

Portfolio management: A new direction in public sector strategic management research and practice

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Abstract

Portfolio management is widely used by large government agencies and non-profits, but it is rarely discussed in public administration scholarship. Portfolio management tools can illuminate groups of projects that should be considered as priority investments by highlighting the relationship of risk to outcomes. This article explores historical and theoretical reasons for the neglect of portfolio management, and then proposes using portfolio management to update a classic strategic management framework to guide organizational choices in public administration. Though portfolio management ideas originated in the private sector, public sector portfolio management differs from its private sector counterpart by trading off risk with public value or mission outcomes rather than financial outcomes. Portfolio management is a tool to incorporate risk to mission in investment decisions. It holds promise for adding an intermediate-level implementation tool to develop theories of public value. The paper concludes with hypotheses for future investigation.

Evidence for Practice

- Public portfolio management differs from its private sector counterpart by trading off risk with public value or mission outcomes rather than financial outcomes.
- The public sector can learn from the experience of private industry to improve their management of portfolios. However, public sector portfolio tools should be updated to incorporate public value.
- Portfolio management is strategic in nature and should be considered part of an organization's overall strategic management practice.
- Public value considerations should include a measure of risk when making decisions about an organization's portfolio.
- The risk/public value tradeoff illuminates groupings of projects that should be considered as potential priorities.
- Considering projects as portfolio groupings can maximize investments among mutually dependent projects.

INTRODUCTION

Portfolio management is used across government agencies and large nonprofits, but it is rarely discussed in the public administration literature. What explains the gap between the literature and practice? What is portfolio management, and how can it be used to create and

improve public value? What are the most promising avenues for research and theory development?

Some agencies that manage a large number of contracts and expensive assets use portfolio management as a tool to guide their investments. Portfolio management could help government agencies at all levels reduce redundancies in services, evaluate the long-term benefits

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of services based on current performance, reduce costs, and improve the ability to mitigate risks. For example, information technology (IT) departments in organizations may hold multiple contracts for the same service across organizational sub-units. By maintaining a comprehensive portfolio, IT departments would be able to buy services at one point for the whole organization, likely saving money and time from system upkeep (Hansen & Kraemmergaard, 2013). Some redundancy may be valuable, for example as a backup if an original system fails. However, portfolio management can identify redundant capabilities and therefore provide a more holistic view of an organization's capabilities than standard project management, which is individual project-focused, or strategic management, which does not always delve into the details of resource management.

Beyond being merely a tool to make more efficient investments in specific programs or technical systems, portfolio management helps agencies organize multiple goals and programs in order to create public value at the agency level (Chow et al., 2009, 2011; Hiromoto, 2013). Few large government agencies and nonprofits have a single goal. Many pursue multiple goals and are composed of sub-agencies and programs with different goals, cultures, and processes. Complex investments in the sense used by Page (2008) usually require decisions along multiple criteria. For example, a new generation of smartphones is better if it has longer battery life, but most systems require more tradeoffs than smartphone upgrade decisions, balancing multiple criteria in which there is not a single obvious best choice. For example, a new e-learning platform might depend on simultaneous and equally valuable investments in IT support and data streams to drive the platform.

In addition to functional goals, incorporating public value in portfolio management makes room for goals beyond efficiency, effectiveness and economy. Some public programs may aim at enhancing the democratic process, even if doing so costs more and takes more time (Brewer et al., 2006). A public sector-oriented portfolio management theory permits deliberation about non-economic ends.

For scholars, portfolio management can extend the literature on strategy and organizations to account for managing across multiple goals and silos in order to create public value. There is a robust literature on organizational strategic management, which includes strategy development and strategic planning, budgeting, human resources, and performance measurement and evaluation (Boyne & Walker, 2010; Laurrett & Ferreira, 2018; Poister, 2010). The literature devotes less attention to how large organizations pursue goals across sub-organizational units. Scholars have found that policy implications are "underutilized" in organizational behavior, which risks making the field become "societally irrelevant" (Aguinis et al., 2021, p. 1).

One of the most promising avenues for theory development is exploration of the use of portfolio

management as an intermediate-level theory of how to create public value in an organizational context. Many discussions of public value are at the high-level of abstract normative theory (Jørgensen & Bozemand, 2007), but the utility of public value is in its link between normative values and the public managerial context. Portfolio management is a tool that can add structure and visibility to how multiple public values are created, reconciled, and implemented in an organization or network.

With some exceptions (e.g., Bozeman & Rogers, 2001; Hansen & Kraemmergaard, 2013), portfolio management has not been analyzed by public sector scholars. In addition to enriching the literature on strategy, a better understanding of portfolio management could also advance the understanding of synergy as a concept (Ansell & Gash, 2008; Ostrom, 1996). Portfolios are groupings of investments that have potential mutual dependencies, or synergy. In addition, conceptualizing portfolio management extends public sector research on risk management (Bullock et al., 2018).

This paper defines portfolio management according to four types relevant to public administration. Then it situates portfolio management as part of resource allocation and strategic management and proposes an update to a classic strategic management framework for the public sector. It then discusses why the scholarly field of public administration has paid relatively little attention to portfolio management and why this is a notable omission if public administration scholars want to understand and improve practice. The paper concludes with hypotheses for future investigation.

