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Enabling enterprise risk management maturity in public sector organizations

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IMPACT
This article addresses an important public sector management issue—what and how organizational capabilities can be mobilized for effective deployment of enterprise risk management (ERM) in public sector organizations. The authors present a framework providing insights to public sector managers for enhancing risk management practices

ABSTRACT
Public sector reforms have led to risk management gaining prominence as a means for effective service delivery and a tool for accountability. The public sector has seen regulatory changes intended to empower managers to engage in appropriate risk management practices. The authors present a framework for effective enterprise-level risk management in public sector organizations. The framework includes three essential enablers of risk management and provides conceptualizations for guiding future empirical research.

KEYWORDS
Business intelligence and analytics; enterprise risk management; management control systems; public sector

Introduction

Over four decades, public sector organizations have experienced significant reforms designed to improve accountability and performance (Schillemans, 2016). The reforms have driven a focus on risk management for effective service delivery and as a tool for accountability (Palermo, 2014). Prior to such reforms, public sector managers were generally risk averse (Bozeman & Kingsley, 1998). With new public management (NPM) initiatives, managers of public sector organizations were empowered by regulatory changes to manage risk (for example, in the UK—see Woods, 2009). Similarly, Australian reforms have precipitated an act of parliament (the Public Governance, Performance and Accountability Act 2013) making risk management central to service delivery (Barrett, 2014).

Barrett (2014) argues that governance/management frameworks are essential for complementing frameworks legislating risk management. Unfortunately, contemporary efforts toward appropriate risk management frameworks focus on accountability rather than strategic and processual risk management—reflecting an emphasis on transparency, involvement, proportionality, evidence, and responsibility in policies adopted by governmental bodies (Palermo, 2014; Barrett, 2014). Despite narrative emphasising that everyone is responsible, risk management is isolated within the internal audit function (Barrett, 2016). Limiting risk management to an accountability function is reminiscent of the traditional public sector compliance culture—risk management as a means of avoiding blame (Palermo, 2014). This dysfunctional situation arises from reliance on legislative requirements as frameworks for managing risks.

Recent reports document growing adoption of private sector approaches to enterprise risk management (ERM) in the public sector (PwC, 2015). While ERM holds promise for effective risk management, implementation does not guarantee success. The accountability structure of public sector organizations means different organizational units operate like self-contained business units and management is characterized by vertical/hierarchical co-ordination and accountability (Bundred, 2006). Even after adopting NPM where emphasis is on market-driven, democratic accountability, internal management relies on hierarchical accountability (Bryson et al., 2014). Consequently, organizations decentralize and structure public services around specialized functions with limited co-ordination across functions (Bundred, 2006; Christensen & Laegreid, 2007). Such practices limit organizations ability to achieve enterprise-level risk management benefits.

We propose a framework for effective enterprise-level risk management. Our framework includes three essential enablers of effective risk management: business intelligence and analytics (BIA), management control systems (MCS), and ERM. ERM is a data-driven approach to managing risk and requires dynamic capability allowing data to be leveraged and assimilated into risk management processes and strategies across the organization. We propose that

MCS and BIA enable such capability to facilitate ERM and enable effective service delivery by public sector organizations.

Public sector risk

Traditionally, public sector risk included political, strategic, financial, operational, and data risks and was primarily the responsibility of high-level management (Carlsson-Wall et al., 2019). Lower-level employees' involvement in risk management was limited to documenting compliance and maintaining an audit trail. Easy data access, enabled by enhanced technological capability, has increased visibility over activities, resulting in identification of more risk elements (for example social inequality, environmental degradation) for public sector organizations to manage (Collier & Woods, 2011; PwC, 2015).

Unlike private sector companies that may opt out of some risks, public sector organizations lack that luxury (Woods, 2009). Public sector risks emanate from providing services, including education, public security, transportation, infrastructure, and social support (Asenova et al., 2015). Thus, public sector organizations have sought better ways of managing risk using formal risk management tools and frameworks (Hinna et al., 2018) and are charging all employees with the responsibility for risk management (Carlsson-Wall et al., 2019).

In a PwC (2015) survey of public sector risk management, ERM is increasingly recognized as offering the framework necessary for managing risk. ERM recognizes that risk management cuts across different internal departments and involves external constituents (Rana et al., 2019). ERM promises a shift from a top-down, silo-based approach to an integrated approach where everyone has risk management responsibility. ERM offers opportunities to move beyond compliance to a comprehensive approach covering strategy and process (Rana et al., 2019). While ERM provides potential to foster an integrated approach to managing risks, there is evidence suggesting that organizations need to develop the capability to effectively deploy ERM (PwC, 2015). We propose MCS and BIA as mechanisms enabling robust ERM in public sector organizations.

