Chapter 20: Public Sector ERP
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Introduction
The adoption of ERP by public sector enterprises has significantly lagged the private sector. This trend is starting to change with public sector organizations of all sizes increasingly implementing ERP systems. ERP applications and related implementation approaches have also matured to align more closely with unique public sector business requirements.

Increased public sector ERP adoption has come with many well-reported struggles as ERP software vendors and systems integrators have often, at least initially, failed to adapt to the unique business requirements of this sector. Moreover, increased focus on government spending accountability has brought additional scrutiny to these implementations. Press articles highlighting failed or troubled implementations underscore the broad range of challenges that accompany deploying ERP systems in the public sector. Some of these challenges are common to ERP across industries and sectors. However, many of these challenges can be traced back to unique public sector governance models and differentiated functional requirements and controls in core ERP functions.

This chapter looks at issues relating to ERP deployment for federal, state and local governments as well as public school districts and public higher education institutions in countries with open and representative forms of government. Since published research in this area is limited, we conducted several interviews with industry experts to enrich the material used in this chapter. The chapter begins with an overview of the emergence of ERP adoption in public sector and the current public sector ERP vendor landscape. Subsequently, it addresses unique public sector ERP implementation barriers such as political subdivisions, public scrutiny, and statutory constraints. Finally, differentiated functional requirements of public sector ERP systems in core ERP areas such as financial accounting, human resource management and payroll, procurement, and budget preparation are addressed.

The Emergence of Public Sector ERP
Although ERP systems are deployed in nearly 80% of Fortune 500 firms (Wagner & Antonucci, 2009), public sector ERP adoption has lagged behind the private sector (Harris, 2004). This gap is starting to narrow, as public sector organizations of all sizes increasingly embrace ERP systems to address long-standing administrative inefficiencies and service delivery challenges associated with legacy administrative systems and processes. Contributing to the increased adoption of ERP in the public sector has been an increased focus on government spending accountability, as well as improved alignment ERP solutions to this market (Kavanagh & Miranda, 2005).

HISTORY OF ERP IN THE PUBLIC SECTOR
Until the late 1990s, most public sector organizations relied on disparate or loosely cobbled together administrative systems for key back office business functions such as general ledger accounting, accounts payable, accounts receivable, payroll, procurement, and budget preparation. Although point solutions focused on the public sector market were commercially available, these applications were typically limited to core financial accounting and, in some cases, the most basic payroll, procurement, and budget preparation functionality. There was also a plethora of niche solutions for specific functional areas. In the absence of truly integrated ERP solutions, public sector organizations used disparate commercially available and home grown applications with limited or no direct integration (Byrne, 2011). Such a customized approach provided limited flexibility, was costly to maintain, and had very limited reporting and analytic capabilities.

The move toward ERP in the public sector did not begin in earnest until many public sector organizations faced the challenge of addressing the year 2000 issue in their legacy back-office systems. The late 1990s saw a wave of public sector ERP implementations driven more by a need to replace systems with year 2000 compliance issues rather than business process improvement (Kavanagh & Miranda, 2005).

Many of the early public sector ERP projects resulted in negative press stories and, in some cases, outright project failures. The ERP implementation at King County, Washington is an example (Songini M. L., 2005). Such stories of cost and schedule overruns, payroll issues, and financial reporting issues likely contributed to a shift in market focus toward realizing measurable return on investment for ERP investments.
After the year 2000 ERP wave, public sector ERP adopters tended to be more risk averse in their approach, and began to shift from focusing on replacing legacy systems to focusing on expected return on investment (Harris, 2004). The shift in focus to measurable return on investment forced ERP vendors to revisit their software and services offerings. Vendors with a history of struggling to fit their private sector-oriented ERP software offerings into the public sector began to develop public sector-specific functionality or modules for their solutions, in an effort to reduce implementation cost and risk. SAP, for instance, added fund management, grant management, and position budgeting and control to their software offering specifically to support public sector clients.