Research Approach

This is primarily a theoretical paper, drawing on a review of peer-reviewed and gray literature (i.e., government and research organization) reports. While the research team initially considered using a systematic review like those conducted of other research areas in public administration (e.g., Hansen & Tummers, 2020), we found that the portfolio management literature was not sufficiently mature for a formal systematic review. A search of public administration and policy journals in JSTOR returned 63 mentions of "portfolio management" in articles from 1978 to 2019. However, term used in different ways; the meaning and uses of the term were not consistent enough to provide a basis for analysis of the effects of portfolio management techniques. Some private sector literature does focus on portfolio management, and we refer to and categorize that literature in this paper, but it neglects the public value and mission-oriented concerns that make portfolio management a potentially useful tool for public managers.

One of this paper's findings is that public sector managers are ahead of scholars in using and assessing portfolio management. We conducted a search for "portfolio

management” mentions in gray literature through WorldCat and Google Scholar, and we searched for General Accountability Office reports related to portfolio management in particular. The most relevant results of these searches are reported in this article.

PORTFOLIOS IN PUBLIC SECTOR MANAGEMENT

The term portfolio can bring to mind compilations of art projects or a set of financial investments, but the term is used more broadly in management. Simply defined, portfolio management refers to analyzing and making decisions about groupings of projects or programs under a single category. A review of the scholarly and gray literature reveals four types of portfolio management in the public sector: infrastructure portfolios, R&D portfolios, financial portfolios, and capability portfolios.

Types of Portfolio Management in the Public Sector

The first type of a portfolio is related to *infrastructure*. It can be a challenge to select groupings of projects that best suit a long-term strategy. Infrastructure portfolios analyze the risk and return among groupings of projects in line with corporate or government agency or nonprofit strategies (Leliveld & Jeffrey, 2004). Infrastructure projects can be large, complex, and expensive investments. They include bridges or airports, as well as IT infrastructure, sometimes referred to separately as IT portfolios (Leliveld & Jeffrey, 2004).

Large infrastructure investments can suffer from cost overruns, misalignment with strategy, or misalignment with user, customer, and stakeholder needs (Bruzelius et al., 2002; Kappelman et al., 2006). Grouping projects together as a portfolio rather than a single asset, hardware or software investment is one way to analyze the risk of misalignment with strategy and needs.

One prominent example is the process of portfolio review in the United Kingdom (UK)'s Infrastructure and Projects authority (Infrastructure and Projects Authority, 2021). The portfolio review subjects infrastructure projects to examination at key points in the life cycle. The process includes strategic alignment, performance measures and risk assessment, management and process evaluation, and capability assessments. The portfolio review rates these dimensions across multiple portfolios or groupings of projects, and it identifies key dependencies among them and tracks portfolios against key baselines. The UK Association for Project Management's formal definition understates the novelty of portfolio management's ability to account for risk and dependencies. The definition is that "Portfolio management is the selection, prioritisation and control of an organization's programmes and projects, in line with its strategic

objectives and capacity to deliver" (Association for Project Management, 2022). The "prioritisation and control" phrase refers to accounting for risk, the benefits of project groupings, and potentially public value rather than narrow financial metrics alone. While this example is in the UK, and we uncovered other examples outside the United States using our library search engine, we did not uncover many examples outside English-speaking countries. This may be due to the limitations of the researchers, however.

A second category is *R&D portfolios*, which typically use matrices to evaluate groups of R&D projects based on their long-term collective value (Bozeman & Rogers, 2001; Chien, 2002; Mikkola, 2001). The advantage of the portfolio approach is the ability to consider individual project scores in terms of their collective contribution to an outcome goal (Bozeman & Rogers, 2001). There are multiple possible outcome goals for a portfolio, including a scientific output, such as advancing knowledge or technology acceleration (Gerstein, 2019; Roberts & Schmid, 2022), or a balance between outputs and increased scientific and technical human capital created by the investments (Bozeman & Rogers, 2001; Stummer & Heidenberger, 2003). An outcome goal might be a long-term societal challenge such as moving toward renewable energy sources and away from fossil fuels (Durant, 2007; Wallace & Rafols, 2015). A large private sector literature examines firms' technology portfolio investments according to narrower, often output, performance criteria (e.g., Eggers, 2012).

A third type of portfolio, *financial portfolios*, are groups of financial assets that can be analyzed to determine their level of risk and expected return over time. Financial professionals advocate not putting one's eggs all in one basket, and portfolios are used to think about how groups of investments are connected—or the risk posed by financial problems in one economic sector or with one form of investment—so that overall financial holdings maintain an appropriate level of diversification (Caccioli et al., 2014). Public sector agencies and nonprofits, too, are concerned about risk and appropriate financial diversification (Carroll & Stater, 2009; Koppel, 1999). For example, the Australian government uses portfolio budgeting to connect investments to ministerial priorities (Xavier, 1997).

One subfield of the nonprofit management literature analyzes financial portfolio management using modern portfolio theory (Hung & Hager, 2019). Modern portfolio theory is a framework with which to consider how revenue streams interact rather than considering them in isolation (Jegers, 1997; Mayer et al., 2014). Many budgeting systems "[do] not account for how revenue sources move in relation to each other and [ignore] the influence of expenses required to generate various revenue streams" (Hung & Hager, 2019). Portfolio management using modern portfolio theory aims to remedy this problem, but it can be analytically complex, and requires greater capacity and financial resources than some organizations can provide. Alternatives, such as the Herfindahl–Hirschman

Index (HHI) provide a simple estimation of revenue diversification which can be sufficient for some purposes.