A framework for enabling risk management

The theoretical model for public sector risk management is premised on established conceptual relationships among ERM, MCS, and BIA. We believe BIA and MCS provide the dynamic capability enabling integrated, data-driven, strategically-focused risk management in public sector organizations. Our model, illustrated in Figure 1, reflects the relationships among these constructs and their effect on service delivery.

ERM is the dominant strategic management approach within organizations as they face a phenomenon termed 'the risk management of everything' (Power, 2007). As ERM is adopted and strengthened, risk management processes move from a rudimentary compliance and prevention focus towards a focus on the opportunity side of risk identification and response (Rana et al., 2019). Different forces, including stakeholder aversion to uncertainty, marketplace volatility, increased globalization, and increased competition, drive this shift (Arnold et al., 2015; Mikes, 2009; Power, 2007). As Power (2009, p. 852) notes, expectations that organizations embed risk management strategies throughout their business processes 'have become an unquestioned ERM imperative'. This imperative should be at the centre of public sector management practices because risk management is tightly linked to service delivery (Woods, 2009).

Power (2007) argues that the move to ERM provides a quantification of risk leading to false comfort, yielding ERM strategies potentially more harmful than helpful. Mikes (2011) suggests this differs based on the nature of ERM practices—not all organizations use quantification blindly. Rather, ERM adoption with a risk envisionment strategy positively impacts organizational performance through a forward-looking stance. Risk envisionment entails monitoring

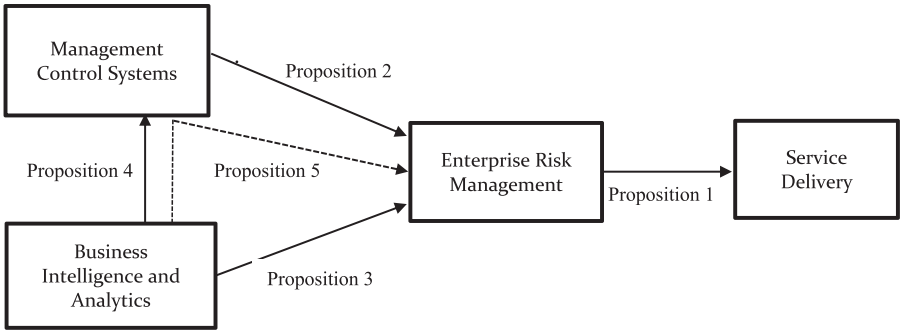

Figure 1. Effective risk management in public sector organizations.

environmental changes that yield threats/opportunities and allows an organization to appropriately respond. Key to risk envisionment is for ERM to provide capability for sensing market and environment changes.

Arnold et al. (2015) develop a theory of ERM in supply chain environments incorporating these theoretical perspectives with theory from operations management on the electronic integration perspective and the linkage between organizational flexibility and supply chain performance. Testing the theory, Arnold et al. (2015) find strong ERM processes drive integration of information systems across the organization providing the information flow necessary to monitor threats/opportunities. Drawing from this research, we propose that mature, comprehensively implemented ERM will be more effective, leading to enhanced service delivery. ERM maturity is the state of being complete, integrating risk across the organization's value chain and having both strategic and processual dimensions. Mature ERM should improve service delivery.

Proposition 1: ERM maturity is positively associated with public sector organizations' service delivery performance

Three elements are needed for organizations to develop effective ERM processes operating both inside and outside organizational boundaries. The first is strategic activity facilitating the development of risk management strategies that align with organizational objectives (Tekathen & Dechow, 2013). Second, effective ERM requires appropriate governance activities where employee involvement across different levels is encouraged and mechanisms for allocating responsibility and oversight are established (Mikes & Kaplan, 2013; Tekathen & Dechow, 2013). Third, ERM thrives on 'the cybernetic control ideal of objective-setting (in the form of risk limits or risk appetite), measurement, feedback, and corrective action' (Mikes & Kaplan, 2013, p. 12).

MCS have properties that can facilitate ERM, including foci on strategy, holistic views of risk, emphasis on interrelationships, emphasis on top-down controls, desire for consistency, focus on accountability, and continuous review of actions (Beasley et al., 2006). MCS ensure public organizations effectively manage risk by linking missions/strategy to risk management processes. The holistic view of MCS (financial, non-financial, cultural, procedural) provides an excellent platform for ERM allowing an all-inclusive risk management strategy to be articulated and aligned with organizational objectives and effective integration of risk management practices across and beyond value chain activities. Leveraging MCS into ERM broadens management's focus and enables organizations to engage with enterprise-wide risks. In addition, the top-down emphasis, coupled with continuous review of actions and focus on accountability, provides for employee participation in risk management, allocation of risk management activities, and risk oversight by top management. An organization's MCS has a single-loop feedback mechanism that facilitating risk targets, measuring actual performance, and enabling corrective actions (Chenhall & Moers, 2015). MCS may also enable double-loop feedback facilitating risk identification and mitigation.

