic organizational form (p. 26). Taken together, we believe our findings may be helpful for understanding the use of performance information and challenges in implementing performance-based management and systems in many public organizations in democracies.

For studying PBM, the IA and SWE are reasonably comparable public organizations. Each has the organizational mission of providing units, weapons, and systems ready to fight, rather than outcomes such as battles won or situations resolved, at least in peace time (Wilson, 1989). Primary measures of performance are outputs that serve as proxy measures for readiness. At the time data collection began for this study in 2008, the IA's budget was approximately \$4 billion USD including all personnel, acquisition, construction, and operations and maintenance appropriations², and the U.S. Navy's budget was about \$138b. Each organization had responsibility for O&M budgets; personnel and other budgets were not integrated at the sub-organization level, and only O&M expenditures were used in performance management to determine how resources linked to outputs. Each organization had begun a PBM process and was operating at least parts of its system, but neither had completely implemented PBM.

Although similar in size and mandate, the two organizations had different motivations for undertaking performance management. In the case of the IA, the motivation was to account for expenditure and to

provide justification for budget requests. The Italian government required output-based budgets with which to analyze funding requirements; thus the IA's primary focus was on linking expenditures to outputs. The U.S. Navy, however, used PBM with the primary intent of increasing readiness. In both cases, organizational leaders expressed "value for money" considerations, and although the IA did link many expenditures to outputs, neither organization could provide its stakeholders with comprehensive information about outputs (value) in terms of complete measures of costs (money).

The motivation for this paper comes not only from the authors' experiences with performance measurement and management in our respective organizations, but from existing studies and observations made by other researchers. We began by examining Robinson's (2007; xxxvi) definition of performance management, which we summarize as the broad and systematic use of formal information to improve public performance. Robinson's definition underlies the importance of two aspects of performance-based management: performance information availability and the use of performance information in decision making processes, with the latter being of greatest importance (Hammerschmid, Van de Walle, and Stimac 2013). Empirical evidence shows that the actual use of performance information by public organization leaders for managing their activities is the best indicator of the success of PBM (Hatry 2006).

Van de Walle and Van Dooren (2008, 2), however, noted that the "actual use of this [performance] information has traditionally not been very high on the research agenda;" and Moynihan and Pandey (2010, 850) stated that how public decision makers, managers and politicians manage performance "remains one of the most important yet understudied issues" in public management. In particular, de Lancer Julnes (2006) noted that the literature lacks sufficient study of the implementation of performance management (as synonymous with actual use³) and related systems. Despite the fact that numerous governments have spent many resources on the implementation of PBM, no country has been completely successful, researchers have not explored all the factors that contribute to its success, and, as Moynihan (2008) notes, government leaders have scarcely considered the question of how to foster better information use.

Van Dooren et al. 2010 suggested that researchers to continue to identify the factors that influence the implementation of PBM and the limitations of extant models. (See also Fryer, Antony, and Ogden 2009, and Moynihan and Pandey 2010.) Bouckaert and Halligan (2008) suggested that more comparative studies should be conducted to increase our understanding of the factors that enable a useful PBM, and a number of researchers have suggested that future researchers should take on the task of providing more contextual research for improving existing performance management models and instruments, especially from an international comparative perspective (Pollitt, 2006; Bouckaert and Halligan, 2008; Pollitt and Bouckaert 2011; Bianchi and Rivenbark, 2012). These studies all suggest that more work is needed not only to increase the demand for and use of performance information but to examine carefully the various ways that information use affects implementation.

This research takes up the challenge to provide a comparative study of factors affecting the successful adoption and use of PBM across international borders in the public sector. As noted, the two studied organizations have similar missions, and are of reasonably similar size. They have, as many public organizations do, limitations in their financial management systems. In addition to providing a comparative study, we note that the public management literature includes very few studies of PBM in military and national (or international) security organizations. Findings of this study very well may be extended to police, security, fire, and many other public sector organizations with similarities in characteristics. Thus, our contribution fills several gaps in the existing literature.

We research the production of performance information in the IA and SWE, how the organizations used information with the intent to increase organizational performance, and the factors or characteristics that enabled or detracted from successful implementation. We focus on the following research questions:

1. How and for what reasons do the Italian Army and U.S. Navy Surface Warfare Enterprise manage performance?
2. What are the critical factors that enable or detract from the successful implementation and use of PBM systems in these organizations, and how do they affect performance management?

In the sections that follow, we first present a review of prior research on performance management as it pertains to motivations for implementing PBM systems and key factors of successful adoption, implementation, and use. We then discuss our research methods, and in the third section, we analyze the cases. Finally, in the last section, we provide conclusions and recommendations for future research.

RELEVANT RESEARCH ON PERFORMANCE-BASED MANAGEMENT

Modern federal performance management in the U.S. traces its roots to the 1930s and 40s, most notably through President Truman's Hoover Commission of the late 1940s (Williams 2003). Over the years, the U.S. and other governments have tried multiple approaches to PBM such as management by objectives; planning, programming, and budgeting; and zero-based budgeting to attempt to connect budgets to government outputs and outcomes. Today, many of the world's 195 national governments participate in performance management activities in their public sectors, and in the past three decades, public leaders have shown a resurgence of interest in and new approaches to performance management. Pollitt described this resurgence as one of the most "widespread international trends" in public management (2006, 25).

Over these decades, many governments approached performance management reform under the umbrella of NPM. The OECD (1996, 2005, 2008) reported that since the 1990s, NPM has been one of the more important focuses of reform agendas of OECD countries. Stemming from NPM is results-based management (or management for results, MfR), which provides the basis for numerous public sector reform initiatives worldwide (Moynihan 2006). Christensen, Lægveid, and Stigen (2006) observed that the MfR focus brought a reorientation from a narrow vision on efficiency, typically what managers focused on with NPM, to a greater stress on outcomes and effectiveness.

Recent government practices promote managing for results or performance management by prescribing collection, monitoring and use of performance information on a government-wide scale and in all management areas (Bouckaert and Van Dooren 2009). Bouckaert and Halligan (2008) prescribe a PBM model that incorporates and uses performance information in the management of the organization and the political cycle. The principal objective of this management model is "using performance information to increase performance by holding managers accountable for clearly specified goals," (Moynihan 2006, 78) which include collection, monitoring, and use of performance towards achievement of both efficiency and effectiveness goals. As Bouckaert and Van Dooren note, "performance management is both measurement and management, [it is] about information and action" (2009).

A number of authors have enumerated categories and specific uses of (or actions that follow the collection of) performance information including Van Dooren et al. (2010), who list 44 uses in policy and management practice; Behn (2003), who proposed eight categories of managerial use of this information, to: evaluate, control, budget, motivate, promote, celebrate, learn and improve; and Bouckaert and Halligan (2008), who describe a "sparser" classification of the uses of performance information: to learn, to steer

and control, and to give account, which subsume Behn's eight. These categories remind us that different stakeholders and organizations have different motivations for undertaking PBM, which influence how adoption and use progress. In this paper, we viewed our organizations through the Van Dooren et al. (2010) three-category lens of how performance information was used.

Beyond the specific uses of performance information are factors that may hinder or enhance the successful implementation of PBM and PBM systems. Research to date has identified more than a dozen such factors; however, findings of this research do not yet provide a clear picture on the importance of each, and some authors continue to call for more investigation (Chenhall and Langfield-Smith 1998; Pollitt 2006). The factors have emerged both from theory and from empirical analyses, and researchers have used surveys and case study analyses to examine the factors (Bianchi and Rivenbark 2012). We examine 14 factors researchers have proposed and use Fryer et al.'s (2009) helpful classification of three groups of issues or problems: technical, systems, and involvement, which we explain in detail below. Table 1, below, shows the studied factors, research methods and study authors.

Table 1: Factors that affect successful PBM implementation

Factor group	Description of factors by group	Specific, empirically determined factors	Research method	References
Technical	Basic difficulties in designing, developing and implementing data and analyses methods to support a useful PBM system Table Content	Availability of information (with which to gather data and perform analyses)	Survey	de Lancer Julnes and Holzer, 2001; Moynihan and Pandey, 2010
		Training and technical knowledge (presence or absence of knowledge in data and analyses related to the PBM system)	Survey	de Lancer Julnes and Holzer 2001; Moynihan and Pandey 2010
		Managerial capacity (to direct, understand, and use the data and analyses)	Case Study	Bianchi and Rivenbark 2012; Sanger 2008
Systems	Difficulties in linkages and interactions among components (information technology along with instruments managers use to coordinate the achievement of goals) that together form the PBM system	Informational infrastructure to support PBM including IT systems and their integration with other organizational systems	Case Study	Bianchi and Rivenbark 2012; Eccles 1991
		Management instruments related to goal achievement processes	Survey	Hammerschmid et al. 2013; Pollanen 2005
		Organizational culture and norms including positive use of performance information (rather than punish-	Survey	de Lancer Julnes and Holzer 2001; Moynihan and Pandey 2010; Jo-hansson and Siverbo 2009; Taylor

		ment), rational versus hier-archical uses and resulting bu-reaucratic behavior to try to control and maximize appropriations	Case Study	2011 Kloot and Martin 2000; Bianchi and Rivenbark 2012; Moynihan 200
		Systemic cost of implementing PBM	Survey	Pollanen 2005
Involve- ment	How stakeholders inter-act with the performance management system. Can be social and political factors, or administrative systems issues, management culture and support from higher levels of management	Resources committed	Survey	de Lancer Julnes and Holzer 2001; Van Door-en 2006
		Employee engagement (including gaming or other manipulative behavior that diverges from in-tended interaction with the PBM system)	Survey	de Lancer Julnes and Holzer 2001; Walker and Boyne 2006
			Case Study	Kloot and Martin 2000
			Leadership commitment and involvement / Stakeholder commitment / accountability / involvement	Survey (stakeholder)
		Survey (leadership)		Moynihan and Ingraham 2004; Moynihan and Pandey 2010; Dull 2009; Moynihan and Lavertu 2012
		Case Study (leadership)		Kaplan 2001; Bianchi and Rivenbark 2012
		Mandatory requirements	Case Study (stakeholder)	Kloot and Martin 2000
			Case Study	Bourdeaux and Chikoto 2008; Bianchi and Riv-enbark 2012
Policy field type of agency, e.g., justice, public order, forestry; type of public sector organization (central versus other levels of government)	Survey		Hammerschmid et al. 2013	
		Case Study (policy field)	Pollitt 2006	