Another challenge for the use of modern portfolio theory-inspired portfolio management approaches is that a variety of forces influence nonprofit and government revenue streams (Hung & Hager, 2019). These forces include politics (or what Moore (1995) calls the “authorizing environment”) ideology, and public sector budgeting realities. These forces are more complex than the framework that modern portfolio theory, structured around market forces, allows for.

Capability portfolios, the fourth type, make up the broadest category. These portfolios are most useful when part of a larger strategic management process (Hiromoto, 2013). They begin with the identification of capabilities, which are structures and activities that an organization uses to achieve its strategic ends (DHS, 2017, p. 74). Then, the portfolios group programs, projects or investments into capabilities which may cross organizational boundaries (Sandia National Laboratories, 2020). Organizations may make new investments according to the degree to which they enhance a capability that is of strategic importance. For example, if a city expects to make broader use of 5G, it may invest in people, technologies, and pilot projects that allow for greater use of 5G technologies and position the city as a leader in the field, rather than make uncoordinated investments in new technology with an equivalent amount of money.

Capability portfolios bring coherence to organizations that can have uncoordinated programs and investments, or programs that are layered on top of other programs. While it is often assumed that private sector organizations’ profit motive will provide greater discipline, private sector firms also employ portfolio approaches to avoid a lack of coordination among investments (GAO, 2007; Haapanen et al., 2016).

Capability portfolios may be especially well suited to support public sector Planning, Programming, Budgeting, and Execution (PPBE) processes. For example, in 2007 the GAO recommended that the Department of Defense (DoD) adopt a portfolio management system because the Department was instituting programs in isolation without considering how they functioned together to support the mission or filled capability gaps. The DoD and Department of Homeland Security define capability gaps as an instance of a means to perform an organization’s mission that is lacking (Defense Acquisition University, *Forthcoming*; DHS, 2017, p. 75).

In 2008, DoD Directive 7045.20 asked the Department “to use capability portfolio management ... to optimize capability investments across the defense enterprise (both material and nonmaterial) and minimize risk in meeting the Department’s capability needs in support of strategy.” The Department implemented capability portfolios as part of requirements and acquisition practice, connecting new investments to strategy and a process to identify capability gaps in meeting the mission, and to various metrics and decision points to continue or terminate programs.

All four types of portfolios share common traits. They group projects in order to analyze their collective value (Chien, 2002). They typically combine qualitative and quantitative data, as well as materiel and non-materiel (e.g., human capital) projects and outcomes (Bozeman & Rogers, 2001). They usually provide a metric for risk and the possibility of failure of a given project as part of the portfolio assessment. At their worst, they are employed by rote, as a layer of time-consuming metrics development and reporting for no clear purpose—a tendency that characterizes some organizations enamored with metrics for metrics’ sake (Muller, 2018). At their best, the portfolio groupings address common shortcomings in organizations—too many projects to be supported by limited resources, a lack of prioritization among projects, and too many small and unconnected projects (Cooper et al., 2000).

Often Used in Practice, Rarely Discussed in Research

Portfolio approaches are widely used in the U.S. federal government, nonprofits and private business. Congress and the GAO often recommend portfolio management practices to government agencies as a means to reduce the chance of delays, cost overruns or obsolete or suboptimal investments (e.g., GAO, 2007). But portfolio management is rarely discussed in the scholarly literature. A search of public administration and policy journals in JSTOR returns 63 mentions of “portfolio management” in articles from 1978 to 2019. Of these, 54 are peer-reviewed, and 21 are in mainstream public administration or policy journals. Others are in specialized health, general management, or education journals. However, none of these articles mentions portfolio management in its title or abstract, and the use of the term is not sufficiently consistent to perform a more systematic analysis. In contrast, JSTOR returns 22 articles in the management and organizational behavior journal categories—nearly all of which refer to private sector applications. We believe that several trends have carried public administration away from a focus on managerial decision-making and decision support in favor of other topics.

At a general level, public administration is still getting over its break from political science and is sensitive to research topics that appear too narrow (e.g., the “philosophy of sanitation workers”). In light of criticism and because of concern that public administration is not cited in other fields, scholars have emphasized stronger research designs, more hypothesis testing, and theory development (McCurdy & Cleary, 1984; Van Wart, 2003; Wright & Grant, 2010). Typically, the theory development builds on theories from other fields, including political science, economics, or psychology (Ni et al., 2017). One influential article in *Public Administration Review* by a then future editor of major journals in the field says that public

administration “must work to end its isolation from the politics, law, and management literature” (Wright, 2011).

Stronger research designs have improved knowledge in public administration—a recent focus on experiments is just one example (James et al., 2017). However, the focus on research designs with strong internal validity and theory-building that draw from other disciplines comes at a cost. Public administration has neglected decision support tools for public sector managers and theories that are native to the field.