By 2005, the public sector ERP market had matured, and several vendors had emerged with products capable of supporting a broad range of unique public sector functional requirements. These vendors began to focus on extending their public sector ERP solution offerings beyond traditional core ERP functionality through internal development or acquisition (Kavanagh & Miranda, 2005). During this period, there was also significant consolidation of vendors with significant focus on public sector ERP and related enterprise applications, highlighted by the acquisitions of JD Edwards, PeopleSoft, and Siebel Systems by Oracle Corporation.

The most recent trend is the move by larger ERP vendors to extend their offerings into the business intelligence and enterprise performance management arenas. These products are being embraced by public sector ERP customers to improve the return on investment of their core ERP systems with only marginal additional investment. Further, vendors like SAP and Oracle have added public sector-specific functionality to business intelligence offerings. For instance, SAP went to market with a new public sector budgeting solution in 2009 based on the SAP Business Warehouse and the SAP Business Objects offerings (Wiggins, 2011), and Oracle followed suit in 2010 with their new public sector planning and budgeting software built on the acquired Hyperion product (Oracle, 2010). With government budgets under unprecedented pressure, these tools are generating an increased share of revenue for ERP vendors relative to revenue from new public sector ERP licenses.

### Public Sector ERP Vendor Landscape

Characterizing public sector ERP vendors presents challenges, since vendors do not always fit neatly into logical groupings. A useful approach involves differentiation of the broader public sector ERP market from important business and product perspectives to create a common profile for vendors in each market tier. **Table 1** uses this approach to contrast public sector ERP vendors by collectively categorizing them into two tiers based on key differentiating characteristics.

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<th><strong>Table 1 - Public Sector ERP Vendor Tiers</strong> (Kavanagh &amp; Miranda, ERP Industry Structure and Marketplace Dynamics, 2005)</th>
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<td><strong>Tier 1 Public Sector ERP</strong></td>
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<td><strong>Total Cost of Ownership (TCO)</strong></td>
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<td><strong>Primary Target Market</strong></td>
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Despite the recent ERP market consolidation, there is an extensive landscape of public sector ERP vendors. These vendors range from small privately held firms to very large multi-national firms and include:

- Cross-industry leading ERP vendors
- Niche vendors servicing the public sector ERP software market exclusively
- Niche vendors focused on smaller public sector entities
- Vendors with a subset of extended ERP functionality (beyond core financial management, human resources, and procurement functionality)
- Geographically-focused vendors

Prominent large enterprise-focused public sector ERP vendors with core ERP solutions that meet at least some of the Tier 1 criteria as outlined in Table 1 are described below in alphabetical order.

**CGI**

CGI’s public sector ERP software client base is primarily in U.S. federal, state, and local government (Hamerman, 2010), and is concentrated in the upper end of the public sector ERP market (Claps & Sood, The U.S. Local Government IT Solution Vendor Landscape, 2009). CGI offers the AMS Advantage ERP solution for state and local governments, and the Momentum ERP solution for the U.S. Federal market. Unlike Lawson, Oracle, and SAP’s ERP offerings, CGI’s public sector ERP applications were built solely for the public sector (CGI, 2010). Also in contrast, CGI typically performs its own AMS Advantage implementations though CGI, in some instances partnering with third party consulting firms for large engagements (Claps & Sood, The U.S. Local Government IT Solution Vendor Landscape, 2009).

**LAWSON**

Lawson has its greatest public sector ERP market share in the mid to upper-mid size organizations, though Lawson does have some larger public sector clients such as the State of Michigan. One Lawson public sector niche is public school districts (Claps & Sood, The U.S. Local Government IT Solution Vendor Landscape, 2009). Lawson leverages third-party systems integrators such as Ciber (Claps & Sood, 2009) and offers its own implementation-related services (Lawson Software, Inc., 2010).