Dimension: Size, age and other factors leading to trust between agency and parent ministry or public	Survey (dimension)	Moynihan and Ingraham 2004; Læg Reid et al. 2006; Van Dooren 2006
National and administrative traditions, e.g., party system of government, individualistic and risk-accepting national culture	Case Study	Pollitt 2006; Ongaro E. 2008

Source: own research

Technical Issues

In the first group, technical issues are those stemming from basic difficulties in designing, developing and implementing data and analyses methods that support a useful performance management system. They may arise due to problems with data, specifically quality, choice of indicators, collection, organization, interpretation, validation, reporting, usage, analysis and interpretation of data (Fryer et. al. p. 488). They may also arise from data and analyses related to the processes of monitoring, feedback, dissemination, and learning (Wang and Berman 2001; Franco and Bourne 2003; de Waal 2003). Interestingly, Hammerschmid et al.(2013) showed that organizational processes for performance information use are more important in determining success of PBM systems than person-related factors such as education, training or experience; however, comparison of processes involve people, and thus it may be difficult to separate these issues from one another.

From the empirical literature examining the importance of various factors on implementation of PMB systems, we include the following in the technical group:

- Availability of information with which to gather data and perform analyses
- The presence or absence of training and technical knowledge in data and analyses related to the PBM system; and
- Capacity of managers to direct, understand, and use the data and analyses (managerial capacity).

Systems Issues

The second group, systems issues, describes problems that arise due to difficulties in linkages and interactions among components (information technology along with instruments managers use to coordinate the achievement of goals) that together form the PBM system. Systems issues include four types of problems that we discuss in more detail below. The first is “the need for an informational infrastructure that supports performance management” (Bianchi and Rivenbark 2012, 523), in which information technology (IT) plays a critical role in making performance measurement possible (Eccles 1991). The second has to do with management instruments linking strategy to desired performance or outcomes. The third describes aspects of organizational culture that affect motivation and willingness to use PBM systems. Finally, the cost of performance management for the organization as a whole may adversely affect the likelihood of its implementation and use.

Informational infrastructure refers to the integration of performance systems with other existing systems including internal personnel, appraisal, and financial systems (Gianakis 2002). Practical examples of performance systems to be integrated into the bigger picture of the organization's systems include enterprise resource planning (ERP), and business intelligence (BI) solutions, which can be used to give managers a more realistic picture of the organization⁴.

Management instruments such as strategic planning, performance contracts and performance related pay processes can be used to coordinate the linkages and interactions among components needed to have a coherent PBM system (Hammerschmid et al. 2013). Læg Reid et al. (2006) noted that conditions for developing a PBM system are better when the organization implemented a strategic planning system (management by objectives for results in their study). Not surprisingly, the degree to which organizations use these instruments positively affects the implementation of performance management. In the absence of or incomplete use of appropriate instruments, lack of strategic direction and alignment of performance goals can result. Neely, Platts, and Gregory (1995) examined the lack of strategic focus, "short-termism" (or myopic views of organizational goals), and sub-optimizing behavior, and Pollanen (2005) examined difficulties in stating performance objectives.

Several aspects of organizational culture affect motivation and willingness to use PBM systems. In this context, we use Schein's (1992, 12) definition of organization culture, which is

"[a] pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

Moynihan and Pandey (2010, 854) suggest that "[m]anagers must want to use performance data. This demand [for performance data] is shaped by the organizational environment and cultural norms." (See also Kloot and Martin 2000; Moynihan and Pandey 2010; Bianchi and Rivenbark 2012; Taylor 2014; Hammerschmid et al. 2013.) O'Reilly, Chatman, and Caldwell (1991), among others, show a strong link between organizational culture, reasons for implementing PBM, and the motivation and willingness to use PBM: organizations where the culture and norms drive the use of performance information for improvement will be more likely to integrate a PBM system into the organization's overall systems than those that penalize poor performers. (See also Jennings and Haist 2004; Taylor 2014).

Taylor (2011) finds that a "rational culture," which stresses productivity, performance, goal fulfillment and achievement, is more likely to incorporate performance information into decision making processes than a culture based on hierarchical structure, because the latter focuses on uniformity, coordination, evaluation, and ensuring internal efficiency and organizational stability rather than the outcomes and achievements that come with the former. Van Dooren et al. (2010) further note that a hierarchical culture, in emphasizing well-defined formal and informal rules and relying on expertise, planning and forecasting, requires that performance information is integrated in the professional corpus or culture of the organization, otherwise performance information that is in contrast to accepted norms will encounter resistance. Finally, traditional Weberian bureaucracy, where the administrative structure of the public organization is developed through rational and legal authority, suggests that public organizations focus on control and maximization of appropriations (Rainey, Backoff, and Levine 1976; Moynihan 2006). Pollitt (2009) states that members of organizations maintain organizational "memory" through a range of "storage locations." Among these he cites the experiences and knowledge of existing staff, and the norms and values of the organizational culture. Thus, the system in which a public organization operates – rational or hierarchical

– and the level of “rational-legal” authority, contribute to the success of adoption and implementation of PBM systems.

Finally, systems issues include the organization-wide costs of PBM system implementation and use, which may affect leadership’s willingness to adopt and implement the system (Train and Williams, 2000; Holzer and Yang, 2004; Pollanen, 2005).

From the empirical literature, we include the following factors in the systems group:

- Informational infrastructure to support PBM including IT systems and their integration with other organization systems
- Managerial instruments related to strategic planning and other organization wide goal achievement processes that focus on attainment of desired performance or outcomes, (and we note that sub-optimization and misalignment of goals result from a lack of or partial use of these instruments).
- Organizational culture and norms related to how performance information is used within the organization
- Cost of integrating a PBM system into existing and organization-wide systems.

Involvement Issues

Involvement factors describe how multiple stakeholders interact with the performance management system. These can include lack of “customer” involvement (Neely et al. 1995); lack of involvement of those inside the organization including lack of or inadequate support or resourcing from leadership (Lawton, McKeivitt, and Millar 2000); overload of demands on the organization that result in processes in which employees provide data independent of other systems, which lessens the usefulness of the performance information (Radnor and McGuire 2004); and gaming the system, in which personnel use performance information to manipulate the effects of PBM on their sub organizations (Vakkuri and Meklin 2003). These factors contribute to the possible success of adopting and implementing PBM at a high level of the organization but resistance or lack of effort at lower levels due to increased demands on personnel, and gaming or other negative behaviors.

Further, involvement in the context of society and citizen influences, political actors including legal requirements or mandates, dimensions of organizations, and national and administrative characteristics can affect the success of a PBM system (Pollitt 2009; Modell 2009). Hammerschmid et al. (2013) noted that performance information is more widely used in the external environment in the policy fields of justice, public order, and safety, and employment services, while agencies involved in economic affairs and finance display significantly higher internal use of performance information. However, defense fell into the “insignificant policy fields” results of their study, which suggests no clear expectations about internal or external use of performance information. Their findings also suggest that leaders of smaller agencies, state or regional agencies, and other sub-national bodies use performance information more than leaders of central government organizations. Lægneid et al. (2006) noted that the size and age of an organization and other factors leading to trust between agency and parent ministry have effects on PBM. They found that the likelihood of success in implementing a PBM system is better in agencies that were established in the 1990s or later, have more than 200 employees, are subject to some kind of market competition, and that are in situations where mutual trust between the agency and the parent ministry is very high. He further notes that older, smaller agencies that do not have to compete with other organizations for “cus-

tomers,” and who report relatively low mutual trust between the organization and its parent ministry tend to be less successful in developing PMB systems.