For example, a proliferation of studies on biases and heuristics drawn from psychology has primarily focused on citizens’ biases and decisions rather than those of public administrators (Battaglio et al., 2019). However, practitioners, and not just deductive theories developed by scholars, can be a source for theory generation. Herbert Kaufman’s (1960) seminal study of five forest rangers generated theories of administrative behavior. More recently, Bernado Zacka (2017) spent 18 months observing the moral lives of welfare office workers, which generated theories of ethics appropriate to public sector street-level bureaucrats. Public administration scholarship can benefit from attention to practitioners to generate problems, theories, and tools that are of use to practice (Barzelay, 2019; Vangen, 2017).

Beyond the general drift of public administration as a field, there are specific reasons for portfolio management’s neglect. In its more narrowly technical applications, it may be considered the domain of systems engineering rather than public administration (Davendralingam & DeLaurentis, 2013). Furthermore, portfolio management’s relevance is more obvious for the private sector. Portfolio management is attractive to the private sector because companies can sell business units, but the government cannot sell its holdings. For example, many portfolio management tools present an industry-attractiveness matrix. Public administration scholars may approach portfolio management with the same skepticism that they approach other private sector tools borrowed without reflection.

However, the line between the public and private sectors is not always so clear in an age when an increasing amount of government work is performed by contractors. Portfolio management might ultimately be more important for government because many agencies end up absorbing new units and in effect becoming holding companies. Portfolio management is also particularly useful for R&D investments in which short-term payoffs are uncertain.

SITUATING PORTFOLIO MANAGEMENT IN PUBLIC MANAGEMENT RESEARCH

The lack of scholarly attention to portfolio management in the public sector presents an opportunity for practice and theory. Managers seek help in using portfolio management better or for the first time. Scholars conceptualize tools as part of larger systems to help managers ask better questions

about their organizations and approaches, and ultimately use their tools better to pursue public ends (Englehart, 2001). Better theoretical development of portfolio management is like giving a sailor knowledge of the wind, to help them better understand when and how to rig the sails (Englehart, 2001, p. 371).

We conceptualize portfolio management as a tool to link elements of strategic management and advance the understanding and implementation of public value in an organizational context. Public sector portfolio management differs from its private sector counterpart in its aim to increase public value rather than profit or revenue.

Mirroring Strategic Management

Portfolio management aligns with public sector management theory and practice as a series of activities associated with strategic management. We use Vinzant and Vinzant’s (1996, p. 202) definition of strategic management as “...a process carried out at the top of the organizations which provides guidance, direction, and boundaries for all aspects of operational management.” They argue that strategic management may include strategic planning but is not reducible to it. Strategic management also includes resource management, which is composed of budgeting and human resources, and evaluation and performance management, as shown in Figure 1. Each of these areas under the strategic management umbrella does not imply a single tool but rather a toolbox of practices that could be used given context and user specifics (Poister et al., 2010). For example, strategy formulation may bring to mind formal strategic planning with a rigid set of activities to complete. Instead, planners should choose purposeful incrementalism to develop strategy or a combine organizational learning with more formal aspects of planning (Poister et al., 2013).

Portfolio management mirrors a three-stage approach to strategic management in its planning, managing, and evaluation stages. Table 1 presents a framework that shows the stages of portfolio development and related activities and metrics, particularly as they relate to strategic management. The portfolio process is associated with activities, such as grouping portfolios before they are assembled, analyzing individual portfolios and groups of portfolios during the creation of portfolios, and conducting evaluation and follow up analysis afterwards. Each of these stages is associated with methods and tools. Organizations need not employ all of these methods at a particular stage or at all, but our research identified the use or potential use of these methods throughout the process, and we list them in Table 1 as examples.

The portfolio management framework in Table 1 builds on Archer and Ghasaemzadeh (1999, p. 213) by using the same stage categories and some similar activities. It also draws on descriptions of portfolio management in government documents and gray literature

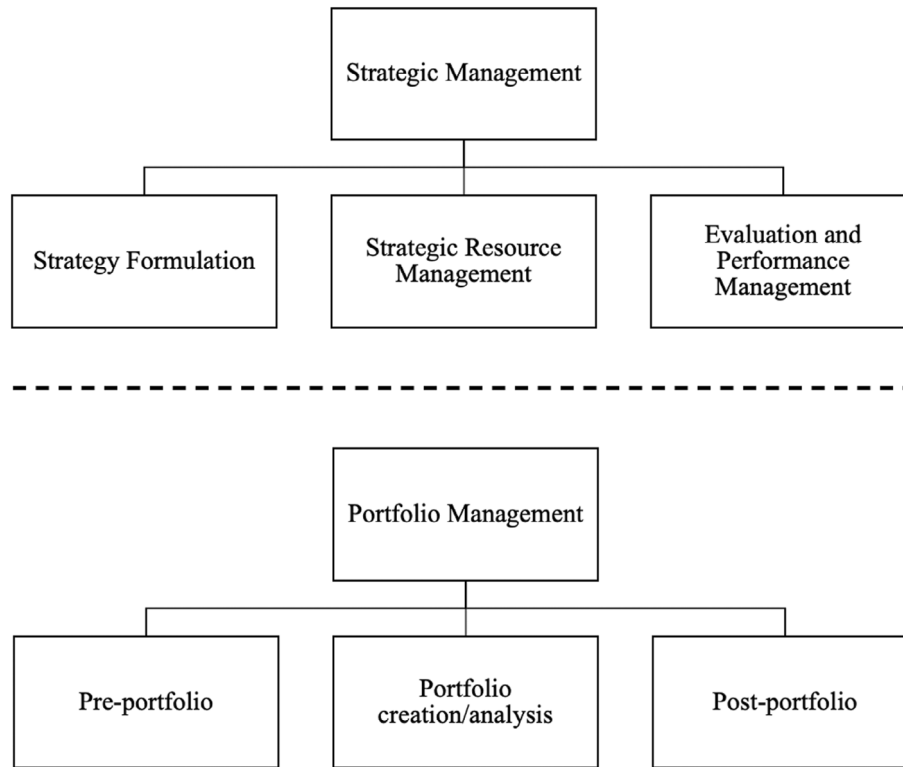


FIGURE 1 Strategic and portfolio management (based on Vinzant & Vinzant, 1996).