**MICROSOFT**

Microsoft’s more than 18,000 public sector ERP customers around the world (Johnson C., 2011) are primarily small to medium sized enterprises. With the new Public Sector Industry solution built on Microsoft Dynamics AX2012, Microsoft delivers a broad range of public sector functionality built to support large public sector enterprises (Johnson C., 2011). Microsoft’s extensive network of system integrator partners and existing desktop, database, and infrastructure software footprint in most of these enterprises could quickly propel Microsoft into a leadership position in the public sector large enterprise market.

**ORACLE**

Oracle has a global public sector ERP customer base with ERP applications for all but the smallest size public sector organizations (Government-CRM.com, 2010). Oracle has multiple core public sector ERP offerings including Oracle PeopleSoft Enterprise, Oracle EBS, and Oracle JD Edwards EnterpriseOne (Claps & Sood, The U.S. Local Government IT Solution Vendor Landscape, 2009). The Oracle PeopleSoft solution is the most established ERP software package in the upper end of the U.S. public sector ERP market (Claps & Sood, 2009). Oracle Hyperion and Oracle Enterprise Taxation Management are also offered to support public sector financial management functions (Claps & Sood, 2009). Oracle leverages a myriad of third party systems integrators such as Accenture and Deloitte Consulting, as well as their own consulting organization (Claps & Sood, 2009).

**SAP**

SAP’s public sector ERP software customer base is concentrated in larger enterprises, though it has made inroads into small to medium-sized enterprises (Claps & Sood, 2009). Though strong in the overall global public sector market, SAP lags behind Oracle in U.S. market penetration (Government-CRM.com, 2010). SAP’s public sector solution offerings include SAP ERP for Public Services, SAP Business Planning and Consolidation, SAP Public Budget Formulation, SAP Procurement for Public Sector, SAP Defense Forces & Public Security, and SAP Tax and Revenue Management (Weber, 2011). SAP Business Objects includes products for financial analysis, reporting, and dashboards (SAP, 2010). SAP leverages numerous third party systems integrators such as Deloitte Consulting, IBM, and Optimal Solutions while also offering SAP-led and SAP-supported implementations.
OTHER PUBLIC SECTOR ERP VENDORS

Many other established vendors in the public sector ERP software market either have primarily smaller customer bases, or are more aligned with the Tier 2 criteria in Table 1. This list includes Sungard, Infor, Tyler Technologies, Kronos and Agresso (Claps & Sood, 2009). In many instances, these firms provide their own implementation services and do not extensively use third party systems integrators. Thus, they are less well known in ERP implementation consulting circles.

Public Sector Governance and ERP

Few, if any, industries require more unique core ERP functionality or pose more ERP deployment hurdles than the public sector. Many of these public sector ERP challenges can be tied to the fundamental public sector governance dynamics. In contrast to private sector organizations, public sector entities typically have more lines of business (Claps & Sood, 2009), more stakeholders with more influence in the organization’s business operations, greater public transparency into budgetary decision-making (Gossling, 2009), complex webs of political subdivisions and silos, and often elusive or conflicting measures of success (Robinson, 2007). When deploying ERP systems in the public sector, it is important to understand public sector governance and how it fundamentally differs from governance in the private sector.

Precisely characterizing public sector governance can be elusive in part due the broad range of government models around the world with differences within branches, agencies, and levels of government. However, there are some common governance traits found in open democratic forms of government (McGee D. Q., 2007). Such traits produce added risk to large-scale public sector information technology projects (Strauss, 2006). Important public sector governance traits impacting ERP implementations are considered in the following paragraphs.

A.4.1 THE ROLE OF THE BUDGET

It can be argued that little happens in the public sector without a budget. The budget is the primary vehicle for allocating and managing public sector financial, human, and capital resources to support public demand (Marini, 1992). The decisions made in the budget process drive nearly everything a government does for the next year or multiple years (Gossling, 2009). Resource allocation decisions made as part of a public sector organization’s budget process, which often carry the weight of law, tend to have a more lasting effect than private sector budgets (Gossling, 2009), (Rubin, 2008). Changes often require legislative action and all of the challenges and scrutiny that come with such actions.