Pollitt, Bouckaert, Dreyfus and Dreyfus (2004) noted that the U.K.’s highly centralized, majoritarian system can spread ideas and practices quickly. Pollitt (2006, 38) also noted that in the U.K., administrations can push for performance measurement and management faster than in some other European governments due to its one-party, majoritarian government, and that, “[...] the more individualistic and risk-accepting culture allows the more vigorous use of devices like performance-related pay and transparent public reporting of targets and achievements.” The implication is that this combination of government and citizens facilitates the implementation of PBM. Although these findings are based on studies of the U.K. and some of its European neighbors, it is possible that the same national conditions of involvement affect PBM in other countries. Finally, political factors can have large effects on the way in which performance information is used. For example, Pollitt (2006, p.39) noted that political figures focus on “problems,” and that large-budget agencies attract more attention than small. Thus, the involvement of politicians likely depends on perceived or real problems, and those organizations allocated larger amounts of national resources would expect to be scrutinized more carefully.

From the empirical literature, we include the following factors in the involvement group:

- Resources committed
- Employee engagement (including gaming or other manipulative behavior that diverges from intended interaction with the PBM system)
- Leadership commitment and involvement / Stakeholder commitment / accountability
- Mandatory requirements (involvement by political / legal authorities)
- Policy field type of agency, (e.g., justice, public order, forestry) and type of public sector organization (central versus other levels of government)
- Organization dimension
- National and administrative traditions related to involvement or characteristics related to involvement of government actors and citizens

METHOD

The most widely used research approaches for the study of PBM and its instruments, tools, and systems are survey and case study methods. Survey data permit statistical inference based on analysis of a large number of units; however, one of the limitations of surveys is the lack of detailed information on each unit. The case study approach enables researchers to have a more complete picture of the phenomenon analyzed (Yin 2009).

We use the case study method, and, in particular, the comparative case study, to analyze observable events and facts in their natural conditions (Benbasat 1989). Comparative research is the most common research approach in the social sciences. It facilitates analysis of comparison groups in order to identify “what is universal despite the variation of context” (Bianchi and Rivenbark 2012, 510). Several studies have employed an international comparative analysis method to investigate PBM and PBM systems in the public sector and the extent to which they have developed in different nations (Pollitt 2006; Bouckaert and Halligan 2008; Varma, Budhwar, and DeNisi 2008; Faletahan 2010). This approach can help overcome the pitfalls of existing models and systems.

As noted above, we selected the IA and SWE based on their comparable missions, budgets, and stage of PBM, and their complex and bureaucratically governed environment. We also had access to data and key knowledgeable personnel in each organization. Each author has had particular knowledge of and experience with one of the organizations. We also chose the SWE to build on prior work of Webb and Candreva (2010). Given our research questions, we relied on a series of semi-structured interviews (with approximately a dozen individuals or groups in each organization) that used procedures described by Yin (2009), along with internal documents, direct observations, notes, archival records, and other organizational material. For the case of IA the participants requested to be anonymous, and for the SWE, participants were told that name and position would not be revealed; for this reason we do not reveal in this paper names or positions, and only use rank generically such that it does not reveal who made particular statements. Using this research material, one author analyzed and inductively coded the evidence to provide the basis of comparison following the methods of Miles and Huberman (1984). The material gathered was examined using hermeneutical analysis supported by qualitative research software, CAQDAS. The results were discussed and screened during the meetings held by the researchers in order to refine and improve the coding process (open, axial and selective code) and memoing (Strauss and Corbin, 1990), and to ensure rigor of the research by removing potential interpretive bias.

We next turn to a discussion of the two cases.

THE ITALIAN ARMY CASE

The Italian Army, composed of about 500 sub-organizations, functions as a hierarchy for direction and coordination as is typical of traditional hierarchical organizations.⁵ It provides outputs that leaders believe will lead to desired outcomes. The IA's mission is:

“to provide the generation and preparation of a land force component with adequate readiness given the available resources for homeland security and the turnover in international military operations” (Defence 2014, 19)

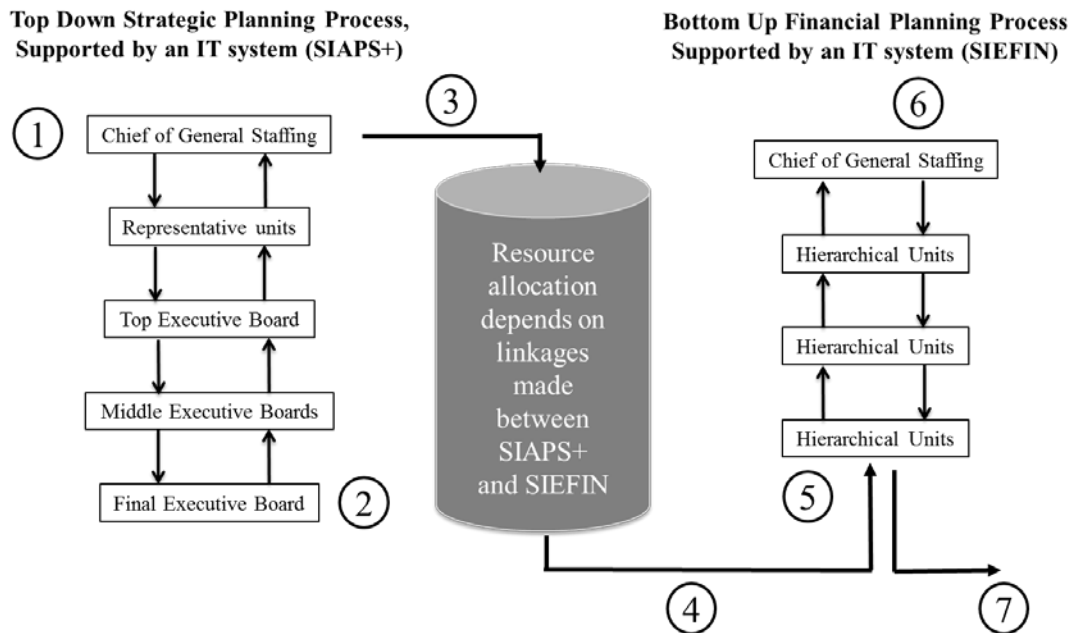
This mission drives three outputs measured by proxies: military readiness (percentage of “ideal” readiness); task force generation (percentage related to a standard); and expenditures (percentage of financial resources allocated versus expended).

Recent budget cuts to the IA resulted in acute difficulties in meeting the IA mission.⁶ The IA appropriation for operational expenditures declined by 70% in the last 12 years from €1,028 in 2004 to an estimated €281 million in 2016, not adjusted for inflation (Defence 2004; Defence 2016). To receive resources needed to accomplish the IA mission, IA leaders used performance information mainly to give account (Van Dooren et al. 2010), and their principal use of this information was for external and internal accountability. Due to the global economic crisis and the consequent fiscal crisis, all Italian ministries suffered a severe cut: “everyone must cut back by... %” (Pollitt and Bouckaert, 2011). Hence, to have more resources, the Ministry of Economy and Finance requested more transparency and required showing outputs against resources. This, combined with a newly enacted law (150/2009) prescribing introduction of the performance management cycle in all public organizations, provided the stimuli for the implementation of IA performance-based management and use of obtained performance information primarily to demonstrate how allotted money would be spent and what would be accomplished. Almost all of the officers pointed to this situation as a crucial moment for the organization during their interviews. To this day, IA leaders have to show what outputs they can produce using their budget appropriations, and if they

need more financial resources, they have to demonstrate what they can accomplish with the additional funds; the imperative is “value for money.” In addition, the commanders of the operative units who are accountable for the full readiness of their organizations, saw in the system a way to report their accountability: the commanders of lower organizational units were eager to embrace the new model to communicate their performance and explain their resource use.

To begin to manage performance, IA personnel mapped the organization’s main internal processes and activities related to operational expenses⁷. IA managers determined outputs for each activity, using the Goal Question Metric approach (Basili, Caldiera, and Rombach 1994), selected applicable metrics (performance targets based on outputs; expenses for output units; amounts of outputs provided, and impairment thresholds) and indicators, which are combinations of metrics (for details, see Sarcia (2010)). Using the outputs and measures defined then attempting to integrate these data into the strategic and financial planning processes⁸, the IA created an output-based budget. An output-based budget is a type of performance budget, where the objectives of a public organization are expressed using efficiency measures or outputs⁹. It emphasizes activities performed and their costs to document what is obtained from what is spent (Jones and McCaffery 2010).

The IA output-based budget links IA strategic objectives, operational objectives and operational programs to financial figures. The IA intended to integrate strategic and financial planning according to an integrated business plan and supporting IT process. Figure 1: Integrated strategic and financial planning process shows the intended links between organizational priorities and resources. (See Suppa, Zardini and Sarcia 2012.) The figure shows that strategic planning is a top-down process in the IA, with the Chief of the General Staff (1) leading the effort to establish goals and objectives across the organization, informed by managers from representative units, and the top, middle, and final executive boards (2). Information from strategic planning feeds into the SIAPS+ IT system (3), and the Chief of the General Staff’s team links objectives and goals to resource allocation needed (4). The SIEFIN IT system links unit resource needs to meet unit-level goals and objectives in a bottom-up process (5), which informs the Chief and his staff on final resource allocation decisions and levels to which readiness of the units will be funded (6). Resources flow to units from these final decisions (7).