TABLE 1 Process of managing portfolios in the public and nonprofit sector.

Stage	Corresponding Stage in Strategic Management	Activity	Method
Pre-portfolio	Strategy formulation/ planning	Strategy development, portfolio matrices, grouping portfolios, stakeholder engagement	Strategic planning, cross-tabs, cluster analysis, capability analysis, stakeholder engagement
Portfolio creation/analysis	Strategic resource management	Individual project analysis; portfolio selection; analyzing common categories across portfolios; eliminating some portfolios; developing goals and criteria for integration of portfolios	Decision trees, resource requests, matrix displays sensitivity analysis
Post-portfolio	Evaluation and Performance Management	Project management, stakeholder engagement, evaluation	Portfolio monitoring and auditing, portfolio process evaluation, stakeholder engagement, outcome evaluation

Source: Adapted from Archer and Ghasaemzadeh (1999, p. 213).

reports (Davendralingam & DeLaurentis, 2013; Eggers, 2012; GAO, 2007; Hiromoto, 2013; Maizlish & Handler, 2005; MITRE, 2021; Moynihan et al., 2009; Sanwal, 2007; U.S. Air Force, 2008; U.S. Department of Defense, 2008).

We extend the categories employed by Archer and Ghasaemzadeh (1999, p. 213) by adding stakeholder engagement as an explicit part of portfolio management in the public sector. In essence, stakeholder engagement refers to efforts to include a wide spectrum of people in deliberating about a matter of shared concern (Bingham et al., 2005). In most uses of portfolio management, stakeholders include the internal divisions of an organization; portfolios of

capabilities or R&D projects may involve multiple divisions that do not often plan or work together. Stakeholders may also refer to people outside of the organization who are affected by a portfolio grouping. Users or affected members of the public are commonly stakeholders who should be consulted when selecting among portfolios.

The Strategic Nature of Portfolio Management

The strategic basis of portfolio management is in the logic of its application. Bryson and George (2020) define

strategy as “what links capabilities to aspirations.” Organizations should begin with an understanding of their mission and goals, and then build strategies with material and human assets in mind to get the most out of the current assets, or those that could reasonably be acquired in the future. Portfolios should be evaluated and revised accordingly so that organizations do not hold on to obsolete assets or have unnecessary redundancies. In some cases, organizations can find new uses for current assets.

Portfolio management can help administrators understand their current groupings of projects and plan for the long-term sustainability of a portfolio of projects and future projects. Therefore, in addition to change management and network management, portfolio management should be part of an updated approach to strategic management. Grouping programs, projects, and capabilities as portfolios reveals implications for budgeting and staffing that are relevant for strategic planning.

For example, the GAO (2018) highlighted that the Coast Guard had failed to plan for the long-term in its annual budget process, and as a result had unfunded scheduled acquisitions that put its long-term goals at risk. The budget constraints eventually threatened core operations, and the GAO found that the Coast Guard put its ability to fulfill its mission at risk by operating ships longer than expected. The GAO recommended a portfolio management approach that would group investments and analyze their payoff over the long term rather than in a year-by-year budgeting cycle. By 2021, the Coast Guard had made progress in developing a project management tool to help visualize long-term portfolio management groupings and tradeoffs in acquisition (JPI, *Forthcoming*; U.S. Coast Guard, *Forthcoming*).

Portfolio management is closely linked to resource management. Portfolio groupings typically refer to resources, whether programs or IT investments, or capabilities connected to resources. However, portfolio management has implications for strategy formulation, evaluation, and performance management (shown in Table 1). Strategy formulation might use lists of capabilities linked to portfolio management, or the results of prior portfolio analysis (Ellonen et al., 2009). Evaluation and performance management occur after the activities involved in portfolio management have occurred. In some cases, evaluation is a continuous process, but it focuses on outputs and outcomes according to the measures listed in the right-hand column in Table 1. Portfolio management, in contrast, establishes relevant portfolio categories and the criteria by which portfolios are assessed and evaluated, and links them to mission and public value.