Proposition 2: The extent of an organization's use of MCS is positively related to its ERM maturity

Research highlights the importance of developing integrated information systems for ERM to effectively support service delivery (Arnold et al., 2015). This integration is fundamental to facilitating flexibility and creating a positive relationship between flexibility and performance. Integrated information systems are facilitated using enterprise resource planning (ERP) technology integrating across the organization and creating an underlying data warehouse. However, with the vast resources in these data warehouses (Big Data), the question becomes how do organizations effectively use these extensive data sources to identify threats/opportunities?

BIA can strengthen a public sector organization's ERM processes. BIA provides a means for analysing the wealth of data captured across the organization, facilitates the monitoring of potential threats, and identifies strategic opportunities. BIA holds promise for radically changing an organization's approach to the development and implementation of ERM. BIA functionality includes data management, analytics, and intelligence (Rikhardsson & Yigitbasioglu, 2018). We contend the data management component is essential to capturing and integrating internal and external data necessary for ERM. The *analytics* part utilizes the analytical capability of data-mining tools to harness the power of Big Data existing in most public sector organizations. The analytics facilitate the ERM tenet that everyone is responsible for risk, because they allow data to be partitioned into areas of responsibility; managers can select their responsibility area and drill through the multiple layers of data (Lee & Widener, 2016). Business analytic capability allows managers to make sense of the Big Data they have accumulated and leverage that data for effective ERM.

BIA capabilities also facilitate sharing of risk intelligence and information across the organization through the dashboards, visualizations, and reports they inhabit (Reinking et al., 2020). BIA reports include current and forward-looking information that draw attention to patterns revealing potential risks and exposures to those risks (Rikhardsson & Yigitbasioglu, 2018). This facilitates better decision-making, development of appropriate prevention/

mitigation strategies for managing risks, and provides information for monitoring risk management processes.

A concern over ERM frameworks' effectiveness in managing risk is whether they can integrate with existing planning and control systems (Rana et al., 2019). We suggest that using BIA facilitates integration of ERM with planning and control systems; because, an organization's BIA has the capability to capture data from different systems and facilitate information sharing across systems.

Proposition 3: The extent of an organization's use of BIA is positively related to its ERM maturity

Big Data presents an opportunity to expand MCS capability to enhance ERM performance by identifying threats and seizing opportunities (Peters et al., 2016). Malmi and Brown (2008) argue that to understand its effectiveness, researchers need to examine MCS as a package of controls that interact to drive behaviour and facilitate organizational actions. The business intelligence component of BIA includes software solutions that effectively provide an MCS package including pre-built reports, key performance indicators, and measures supporting activity-based costing (Elbashir et al., 2011). Further, the dashboard and visualization capability in BIA allow for real-time display of indicators that facilitate MCS monitoring (Reinking et al., 2020). At the same time, the business analytic component provides the dynamic capability to introduce analytics and gain a better understanding of emerging business phenomena. The analytics allow actionable information to be presented in ways that facilitate the decision-making role of MCS (Peters et al., 2016).

Proposition 4: The extent of an organization's use of BIA is positively related to its MCS capability

Given that BIA is expected to enhance MCS capability and MCS is predicted to be positively related to ERM, we expect MCS to mediate the relationship between BIA and ERM.

Proposition 5: The relationship between the extent of an organization's use of BIA and its ERM maturity is positively mediated by MCS capability

Discussion and conclusion

The new framework presented promotes a better understanding for achieving successful integration of BIA to enhance MCS capability and enable successful ERM. Highlighting the importance of BIA and MCS as enablers of effective ERM, we focus on the level of integration into ERM processes. We propose ERM alone is insufficient to support effective public sector risk management, while BIA and MCS can provide complementary capabilities necessary to transform data warehouses into effective ERM processes. We argue public sector organizations should use BIA to digest the large data warehouses they naturally create to enable more comprehensive ERM processes —processes monitoring threats/opportunities. We believe public sector organizations can be leaders in leveraging Big Data by applying business analytics to address ERM issues.

We also propose BIA systems can provide enhanced MCS capability by producing comprehensive monitoring and reporting capability supporting risk planning, control, and decision-making. While the capability provided by these systems theoretically delivers MCS benefits to organizations, minimal empirical evidence has been reported, particularly related to risk management in public sector organizations. Accordingly, our framework raises the following question for future research to address:

How can organizations utilize BIA analytic and intelligence capability to analyse their data warehouses to enhance MCS capabilities and stimulate ERM strategies and processes?

While our model provides a foundation for future empirical research exploring and validating the relationships, the strong underlying theory provides a robust model for assisting public sector managers in meeting legislative mandates for better ERM. There is strong evidence supporting the value of BIA and MCS in enhancing ERM maturity.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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