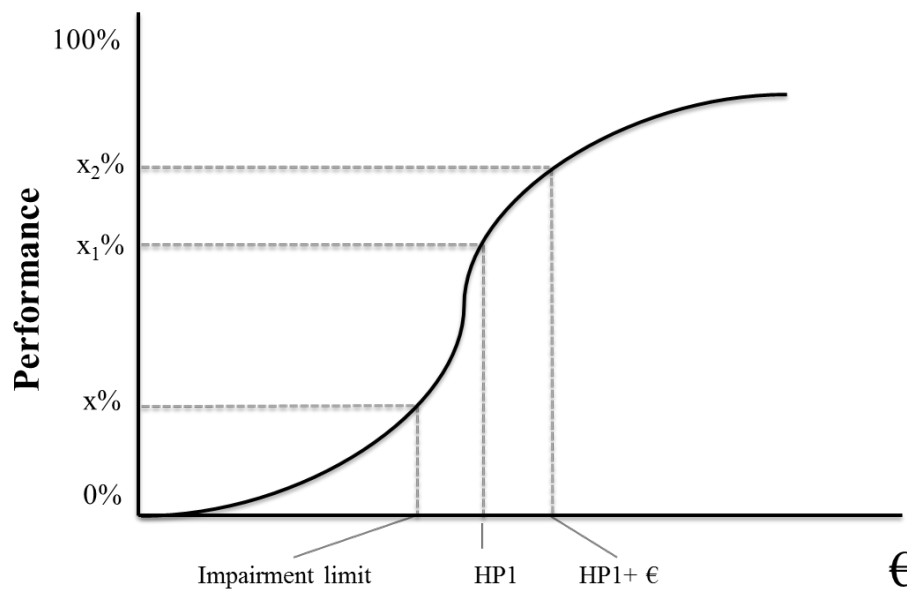
Figure 1: Integrated strategic and financial planning process

Source: Italian Army General Staff (AGS) 2010

Additionally, IA personnel calculated a composite measure of military readiness for the entire organization by aggregating the percentage achievement of different outputs, weighted by an “impact factor” (the average of five years of appropriations for a particular output as a percentage of five years of total IA appropriations). IA managers examined the composite measure, which ranged from 0-100% and recalculated readiness using a “what-if” analysis model. The model allowed managers to simulate alternative funding levels, providing the rate of performance (% military readiness) obtainable by the whole organization for each posited allocation, which is illustrated in Figure 2: Italian Army “What-if” Analysis Model.

In practice, the “what-if” analysis is a measure of expected performance, providing a type of benchmark that identifies achievable targets for organizational functions or areas with a given level of funding. In Figure 2, “HP” stands for the simulated hypothetical amount of money allocated to the IA budget and x is the readiness or output level generated. Data collection supported the measurement of military activities, expenditures and readiness proxy measures with much of the data coming from internal transactional databases and internal legacy IT systems. In addition, sub-organization managers provided (relatively) objective data such as logistic and training outputs, some of which came from self-assessment. Managers used the combined data to analyze how well sub-organizations provided their outputs and compared outputs generated with the given budget to a performance target. Performance targets were set based on historical outputs, which came from the five-year average of appropriations as described in the preceding paragraph.

Figure 2: Italian Army “What-if” Analysis



Source: Italian Army General Staff (AGS) 2010

Factors related to adoption and implementation of the PBM System

The IA's performance system was in progress but in relatively early stages at the time of this study and aided the IA in constructing the output-based budget, which served both as a proxy for readiness and a means to obtain funding. Performance information was used almost exclusively in the ex-ante phase of the budgeting process, and the PBM system had not matured to the point where managers could use performance information for resource allocation and corrective action during the year.

Technical Issues

In the implementation of PBM, IA managers observed several technical or quality issues including problems related to data availability and collection, and accuracy in the data. One Italian officer, working at the IA Performance Management Office, stated: “[...] there are problems [with] the existence and validity of some data due to the self-assessment of the sub-organization heads, so we have to try to improve the metrics, information architecture and information technology.”

These problems, in part, resulted because managers had data only on operational expenses for each output rather than full, actual costs, (which would include personnel, investment, and other expenses not part of operations expenses). With this lack of information, the unit of measurement was unit expense related to operations and maintenance, not unit cost. As is the case with many government organizations, the internal information system used is a cash-based accounting system rather than a system based on costs, and data systems were not linked in such a way that personnel, investment, or other costs of operating each unit could be properly allocated across activities.

Further, training and technical knowledge of staff was underway but not widespread or well-understood throughout the organization, resulting in greater difficulties in attaining quality data to assess performance. While the number of managers and their ability to understand and use performance information

(managerial capacity) was growing, and data and analyses were evolving, the ability to direct, understand use data and analyses was still limited by the lack of knowledge of performance information and its use. One officer working on the PBM system stated, "The resistance [to the adoption of PBM] is due to the novelty of the subject, the fact that they [personnel involved in the PBM process] do not know the topic we are talking about [... It] is more a resistance due to ignorance." The officer concluded his remarks by noting that what his office was trying to do was to "push hard" on staff training so that common knowledge could be spread throughout the IA. This was intended to help personnel understand the usefulness of PBM.

Systems Issues

Systems issues also affected the adoption and implementation of the PBM. As noted above, the IA was not yet able to adopt and use an integrated, or "holistic," information system that included financial, strategic, personnel, investment, and other IT support systems. Another Italian officer working at the IA Performance Management Office reported that the IA did not have an IT system capable of "managing rapidly and reliably the amount of information that we collect." Although moving forward, the IA's business intelligence system was not completely implemented and integrated. This lack of information infrastructure underlies the systems issue at the root of the technical issues listed above. As a consequence, even if personnel well understood the PBM system, managers could not make tradeoffs and improve resource allocation (or reallocation) across organizational functions.

The IA's management instruments related to strategic planning and implementation were strong: managers and the IA Performance Management Office were able to connect strategic goals to outputs to activities in order to understand and measure readiness. As mentioned above, they did not have management instruments in place to readily facilitate cost-benefit tradeoffs. In essence, the links as demonstrated in Figure 2 were not yet fully functional.

Organizational culture and norms exacerbated difficulties in using performance information, manifesting in dysfunctional behaviors (Smith 1995; Pidd 2005). Although the IA intended to use performance information to create positive outcomes from linking outputs to budgets, actual use of the information was mixed. On the positive side, IA leadership understood that the PBM could be used as an instrument for showing "objectively" the need for more funding. Commanders of the operational units, being accountable for the full readiness of their organizations, saw in the system a way to report their accountability; in fact, some officers of the IA Performance Measurement Office reported that commanders of lower organizational units were eager to embrace the new model to communicate their performance and explain their resource use. One reported "...the model is getting better each time, thanks to a new approach with the different users, [because] they have managed to understand [...] the opportunities for them to be able to request and demonstrate what they produce and what their real needs [are]." On the negative side, staff "cultural history" and experiences with the organization led managers to focus on inputs and appropriations more than outputs and output-based budgets. One interviewee stated, "The internal process of resources allocation, [during the year] continues to have a financial approach [... It] continues to follow the classic bureaucratic logic inherent in the IA General Staff." He continued by saying, "The idea [PBM] is enlightening but difficult to implement since the current information system is based on financial accounting."

Analysis of interviews of key personnel also revealed that during the year, decisions to allocate resources among functions or sub-organizations may have reflected priorities for a subordinate part of the IA, but did not necessarily reflect priorities among functions and for the organization as a whole. As reported by

another interviewee: "...the most critical aspect is related to cultural nature and change of mentality ... it is clear that the PBM requires [the organization's leaders] to change the approach with which it plans and manages..." Leaders also observed sub-optimal behavior, which may have been unintentional: when managers self-assessed their sub organization, they behaved in completely rational ways for themselves and their parts of the organization but not in a rational way for the organization as a whole. Hood (2006, 516), aptly suggested that this mismanagement can result in "hitting the target and missing the point."

Lastly, although not asked directly in the interview process, interviewees' responses might suggest that systemic costs, not only financial but related to the use of other resources such as personnel and IT, hindered the implementation of PBM at least to some degree.

Involvement Issues

With respect to involvement, IA leaders demonstrated a high level of commitment and participation with the PBM process. The real driver for implementing PBM was very likely the legal mandate and requirements handed down by the Ministry of Economy and Finance. By setting up a Performance Management Office, investing resources in IT systems and training, attempting to connect other IT systems with the PBM system, and continuing to show to personnel and higher levels of government their commitment to providing output-based budgets, leadership engagement was a positive force in pushing forward adoption and implementation of the PBM system.

Further, employees who understood the system, as evidenced by the comment about unit commanders, above, engaged in positive ways to support the PBM process. However, leaders also observed gaming, which resulted when self-assessed data led personnel to distort or manipulate reported outputs to their gain. To compound this issue, no personal rewards or incentives existed within the PBM framework: due to legal and other mandatory regulations, personnel evaluation occurred through different processes and systems, and no bonuses or tangible recognition could be awarded to those who embraced PBM. Similarly, the PBM system and the IA in general had no provision for rewarding organizations for meeting performance targets (e.g., increasing funding, allowing carrying over of efficiency gains, providing bonuses, etc.). Thus, employee and even management involvement may have been adversely affected by perverse incentives: if a unit has to "use or lose" its annual budget, showing efficiency gains can result in a lower budget next year, which rational individuals likely will not choose to report. Individuals who may be rewarded for those gains may be the subjects of criticism for lower budgets at the sub-organization level.