Tradeoffs of Public Value and Risk

Many specific portfolio management applications take the form of decisions about the tradeoffs shown in

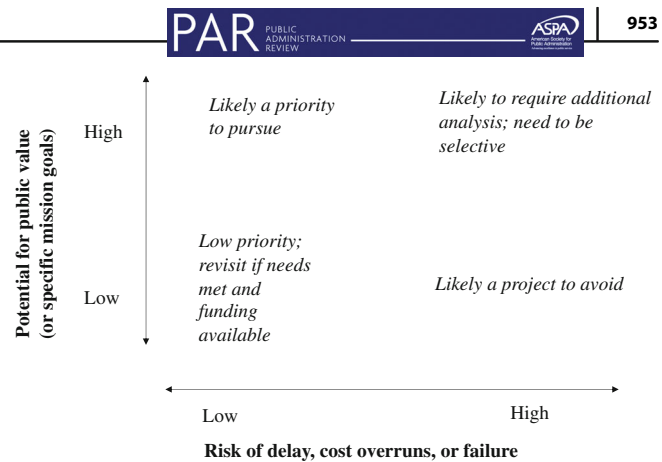


FIGURE 2 Portfolio management tradeoffs. *Source:* Updated for the public sector from Jeffrey and Leliveld (2004).

Figure 2. In the private sector, portfolios often aim at financial goals such as profit or revenue growth. Portfolios in the public sector aim at creating public value, or at fulfillment of mission goals, aligned along the Y axis from high to low. Knowing how and whether a specific activity creates public value requires understanding context, but the central point is that “Public managers must produce something whose benefits to specific clients outweigh the cost of production” (Moore, 1995, p. 65). At one level, public managers must evaluate whether a specific activity is worthwhile, relative to cost. At another level, the activity must produce normative value for the wider public. Moore explains that the value of that enterprise must be judged against citizens’ expectations for justice and fairness as well as efficiency and effectiveness” (Moore, 1995, p. 52). Public and nonprofit sector leaders operating outside a public value framework might substitute mission fulfillment for public value, but they still face tradeoffs with risks that the project would not be completed on time or on budget, or achieve its stated goals. Risk is a multifaceted concept that is integral to public value, however. Figure 2 shows how placing specific kinds of risk on a separate axis can guide investment decisions.

In a specific application, Figure 2 would be adopted to the nature of the investments and managerial contexts. The groupings could be used to prioritize individual investments or groups of investments based on a payoff for public value or mission goals and relative risk, as shown in the figure’s quadrants. Archer and Ghasaemzadeh (1999) take a similar approach, as do various specific applications (Chow et al., 2009, 2011; Hiromoto, 2013).

The chart does not make a decision itself; rather, it is an input into a decision process that typically would have a budget constraint. Applying budget constraints brings to light the benefits of particular combinations of projects and makes room for moving ahead with a combination of large and small projects. In many cases, promising projects and needs will go unfilled. For example, the National Science Foundation often uses a portfolio approach to frame which programs or projects it pursues given a

limited amount of annual funding, but many worthy projects or programs will go unfunded. One NSF directorate proposes a strategy of “balance,” to pursue “a portfolio that addresses the range of these research objectives” (National Academies, 2005, p. 13). Another option would be to increase resources and attention devoted to a priority objective.

Developing Theories of Public Value and Risk

Portfolio management has the potential to advance development of intermediate organization-level theories of how public value and risk decisions are made. Portfolio management provides an intermediate-level framework in which to apply the concept of public value and potentially test how organizations define and employ public value, giving context to Figure 2.

Public value theory alone is at too high a level to guide many organizational choices. Analyses of public value can get lost in debates over what the term means and whose values count. Prebble (2021) recommends caution and moderation in interpreting the concept. One approach that some scholars have settled on is to conceive of it as a version of the common good and the public interest that takes into account respect for rights and a consideration of future generations (Jørgensen & Bozeman, 2007, p. 362). That definition of public value is useful but potentially too broad and high-level, distancing itself from the tradeoffs and decisions of organizational life. Mark Moore (2013, p. 400) made public value central to managerial decision-making, but operationalizing public value has proven difficult. At a minimum, it requires consideration of stakeholders in setting the long-term direction of an organization, as opposed to decision frameworks that focus on a static mission or on profit.

Public value provides an alternative to the market and individualist logic that is assumed in most private sector discussions of portfolio management (Alford & O'Flynn, 2008, p. 7). When public value is incorporated into portfolio management, it can pull managerial analysis toward considerations of normative dimensions. The responsibility of public administrators is ultimately to provide benefits to society. In many cases, the administrator provides benefits by pursuing an organization's mission, but in some cases more benefits might accrue from creative interpretation of the mission, or even going beyond the mission as conventionally understood. Mark Moore's (1995) classic example of libraries that developed new programs for latchkey kids is one example of creative reinterpretation. Private sector firms could aim at creating public value because public value is rooted in society and not just government structure (Melchior & Melchior, 2001). Social entrepreneurship in private firms would be a fruitful area for future public value research. However, portfolio management tools in the private sector as reviewed for this

paper's literature review do make room for consideration of public value.

Portfolio management can extend research into public value by providing context for practicing and examining “public value creation.” A recent debate in *Administration & Society* over whether public value is knowable through empirical methods led to the argument that public value creation, or how public value comes about, remains obscure. Meynhardt (2021) recommends further research and observes that public value creation may be a matter of the “survival of the fittest” and recommends work on a “process-oriented public value theory.” Public value theory is typically at a high level, but portfolio management may contribute to a more process-oriented theory by providing an organizational decision context in which public value operates.

Risk sets portfolio management apart from the concept of strategic management, with which portfolio management is sometimes associated. In a recent special issue in *Administration & Society* on public value, Meynhardt (2021, p. 1631) wrote that public value should help us reflect, with humility, about “the chances and risks taken in the name of public” (see also Prebble, 2021). Decision-making in managing portfolios takes risk into account.