As noted in the literature review, national and administrative traditions, policy field type, type of public sector organization, and dimensional characteristics may have an effect on the successful adoption and use of PBM. In this comparative study of similar organizations, it is not possible to compare our studied organizations to those in another policy field or to examine critically dimensional or type of organization issues that would occur across a greater number of organizations. Research on policy field type has no clear implication for the internal or external use of performance information for a defense organization; in the IA, it was used mainly for external purposes. We might also expect that since politicians tend to focus on "problems," the mandates for output-based budgeting follow perceived or real problems in accounting for performance in the public sector. In addition, in most countries, defense spending draws a lot of attention, whether for its size in terms of resources used or its perceived inefficiency or ineffectiveness; thus, we might see the MoD receiving greater scrutiny. We might also speculate that more individualistic and risk-accepting culture allows greater use of instruments such as performance-related pay and transparent public reporting of targets and achievements, but again, our comparative case study cannot determine the significance of these factors.

In sum, the most important factor in determining successes achieved in implementing the PBM system in the IA was the legal mandate requiring output-based budgets. Public demands for better public management played a supporting role. With these mandates and demands, IA personnel were forced to consider and map costs, inputs purchased, and outputs or readiness generated for all activities, units, systems, etc. The validity of the readiness measures was likely less important than showing the connection from expense to readiness, whether or not the measures captured all linkages between the two or even predicted readiness particularly well. Leaders and managers leveraged existing data and information infrastructure, and pushed forward with new IT systems and better methods to connect strategic planning and achievement of readiness goals to expenditures. Leadership was highly committed both in terms of actions and resources committed: the Performance Management Office was created and resourced; and resources were allocated to training, structuring strategic and business processes, and IT purchases and development. In short, IA leaders did what needed to be done to insure their future funding. If one believes the most important aspect of PBM is to show how funding affects outputs (or readiness, in this case), the Italian example provides a methods by which some success can be achieved. On the negative side, however, the focus on mapping activities to expenditures does little to help organization managers find efficiencies; rather, it provides a disincentive, because reporting higher expenditures by sub organization inflates budget requests. Sub optimization and gaming within the IA illustrate consequences of these incentives. Further, the IA faced challenges in information availability and structure, and had little time to get all employees on board with the new requirements for PBM. Using hypothetical readiness calculations and impairment limits based on data with known quality issues can lead to negative outcomes should forces have to be mobilized, and it is likely that it will take many years for the IA to improve the PBM system to include explicit and comprehensive linkages from costs to readiness.

THE U.S. NAVY SURFACE WARFARE ENTERPRISE CASE

In the late 2000s, the U.S. Navy undertook a series of “business” or “enterprise”-oriented management processes designed to improve efficiency and effectiveness of readying the Navy’s surface ships for military missions. As is the case for the IA, the U.S. Navy typically functions as a traditional hierarchical organization, focusing on the provision of ready ships, which SWE managers referred to as readiness outcomes. The Navy designated the SWE as the business operations unit responsible for this provision.

Navy leaders’ statements over many years indicated that they believed the Navy faced a “burning platform,” in that operations and maintenance and personnel costs were burning up resources needed for acquisition and modernization. SWE leaders’ implicit goal was to provide ready ships at least cost to preserve funds. SWE leaders explicitly stated their tasking as “optimizing” warfighting readiness using the expression, “warships ready for tasking.” The Navy’s goal was to project power anytime, anywhere, and the SWE prepared ships to operate both independently and interdependently as part of a battle group. As such, the performance effort within the SWE related mostly to being accountable for using resources as wisely as possible to conserve funds for other uses.

“Warships ready for tasking” meant that a given ship could be ready for multiple operational missions. SWE leaders described a specific set of performance “figures of merit” or indicators that were to be useful to leadership from the very top all the way down through maintenance, supply chain, training and other functional areas, allowing managers and personnel at all levels to take actions to improve ship readiness. Thus, Navy leadership used PBM largely for steering and control of the SWE. In addition, Navy leaders stated their intention to use the performance system to connect readiness to resource allocations,

specifically appropriations requests. Webb and Candreva (2010, 525) reported that “Navy leaders express[ed] their desire to drive the budgeting process” with their PBM system, and the leaders assumed that, when fully operational, the system would provide them with direct linkages from goals to outputs to budgets. As it turned out, this was not to be the case.

SWE leaders began their campaign to adopt and implement the new PBM system using lines of effort that were familiar and well understood by most Naval personnel. Managers measured performance using proxies for manning, training, equipping and sustaining operations; thus, SWE leaders designed the PBM around the major functional and operational internal processes and activities needed to provide ships ready for tasking. Using historical data and process information, and with the intent to link to existing maintenance, supply and other information systems, SWE personnel constructed five composite performance measures based on five critical performance areas. The composite measures described mission readiness in each of the following functional areas: personnel, equipment (maintenance), supplies, crew training, and ordnance (or the acronym “PESTO”).

SWE leaders assigned responsibility to one senior officer for each of the PESTO areas, and to one product line manager for each ship class (frigate, destroyer, cruiser and amphibious). Thus, performance depended on a matrix management structure where nine senior managers (five PESTO; 4 ship class) communicated amongst themselves to insure progress towards readiness goals. Performance was measured for each individual ship and each individual mission for which the ship could be tasked¹⁰.

SWE managers worked to develop mathematical algorithms to support the figures of merit or performance indicators in each of the PESTO functional areas. At the time of this study, the personnel, training, and maintenance algorithms were more developed with the latter being the most developed of the five. The algorithms attempted to capture the processes underlying the transformation of inputs through activities to outputs in a way that simplified performance measurement. SWE personnel used standardized composite proxy measures along a 0-100 scale, to indicate readiness. The SWE used a four-light “stoplight” with the following scores: green=90-100; blue=80-90; yellow=70-80; and red<70, where green indicated a ship was fully functional for a particular mission, and red meant the ship could not undertake the mission; blue and yellow were intermediate stages showing higher and lower states of readiness between green and red, respectively. Figure 3: Maintenance Readiness for U.S. Navy Surface Warfare Enterprise provides an example of the stoplight chart used to assess readiness of equipment (maintenance).

Note that there was no true measure for “overall effectiveness” (or overall readiness) either by functional area or by ship as the performance algorithms could only weight factors for a specific ship and mission type. Thus, the “overall effectiveness” measure in the table referred to a subjectively determined “average” of other measures. For example, a ship may have shown “green” for mission one but “red” for mission two due to a specific maintenance problem that affected only the second mission. The average of the two may indeed, have been a number in the “yellow” range of the stoplight, but that measure was only an average of other quantitatively determined performance indicators. Further, it made no sense to aggregate all PESTO measures by ship. Thus, PESTO indicators provided information only on how well a ship could perform a certain type of mission relative to each of the five PESTO functions, not whether the ship was universally ready.

Figure 3: Maintenance Readiness for U.S. Navy Surface Warfare Enterprise
(unit = ship)

STATUS	UNIT	Overall Effectiveness	Mission Area 1	Mission Area 2	Mission Area 3
DEPLOYED	1	89.5	98	95	61	96	96	88
	2	91.8	98	98	90	91	96	78
	3	94	95	96	94	92	96	89
	4	72.3	94	88	23	84	94	87
	5	74.2	68	55	72	89	91	89
SURGE	6	86.5	97	79	97	93	52	89
	7	84	13	83	88	91	91	71
	8	90.5	99	70	88	95	94	89
	9	88.1	67	98	99	96	95	80
	10	69.9	84	79	36	73	93	88
	11	90.1	100	78	96	96	95	85
	12	80.2	90	57	98	94	87	84
	13	91.3	99	94	87	99	96	77
	14	84.7	0	88	96	96	96	74
	15	51.6	0	33	28	90	0	86
	16	77.6	0	96	88	93	85	80
	17	43.9	0	75	45	6.2	48	92
	18	86.9	98	90	84	90	94	77
(NOT) AVAIL	19	82.1	15	89	87	81	98	89
	20	40	94	51	73	42	0	83
	21	53.2	67	50	78	21	93	79
	22	3.9	0	0	1	0.4	0	67

■ 90-100, mission ready ■ 80-90, possibly mission ready ■ 70-80, missing key readiness elements ■ < 70, not ready

Source: Adapted by the authors from a SWE internal chart

In the bigger picture of overall Department of Defense readiness, SWE personnel linked their PBM system to the Defense Readiness Reporting System (DRRS), a defense-wide IT system for reporting military unit readiness for a given mission. The DRRS approximated an internal business intelligence system and was set up to help defense leaders improve internal processes and make better decisions. Through the DRRS, real-time changes in maintenance, personnel, training, ordnance, etc., were tracked in such a way that anyone with access to the database could drill down to find reports on individual performance measures and action items by ship.

Unlike the IA, SWE personnel did not focus on mapping internal processes and activities to operational expenses. In some of the more well-established systems, such as a decades-old maintenance system, costs of certain repairs and corresponding readiness measures could possibly have been calculated, and certainly supply and ordnance systems contained valuable information on expenditures but included only those expenditures captured in the operations and maintenance budget. The majority of personnel at the SWE are uniformed service members whose pay is managed in a different budget that cannot easily be mapped to activities of the SWE. Despite consistent messages that all of the DoD needed to become more efficient, virtually no formal effort within the SWE was made to connect financial management systems to the PBM system or to create output-based budgets, and without outputs by a unit, ship, or other sub-organization categorization, it is hard to imagine how to tie overall readiness to budgets. Rather than focusing on value for money, across the DoD and under Congressional mandates, DoD leaders focused on

financial integrity and audit readiness, giving much more consideration to tracing each dollar of funding from appropriation to obligation¹¹. Thus, the lack of integration between strategic and financial planning processes resulted in no concrete linkages between organizational priorities and resources.

Factors related to adoption and implementation of the PBM System

As noted, SWE leaders used performance information mainly to steer and control the processes of manning, training, equipping, and sustaining surface ships. SWE managers produced a very useful PBM system that provided important information about specific actions and functions to improve. Leadership and managers seemed quite enthusiastic about the new PBM system because their focus was on readiness. Its PBM system, however, had little connection to expenditures related to activities and outputs. Performance information was not explicitly used in the budgeting process, and the PBM system had matured only to the point where managers could use marginal reasoning along with readiness (performance) information to determine where to allocate the next dollar to improve readiness.

Technical Issues

The SWE suffered from limited information availability in some readiness measures with missing data and limited quality of data, from nearly complete lack of integrated cost information, and from difficulties in designing and developing indicators that supported more general performance improvement, particularly efficiency. The most developed of the performance measures, the maintenance performance indicator, came from historical data and an algorithm that assigned values to repair tasks weighted according to their impact on mission accomplishment. The legacy maintenance system provided the historical data on time, materials used, and some information on costs of maintenance actions, and SWE personnel provided information on the weighting of each repair. In fact, all PESTO measures were based on the SWE's attempt to link internal databases and processes from legacy systems to the PESTO algorithms. Creating these links, while a great first step in mapping the activities of different outputs, provided backward-looking data not integrated with any other part of the work of the SWE including expenditures or costs. A couple of interviewees also expressed concern that the weighting and algorithms did not present very useful information.

The SWE had not transitioned from its legacy encumbrance-based budgeting and accounting systems to performance-based cost information through a true cost accounting system. As in the case of many public organizations and similar to the IA, they had only expense and obligation data, not true costs, but unlike the IA, they had no formal mechanism to link costs to activities and outputs. Instead, SWE personnel reported that they attempted to measure costs of the various performance activities using other financial data. They did not include cost data for military personnel salaries since those expenses were recorded in a different organization's budget and not deemed relevant to SWE performance. Interviewees reported using: (1) data mining purchase data to try to find possible reductions in quantity and/or price of those purchases; (2) comparing ship spending by (ship) homeport (geographic station); (3) charting cumulative year-to-date spending against rolling averages of performance; (4) producing stoplight charts with readiness indicators along with estimated costs of improving a ship's rating from one (stoplight) status to the next; and (5) analyzing expenditure by mission type to try to manage the "cost" of those missions. Webb and Candreva (2010) noted that there were problems in using these methods except the last, which was not something the SWE could accomplish, because they measure only a part of information needed to manage outputs and costs and because they can be misleading depending on the assumptions used in

each. Because the PBM system was not able to provide a comprehensive picture of the organization's performance, managers had little information with which to make resource allocate trade-offs.

In the development and adoption stages of the PBM, SWE personnel negotiated and agreed upon evolving algorithms that provided output (readiness) measures. SWE leadership reported undertaking various measures to train and to increase technical knowledge in functional, operational areas, and used this information to drive specific behaviors. This involved support for training and technical understanding of the value of performance information, but was hampered by data and limitations of the performance indicators as noted above. Given the substantial knowledge of and use of the new PBM measures for readiness at least in the maintenance, personnel, and training areas, training and the transmission of technical knowledge was important in moving towards success in implementing the PBM system.

With respect to managerial capacity, managers could describe quite well what information they wanted and how it would be used to improve efficiency and effectiveness at the SWE. However, the interviews revealed that managers did not grasp the enormity of the effort that would be needed to connect their figures of merit to costs, and thus their capability to implement the PBM system was limited. A group of commanders interviewed mentioned that they still did not completely trust the new algorithms and performance measures and also noted that they were running legacy systems in parallel to insure that the figures of merit were reasonably accurate based on past practices for measuring readiness. This suggests an exceptional managerial capability to understand the readiness measures but perhaps a somewhat cautious attitude about moving forward with the new PBM system. Leadership believed that once this group could be convinced of the value of the new measures, they would more enthusiastically lead the effort to monitor and control readiness with the new PBM system.

Despite this enthusiasm, SWE leaders had not made much progress in explaining and possibly understanding that their financial systems were inadequate for performance management. One high-ranking individual reacted to this information with disdain; and in another interview, a Navy captain¹² involved in the PBM effort seemed surprised when pressed on the point that inputs purchased do not equal costs because many items purchased for ship repair could be used in a different fiscal year from when purchased, and in any event, no systems were in place to track the items to a particular mission or event. Throughout the interview process, with the exception of one senior civilian, leaders and managers demonstrated lack of understanding of the financial systems that exist in an appropriations-based organization where obligations on objects of expense by sub organization must be used to meet financial standards. Further, although interviewees at the management level were quite comfortable explaining that readying ships would naturally involve manning, training, equipping, and sustaining activities that map across parts or all of multiple missions, they demonstrated little understanding of the difficulties of assigning costs to missions by ship. They also seemed to miss that some costs, such as overhead, cannot be properly mapped to any specific mission.

Systems Issues

As described in detail above, SWE leaders had poor understanding of financial management systems and linkages to outputs needed to construct a functioning PBM system. And although SWE leadership was very clear with regard to strategic direction and made every effort to align performance goals with strategy, IT systems needed for performance management did not exist¹³.

Organizational culture and norms had both positive and negative effects on the implementation of PBM. The culture of high performance translated into a "can-do" attitude among managers and the rank and file.

At a high level, this contributed to managers pushing forward with the PBM system even if not fully convinced that the measures were correct. At an operational level, the “can-do” attitude sometimes resulted in commanding officers undertaking missions where ships were not deemed ready due to inventive workarounds. And overall enthusiasm for measuring readiness also helped the organization begin to successfully implement the new PBM system, supporting Van Dooren et al.’s (2010) statement that performance information, when integrated in the professional corpus or culture of the organization, improves the likelihood of successful implementation.

As in the case of the IA, however, leaders mentioned sub-optimal behavior, and may have thought personnel behaved in rational ways with respect to their own responsibilities but not necessarily in a rational way for the organization as a whole. For example, SWE personnel noted that using composite measures by functional area (along the PESTO or ship manager lines) could exacerbate individual motivations to sub optimize. Further, the fact that PESTO performance measures could not be aggregated to calculate a quantitative measure of “warship ready for tasking,” may have resulted in sub-optimization despite a functional area manager’s best effort to efficiently and effectively provide ready ships. As previously noted, some managers cautiously ran legacy systems in parallel with the new PBM system, which suggested that cautiousness about change may have been part of the organizational culture. None of these concerns, however, was backed up by interviewees as having resulted in concrete instances of bad behavior or problems, so perhaps they were only concerns.

Finally, SWE leaders did not mention the costs of undertaking the PBM system; their enthusiasm about supporting mission readiness and their lack of understanding of the financial management systems that would be needed to measure efficiency likely led them to underestimate this very real cost.

Involvement Issues

With regards to involvement, perhaps the greatest factors in the successes of the PBM at the SWE were the evident commitment and involvement of leadership, including high-level leaders’ interest in studies of their PBM system. Leaders knew how to leverage the culture of high performance and were willing to allocate resources to the performance process and system. Employees interacted directly at multiple levels with the PBM system based on personnel engagement with constructing algorithms and readiness measures and the way in which leaders held them accountable. Given the primary use of steering and control, SWE leadership used these involvement factors along with training and technical knowledge to achieve desired behavior, which resulted in reasonable success in adopting and using the PBM for measuring and improving readiness.

Despite the exceptional managerial capability to understand the readiness measures, some SWE managers stated that some of the activities undertaken and PESTO measures added little or nothing to their ability to use performance information. Perhaps because these managers were not convinced of the value of the new PBM system and felt their legacy systems worked well enough, they experienced the problems of performance measurement dysfunction, information overloading or indicator mushrooming (Van Dooren et al. 2010). With no mandate to provide performance results DoD- or Navy-wide, and incentives to demand greater appropriations for acquisition and modernization of surface fleet, personnel may have sub optimized in terms of their own performance or engaged in gaming to try to maximize funding. One example of gaming was that SWE managers “encouraged” sailors to obtain training en route to a ship rather than after reporting, which shifted the cost of the training to another command.

As in the case of the IA, no personal rewards or incentives existed within the PBM system. The SWE had no provision for rewarding organizations for meeting performance targets by increasing funding or other mechanisms. Further, SWE managers and leaders sometimes used the PBM system to drive behavior in ways that undermined the integrity of the system. For example, interviewees explained that the maintenance algorithm generates a performance indicator by weighting high priority repairs, which prioritizes the most important or critical repairs. It can be prioritized to direct action so that maintenance indicators rise more quickly for more critical missions. However, some tasks that are mandatory, e.g., modifying an all-male ship to accommodate female sailors, can be manipulated so that the ship scored a zero until the modification was completed (interviews and Webb and Candreva, 2010). This changed the PBM system from being useful for information and evaluation to one that acted solely to control behavior. In essence, it masked all other actions by manipulating the figure of merit scores.