As a field, public administration has struggled with how to conceptualize the role of risk in decision-making. In private sector contexts, risk is more easily measured as a cost, or perhaps a probability of failure. But the concept of risk in public management is multifaceted. Risk to projects include delay, failure to complete, and failure to perform at the right level. Portfolio management can provide a process to analyze and, if necessary, mitigate risks that are associated with major investments. Additionally, it is important to note that portfolio management is an input into decisions rather than a decision-maker. The decision to mitigate or even terminate a project may depend on the level of risk that an organization or manager is comfortable with.

In a broader public management context, risk could refer to the likelihood that an investment would not fulfill its stated goals. This is a specific application of the even more general definition of risk in public sector management found in Bullock et al. (2018, p. 77), defined as “the probability of an event occurring and the resulting consequences.” What risk refers to depends on the decision-context and should be specified in advance, or else risk may be too general a term to be useful. For example, enterprise management, the practice of considering all possible risks across an organization or system, has been criticized for being too broad to be useful to managers (Bromiley et al., 2015). As shown in Figure 2, the X-axis in a portfolio management application often portrays a risk scale, from high or low. The risk could be the risk of failure of a particular portfolio, or the risk that a particular mission goal would not be fulfilled. In the adoption of new technology, risk often refers to the likelihood that the

technology will not deliver as promised or will not work at all.

Portfolio management is more than just a list of the benefits of an investment for public value compared to the risks. It is a tool for strategic decision-making. One way to use the tool is to create a zone of acceptable risk, and aggregate risk across the portfolio and against delivery baselines. The risk map could show risk profiles outside of acceptable zones and provide a starting point for examining common risks across a portfolio. For example, an organization may own and operate a lot of commercial office space vulnerable to falling to disuse or lower returns because of an increase in remote work. If the risk is deemed too high the organization could change scope, reschedule, or end certain projects.

HYPOTHESES TO ADVANCE A RESEARCH AGENDA

As laid out above, portfolio management is a natural fit within the strategic management umbrella. We propose specific hypotheses to contribute to a new research agenda on portfolio management. The hypotheses are derived by comparing the literature on strategic management with the analytic categories of portfolio management as distilled in this article.

Hypothesis 1. Portfolio management is most effective when integrated with other strategic management activities.

Portfolio management will be most effective for adding value to an organization when it is integrated with other strategic management tools, particularly strategic planning, budgeting, human resource management, and performance evaluation. If we accept that portfolio management is strategic in nature, then it should follow that portfolio management would help improve other strategic management practices. Performance evaluation might be particularly promising for further research. Programmatic effectiveness in some contexts relies heavily on effective portfolios of services or contracts. Determining how to derive the most value from contracted goods and services might improve the overall value of an organization's services.

The converse may also be true. Integrating portfolio management with other strategic management tools may produce better portfolios on average. For example, by incorporating portfolio management with an organization's strategic planning efforts, the organization's portfolio is more likely to align with the overall strategy and goals of the organization. This type of integration would help to ensure that public value or the organization's mission is kept at the forefront of decision-making about organizational portfolios.

Hypothesis 2. Public sector portfolio management improves decision-making concerning large-scale capital projects by weighing risks and public value, in addition to resources.

Governments around the world propose more large-scale infrastructure and technology projects, even as these projects appear prone to unanticipated costs and the risk of underperformance (Flyvbjerg et al., 2003, p. 3). The opening of the Denver, Colorado airport in 1995 and the Hong Kong airport in 1998 are two classic cases. Repairs and extensions to transit systems in New York, Boston, and Washington, DC regions provide more recent examples (Greiman, 2013). Scholars have found that cost overruns and delays result from the complexity of mega-projects, including the politics involved, the large number of participants and associated transaction costs or "friction," and the failure to plan for risks and costs (Ansar et al., 2014; Flyvbjerg et al., 2003, pp. 3–4, 70).

Portfolio management has the potential to improve the management of mega-projects by clarifying the risk of project groupings through analysis. It also has the potential to force a conversation about the public value that a project is expected to provide, which is different than traditional cost–benefit calculation. If mega-projects are often subject to cost overruns, it may be worth making a project's contribution to public value explicit. An airport may be built to accommodate a benchmark number of air travelers that takes longer than expected to reach, but the airport may also be expected to stimulate economic growth in an economically stagnant region. If economic growth and job creation are part of the public value calculation, they should be considered when evaluating success and the need for continued investment in a project.

Portfolio management principles and tools (e.g., the matrix in Figure 2) can be employed by smaller organizations and projects less than "mega." Medium-size organizations often struggle with making IT purchases that will benefit all parts of the organization. However, there is likely a lower size limit for organizations and projects where portfolio management adds complexity where simpler decision tools will suffice. It would be a peculiar family that would employ portfolio management tools explicitly for the purchase of household computer systems, though the principles of identifying groupings, risk, and dependencies apply even at a small scale.

Additionally, portfolio management has the potential to improve the management of large-scale capital projects by making explicit consideration of public value and risks. This hypothesis could be tested through case studies and interviews, or through large-N survey research. Case studies may be more promising if there are projects that are similar along most relevant dimensions. Case study research has the potential to uncover whether and more importantly how portfolio management can improve large-scale capital projects.