Again, national and administrative traditions, policy field type, and other involvement characteristics not previously evaluated may have an effect on the successful adoption and use of PBM, but in this comparative study, it is not possible to thoroughly examine these factors in relation to other organizations.

In sum, the SWE faced a very different set of challenges and motivations for implementing PBM. Leaders were not under mandate to provide performance information; rather Navy focus was on improving readiness while finding efficiencies to maximize funds available for acquisition and modernization. Further, leaders rarely expressed using PBM to justify budgets outside the Navy, with many assuming that the “top line” (amount of funding provided) would not increase over upcoming years. These leaders were highly committed and were able to effectively motivate managers and rank and file employees to work towards improved readiness using the logic of providing warfighters the highest quality surface fleet possible. The Surface Forces leadership stood up the SWE specifically to manage performance, put resources into the PBM system, assigned managers to manage functional areas specifically related to readiness, and involved employees in the construction of algorithms for measuring readiness and the implementation of systems to capture necessary data. If one believes PBM should concentrate first and foremost on the mission of the organization (in this case, national security), the example of the SWE provides a way forward. However, the public receives little information with which to assess accountability of expenditures beyond showing what inputs were bought with appropriated funds. SWE leaders understood that showing connections from readiness to costs or budget was needed at least within the Navy, but their characterization of the “costs” of attaining readiness was not linked to actual expenditures or cost data, and their PBM system included almost no useful data for this purpose. Thus, the greatest explanation for the limited success of the PBM system in the SWE was the leadership’s failure to expand the appropriations-based financial management systems. Other challenges will be making the significant investment in managerial capacity and employee involvement in, and design, integration, and use of a new financial management system; anticipating and mitigating sub optimizing and gaming behavior; and providing comprehensive performance information through the PBM system that would allow resource allocation tradeoffs.

CASE COMPARISON

Both the IA and the SWE are complex, bureaucratic public organizations that share an overall objective to provide units ready to fight. However, their leaders faced different issues: In the IA case, leaders focused on severe budget cuts and the survival of the organization; they showed how they spent public money and what outputs they obtained. Their main use of performance information was for external and internal

accountability. SWE leaders concerned themselves with internal steering and control to increase readiness and free up resources. Many of the factors posited in Table 1 had an effect on PBM implementation. Table 2: Findings on Factors that affected successful PBM implementation in the IA and SWE summarizes these effects. We explain each by group, below.

Technical Issues

In the technical factor group, both the IA and the SWE exhibited problems with the availability of data including missing and limited quality of data, and inability to gather and link cost data with readiness. In the case of the SWE, little attempt was made to collect activity-based cost data; rather, the emphasis on financial integrity and auditability led to greater focus on accounting for appropriations and purchases of inputs. However, the IA had made a fair amount of progress in implementing its PBM system in terms of connecting expenditures to readiness, while in the SWE made great progress in managing readiness.

Leaders in both organizations trained and shared knowledge, which was apparent in the IA's success in providing output-based budgets, and the SWE's success in implementing PBM for mapping readiness. For the IA, greater efforts must be made to help personnel understand the PBM system. For the SWE, these same efforts must be made, but they need to be enhanced so that personnel begin to understand what the organization must do to connect costs or expenditures with readiness.

In both organizations, managerial capacity was growing. Both organizations set up offices to manage performance, albeit with different focuses. As noted, IA personnel involved in PBM reported frustration with ignorance in the organization, and were working to direct action. In the SWE, the entire Surface Warfare Enterprise concept was based around improving readiness and finding efficiencies, and managers well understood this, but their capacity to direct or perhaps even understand links between readiness and cost hampered the effort.

Table 2: Study findings on factors that affect successful PBM implementation

Factor group	Specific, empirically determined factors	Italian Army	US Navy Surface Warfare Enterprise
Technical	Availability of information (with which to gather data and perform analyses)	Lack of integrated information; lack of cost data; excellent attempts to link expenditure data; not yet able to manage rapid acquisition of data or analyze it	Lack of integrated information; reasonably good but still developing readiness data with quality issues; little cost data linked to activities and outputs
	Training and technical knowledge (presence or absence of knowledge in data and analyses related to the PBM system)	Good training occurring and information flowing about needs and how to build output-based budgets	Training clearly effective for readiness uses of PBM. Little training on activity-based costing.
	Managerial capacity (to direct, understand, and use the data and analyses)	Growing but slowly. Officers in Performance Management Office stated that ignorance is still a big problem; not all managers know or can adequately address how to use the data and analyses	Excellent capacity to understand, direct, and use readiness algorithms and measures. No formal capacity to direct or perhaps understand links between readiness and costs.

Systems	Informational infrastructure to support PBM including IT systems and their integration with other organizational systems	IT systems not integrated; some legacy systems still in place; strategic planning system loosely connected to FM system, which is not fully supported by accurate cost data	Legacy systems still providing foundation for much of PBM system; no FM IT system to support PBM
	Management instruments related to goal achievement processes	Strategic planning and PBM instruments present and evolving	Strategic planning alignment to readiness measures well communicated and aligned to higher-level goals; FM instrument related to a different goal: auditability
	Organizational culture and norms including positive use of performance information (rather than punishment), rational versus hierarchical uses and resulting bureaucratic behavior to try to control and maximize appropriations	Data being used positively to provide enough resources to meet mission needs; more hierarchical than rational, and more focus on control and maximizing appropriations although outputs also required; organizational “memory” remembers decision making based on inputs and appropriations	“Can do” culture; readiness achieved whether through actions inventive workarounds. Perhaps less hierarchical than IA. Design of performance measures along functional areas could cause sub-optimal behavior; goal misalignment results in some being focused on readiness and others on financial integrity
	Systemic cost of implementing PBM	Not explicitly mentioned	Not explicitly mentioned
Involvement	Resources committed	Stand up of Performance Management Office; money and personnel support IT systems acquisition and use; no mechanism to reward individuals or sub organizations for realizing efficiencies	Standup of SWE, the business unit responsible for PBM; efforts to describe and plan for linking IT systems underway but missing resources and support for FM system; no mechanism to reward individuals or sub organizations for realizing efficiencies
	Employee engagement (including gaming or other manipulative behavior that diverges from intended interaction with the PBM system)	Some employees involved; some managers employed in positive ways, others used gaming to try to gain additional resources	Managers and employees involved in creating performance indicators and algorithms; enthusiasm for using effectiveness-based measures; a few managers skeptical of value of new PBM system; leaders used PBM to drive behavior that changed usefulness of PBM information and evaluation to an absolute control mechanism

Leadership commitment and involvement / Stakeholder commitment / accountability / involvement	Leadership fully committed and involved; government involved through higher-level resource allocation process	Leadership committed and involved; used culture and accountability to push forward PBM in terms of readiness; no direct government involvement except in terms of financial management
Mandatory requirements	Law requires output-based budgets	Law requires auditable financial statements
Policy field type of agency, e.g., justice, public order, forestry; type of public sector organization (central versus other levels of government)	Difficult to compare: policy field type suggests external use, which lines up with IA's use	Difficult to compare: policy field type suggests external use, which does not line up with SWE's use
Dimension: Size, age and other factors leading to trust between agency and parent ministry or public	Not explicitly determined; older, larger organization; and militaries are generally not "popular" with citizens, so perhaps some trust issues	Not explicitly determined; SWE is new; trust issues not apparent with higher-level organizations, but PBM system not used outside Navy except to request appropriations; military not always "popular" with citizens
National and administrative traditions, e.g., party system of government, individualistic and risk-accepting national culture	Difficult to compare: national culture based on government wide (and citizen sponsored) demands for better public management	Difficult to compare: national culture based on individualism and risk-accepting culture, "can do" attitudes, government wide focus on auditability; dysfunction of political system
Resources committed	Stand up of Performance Management Office; money and personnel support IT systems acquisition and use; no mechanism to reward individuals or sub organizations for realizing efficiencies	Standup of SWE, the business unit responsible for PBM; efforts to describe and plan for linking IT systems underway but missing resources and support for FM system; no mechanism to reward individuals or sub organizations for realizing efficiencies
Employee engagement (including gaming or other manipulative behavior that diverges from intended interaction with the PBM system)	Some employees involved; some managers employed in positive ways, others used gaming to try to gain additional resources	Managers and employees involved in creating performance indicators and algorithms; enthusiasm for using effectiveness-based measures; a few managers skeptical of value of new PBM system; leaders used PBM to drive behavior that changed usefulness of PBM

		information and evaluation to an absolute control mechanism
Leadership commitment and involvement / Stakeholder commitment / accountability / involvement	Leadership fully committed and involved; government involved through higher-level resource allocation process	Leadership committed and involved; used culture and accountability to push forward PBM in terms of readiness; no direct government involvement except in terms of financial management
Mandatory requirements	Law requires output-based budgets	Law requires auditable financial statements

Source: own research

Systems Issues

In terms of systems factors, both organizations had not yet integrated IT systems needed to form the PBM system and still relied on legacy systems. Both organizations had clearly defined strategic plans and desired outputs (ready forces), but the focus for creating PBM systems of the two organizations was quite different. The SWE faced conflicting objectives of improving readiness but making financial management systems auditable, which requires a financial management system tracking obligations, which resulted in separate IT and information infrastructure. Goldratt's (1990, 26), quote, "Tell me how you measure me, and I will tell you how I will behave" characterizes the differences in observed behavior and emphasis on and success in implementing PBM systems.

In addition, organizational culture and norms affected the success of implementing PBM. In both organizations, personnel were hampered by institutional "memory" and ignorance where some employees remembered decision making based on inputs and appropriations and were not eager to comply with new PBM requirements. SWE leaders took advantage of the Navy's "can do" culture to push quite successfully the implementation of a PBM system managing readiness.

In terms of organizational structure, as noted in the literature more "rational" organizations can use information and facts to convince employees to get on the bandwagon with PBM more quickly. In this respect, the SWE had some advantage: its leaders relied on delivering the rational message of increasing readiness for the warfighter, which is easier for military personnel to comprehend than public budgeting, to achieve organizational goals across its matrix management structure. However, we have no other organizations with which to judge the significance of this observation.

Both organizations expressed concern about personnel putting the needs of their sub organization ahead of the organization's needs, but only interviewees in the IA reported observing this behavior. Culturally, it is likely that individuals in both countries understood the natural incentive to seek additional resources for sub organizations at the expense of others, but would have preferred to see the PBM system accurately report resources needed.

Involvement Issues

Involvement factors in both organizations were quite similar. Both organizations stood up performance management offices or constructs, and both put money and personnel against adopting a PBM system. In the IA, efforts focused both on acquiring and using IT systems, while in the SWE, more effort was fo-

cused on creating algorithms and collecting data to provide performance measures on readiness. In neither case could the organization reward individuals or a sub organization for being more efficient; in fact, in both cases, sub organizations could be punished by losing resources when their personnel found more efficient ways to provide readiness.

Leaders in both organizations were highly committed to PBM, although with different objectives in mind. In the IA, employees began to be more involved as they realized that reporting output-based budgets could result in a greater amount of resources in the next year. In the SWE, nearly all personnel well understood that increasing readiness and finding “efficiencies” were the main objectives of leadership. In both organizations, however, the messages were not universally understood, and ignorance worked against successful implementation of the PBM systems at least to some degree.

One of the biggest differences between the two organizations was the obvious contrast in government involvement and requirements. Italian law required all government agencies to build output-based budgets while U.S. law required organizations to provide auditable financial statements; thus, outside stakeholders directed action within the IA, but only directed financial management compliance within the SWE.

Lastly, the comparative case study does not readily allow comparison of the IA and SWE with organizations in other policy fields, of different dimensions or those operating within the same national and administrative traditions. We noted some areas for further consideration but cannot provide evidence on their significance in this study.

CONCLUSION

In this study, we examined the adoption, implementation, and use of performance based management systems using the cases of the Italian Army and the U.S. Navy Surface Warfare Enterprise. We contribute to the literature by examining the various ways performance information affects implementation. Specifically, we examined motivations for performance management and factors relating to technical competency, the integration of performance and other internal systems, and how stakeholders interact with the performance management system. By undertaking an international comparative case study approach, we discovered differences in the use of performance information, but more similarities than differences in the factors that enhanced or detracted from adoption and use of PBM. We found as Hatry (2006) did that the actual use of performance information is the best indicator of where public organizations find success in implementing PBM: requirements to provide output-based budgets in order to receive funding drove the PBM process in the IA while the emphasis on readiness dominated PBM in the SWE.

The greatest takeaway from this study is that the legal, governmental, and organizational motivations and processes for undertaking PBM drive systems in predictable, if not completely successful ways, and that where they did not apply (or organizational leadership thought they did not apply), barriers to implementation got in the way. One might surmise that Hammerschmid et al. (2013)’s observation that organizational processes for performance information use are more important in determining success of PBM

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systems than person-related factors appears to apply in this case. We found that leadership commitment, employee and stakeholder involvement, managerial instruments and capacity, training, elements of organization culture, and allocating resources to PBM can enhance the implementation process. Issues of lack of data or poor quality of data, missing information infrastructure including IT systems, other elements of organizational culture, contradictory goals for performance information use, and possibly hierarchical management (rather than rational), can hamper PBM and may result in sub-optimizing and gaming behaviors.

The main limitations of this study are two. First, the comparative case study did not allow us to properly evaluate some of the involvement factors such as policy field and institutional aspects of both organizations, specifically national culture (Hofstede 2001), and national systems, (Pollitt 2006). Future studies could examine these by looking at more organizations or case studies of organizations across different fields and cultures. Secondly, both organizations are still involved in developing, implementing, and reviewing their PBM systems. Since the time of this study, IA leadership has improved IT systems and collection, and quality of data, has decreased its reliance on self-assessment, and has undertaken efforts to integrate the Army performance management system with a defense-wide system. In the SWE, leadership has changed the team consisting of a senior officer responsible for each of the PESTO areas and each ship class to a team of flag officers who are “champions” for objectives in five areas of the SWE Strategic Plan.¹⁴ Future work could examine the evolution of PBM systems and processes, and more established PBM systems and processes, to see if the findings discovered in this study hold.

Summarizing what we have learned, we prescribe the following for public managers and leaders in their attempts to adopt, implement, and use a performance-based management system:

- Understand mandates and goals for PBM; set the stage for transparency and performance management
- Examine consequences of stakeholders’ involvement and anticipate required responses
- Provide insight to all stakeholders on how to create an environment of continuous improvement
- Educate all personnel about mapping expenditures to inputs to activities to outputs, and where possible to outcomes, and help them understand the meaning of each of these terms plus efficiency and effectiveness so that their data collection, direction, and managerial efforts have a greater chance of being successful, i.e., train the workforce to transmit knowledge and gather quality data
- Bring groups of employees together with leaders and managers to plan for, upgrade, or purchase, and integrate needed information infrastructure and IT systems
- Train and train some more
- Revisit all of the above at regular intervals

We hope this research helps address gaps in the literature that assess the demand for and use of performance information and the effects of different factors that managers of complex, bureaucratic, hierarchical public government organizations should address in their attempts to manage performance. We suggest that other public organizations experience similar issues, and that our work may be helpful in increasing our understanding of performance management and PBM systems.

NOTES

¹ In this paper, we use the words, “leader” and “manager,” as does the Harvard Business Review, “Management consists of controlling a group or a set of entities to accomplish a goal. Leadership refers to an individual’s ability to influence, motivate, and enable others to contribute toward organizational success. Influence and inspiration separate leaders from managers, not power and control.” <https://hbr.org/2013/08/tests-of-a-leadership-transition>

² For more on Italy's military budget, please see: <http://militarybudget.org/Italy>

³ Van Dooren (2006, 123) notes that, “[i]mplementation refers to the extent to which the organization is doing something with the policy and management tools.”

⁴ ERP systems combine planning, accounting, shipping, logistics, and other systems into an integrated single system; BI systems are software applications that analyze an organization data.

⁵ For more on traditional hierarchical organizations, see, for example, Downs (1964) and Diefenbach & Sillince (2011).

⁶ The Italian Army is being cut by 20% and almost a third of military bases will be closed or sold over the next 10 years (law nr. 244/2012, legislative decree nr 7 and 8 2014).

⁷ IA managers mainly manage the operational expenses of the annual budget because personnel expenses depend on manning levels, which are set by law, and are thus a fixed cost, and investments are in the budget authority of the Ministry of Defense.

⁸ The strategic planning process is a top-down process; through it the organizational objectives for each layer are defined and decided with a cascading approach. It is supported by an IT system (SIAPS+). The financial planning process is a bottom-up process, in which each unit of the IA from the bottom to the top plans its financial needs for the next three years. The IA General Staff then allocates the available resources supported by an IT system (SIEFIN).

⁹ The focus of output-based budget is the goods and services produced. The substitution of outputs as the main focal object of the public organization budget, rather than cash, (which was the principal object of traditional input-based budgeting), means that the decision process that accompanies the budgeting process is reversed in its direction (Carlin 2006).

¹⁰ Since each class has (and sometimes individual ships have) unique systems, requirements and capabilities, senior managers readied each individual ship according to ship technology and expected mission requirements.

¹¹ In fact, Congress has mandated a full audit of DoD’s fiscal year 2018 financial statements. While bringing deficient financial management systems up to auditable standards could provide managers with powerful information with which to begin to link activities to outputs, to date, the focus is very much on input budgets and appropriations rather than PBM connecting costs to outputs.

¹² One rank below admiral; thus a senior manager.

¹³ The Navy was working to build a new ERP system with the intent to combine it with activities and performance measures, but the ERP was in early stages at the time of this study.

¹⁴ The authors no longer have access to processes or leadership inside our respective organizations. For the case of the SWE, it is not clear from publicly-available information how this change affects performance management. See, for example, the U.S. Navy's Surface Forces website at <http://www.public.navy.mil/surfor/Pages/SWE.aspx#.WCdWU-YrI2w>

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