Hypothesis 3. Explicitly pursuing stakeholder engagement as part of portfolio management will help to clarify the potential public value of projects, thus enhancing a project's impact.

Stakeholder engagement is an explicit part of portfolio management in the public sector, and it is a potential form of creating public value (Moore, 2013). Incorporating new stakeholders can serve goals of collaboration, which is an end in itself, beyond the efficiency concerns that characterize an applied micro-economic style of reasoning (Berman, 2022, pp. 39–40). Many public programs aim to enhance the democratic process in addition to other goals (Brewer et al., 2006). Private sector portfolio management in contrast prioritizes financial outcomes and efficiency. Private sector portfolio management and benefit–cost analysis would not likely value stakeholder engagement as an outcome to the same degree. Making stakeholder engagement an explicit part the public value in portfolio management project selection has the potential to lead to better long-term outcomes than alternative considerations.

On one hand, discussions with stakeholders may help clarify the risks associated with a particular project, building more understanding if the project is not ultimately adopted. Or, on the other hand, stakeholders could help public organizations understand when the value of project is worth undertaking even when risks have been deemed too high by the organization. Stakeholder engagement could lead to changing or broadening the acceptable zone of risk.

Hypothesis 4. Emphasizing risk as part of portfolio management will encourage prudent risk-taking if it is prefaced by a recommendation that public management seek innovation.

On the face of it, emphasizing the risk of failure in public sector decision-making could lead decision-makers to be cautious. Therefore, portfolio management should be accompanied by a discussion of the need for innovation in the public sector. The discussion could focus on the need for innovation in a particular area, and on the relationship of risk of failure, cost overruns, and delay to the risk of not creating public value or achieving mission goals.

Achieving public sector outcomes is difficult—reducing child mortality or increasing educational performance, for instance. Outputs are easier. In most cases, public managers and science generally do not know the best way to achieve desired results, and therefore taking risks is necessary.

The discussion of the need for risk-taking and innovation should include Moore's (2013) recommendation to shift resources toward innovation when citizens are unhappy with public services in an area, when an agency confronts a new task, when agencies work in a dynamic

and changing area, or when technology advancement creates new challenges. After a survey of cases of public value, Moore (2013, p. 234) concludes that most public sector agencies underinvest in research and development (R&D). A risk-taking element of portfolio investments in the service of public value and outcome goals may be warranted.

Hypothesis 5. The administrative costs of portfolio management processes and structures may be higher than the benefits provided depending on organizational context.

Portfolio management in its most fully developed form requires people, expertise, processes, and time to develop a more holistic view than what typically occurs in individual project management or execution. Portfolio management also leads to decision processes that take time and attention. Portfolio management may not be worth the costs for certain contexts. Organizations responding to a crisis, like a global pandemic, may need all their resources to face the current circumstance. They simply do not have the capacity to plan or make longer-term decisions. Or smaller organizations with less products or projects to manage may not need to add more complexity to their decision-making. In these cases, the administrative costs would likely greatly outweigh the benefits of portfolio management. Just as undertaking a new evaluation or strategic planning, portfolio management is not a one-size fits all type of solution. Context matters.

This is one area where past public management research has been helpful for those working in in the field. Researchers could add to our understanding of portfolio management by determining where it is working well and under what circumstances. Researchers could also develop tools designed for portfolio management in smaller organizations.

These hypotheses can advance a public administration-oriented portfolio management research agenda into portfolio management that could illuminate concepts of scholarly interest as well as assist practitioners. There are many more discrete research questions that could also advance scholarship. For example:

- Are certain types of portfolios more useful?
- What types of risk and public values should be considered in a matrix tradeoff?
- What conditions frame the groupings of projects?
- How can capability-portfolio thinking inform public sector strategic management?

All of these questions flow from the increasing use of portfolio management tools by practitioners, and the growing understanding of strategic management as an ongoing and multifaceted process rather than a single stage or discrete tool (Bryson & George, 2020; McGuire & Schneck, 2010).

CONCLUSION

The purpose of this article is to propose portfolio management as a much-needed area of research within the scholarly field of public administration and management. As demonstrated above, there is little research into public sector portfolio management, even as the practice is becoming more popular in all levels of government and has been used widely in the private sector. Public management scholars have the opportunity to learn how public managers are using the practice and play a role in improving it. There is also room for theory-driven investigation into how managers can select groupings of projects to improve public value, including improvements in stakeholder engagement in the democratic process. While this article highlights opportunities for the use of portfolio management, it may have downsides for some organizations, including increased administrative costs, as presented in Hypothesis 5, and the potential for mission drift. The potential for mission drift is a hazard for all organizations that embrace a public value orientation as opposed to a narrow mission focus.

Portfolio management appears to be a particularly fruitful line of inquiry for public sector scholars that focus on strategic management and planning. Portfolio management is at its core a strategic practice to improve the outputs and outcomes of an organization's various types of portfolios. The general management literature on portfolio management is closely aligned with strategic management and may be a good starting point for public sector analysis. However, scholars will need to account for differences in portfolio management between the public and private sectors, particularly in defining risks or costs and benefits. To borrow a calculation from this paper's Figure 2, the risk of not extending the study of strategic management to portfolio management may be too high a tradeoff for the field of public management.

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