True understanding of the potential impact of the budget on public sector ERP deployments requires an understanding of the political nature of the budgeting process. Compared to other ERP-related business processes, budgeting processes vary widely among public sector organizations (Claassens, 2005) due to the underlying political nature of public sector budgeting (Gossling, 2009), (Rubin, 2008). Thus, public sector budget decisions often reflect a compromise or political equilibrium amongst a broad range of participating interests rather than strategic goals (Rubin, 2008). By analyzing public sector budgets, it is often possible to gain insight into organizational priorities, influential stakeholders, core functional requirements, and business drivers (Abuelafia, Berensztein, Braun, & di Gresia) which will impact ERP deployment. Important factors to consider when reviewing a public sector organization’s budgeting processes with respect to ERP deployment include:

The Budget Process - Budgeting includes all the steps necessary to adopt and manage a budget through the fiscal year (McGee D. Q., 2007). Understanding this process, including when and how agencies make their budget requests, the chief executive makes a budget recommendation to the legislative body or board, the legislature adopts the budget, the budget is signed, and the adopted budget is executed provides critical context to ERP deployment. The budget process may materially influence ERP go live schedules, functional configuration and reporting requirements, and project resource availability. In addition, changes in a public sector organization’s budget process and budget calendar would dramatically impact an ongoing or planned ERP project or ERP system configuration, particularly from reporting, budget preparation, and budget execution perspectives.

Budget Approach - Most public sector organizations use an incremental approach to budgeting. Under this approach, it is assumed that a base or the current level of services will be provided from budget to budget (Lee, Johnson, & Joyce, 2008; Wildavsky & Caiden, 2004). Budgetary decision-making, in turn, primarily focuses on incremental adjustments to that budget from year to year (Miller & Robbins, 2009). Alternately, reform-oriented budget approaches include program budgeting, performance-based budget, zero-base budgeting, and responsibility-centered budgeting (Lee, Johnson, & Joyce, 2008). Most governments adopting these reform budget approaches continue to use the incremental approach to budgeting (Miller & Robbins, 2009) as their foundation, and focus on adding additional accountability into the budget process by aligning resource allocation decisions with program activities, performance outcomes, or strategic goals and objectives. (Robinson, 2007).
Regardless of which is adopted, an organization’s budget approach will significantly impact ERP configuration, especially master data, integration, and reporting requirements.

Revenue Sources - Public sector organizations often receive funding from multiple tax sources such as personal income tax, sales tax, property tax, and other sources including intergovernmental revenue, user fees, tolls, or grants (McGee R. W., 2004). Some revenue streams, such as property taxes, have traditionally been more predictable and less elastic due to this tax’s lower susceptibility to tax avoidance (Lee, Johnson, & Joyce, 2008), (Bowman & Kearney, 2003), and therefore provide more stable and predictable funding streams.

Public sector organizations that rely more heavily on grants or other intergovernmental revenue sources will likely have more complex financial management and reporting requirements (Lee, Johnson, & Joyce, 2008). State departments of transportation are good examples of organizations that receive and administer a large portion of their budget from outside sources (Fry, 2011). They also, not coincidentally, have very complex financial management and reporting requirements associated with federal aid billing. The mix of an organization’s revenue streams may substantially impact ERP project funding and timing, software functional requirements, and implementation complexity.

Capital Budgets - Many public sector organizations have separate capital planning and capital budgeting processes. These budgets tend to be more project-oriented in nature, and often involve multi-year capital expenditure outlays (Lee, Johnson, & Joyce, 2008). Capital budgets are often based on detailed information collected in project management and grant management systems. There is often a desire to tie capital budgets to operating budgets for decision-making and tracking (e.g. link newly funded positions to a newly constructed building). Such requirements may call for unique and complex integration between ERP components and third-party systems. At the same time, capital budgets often provide insight into underlying ERP functional requirements including cost accounting, debt management, and infrastructure management.

Budget Control - In public sector organizations, budgeting does not end with the adoption of the budget. Public sector organizations often use budget availability checking to manage their budgets after adoption (McGee D. Q., 2007), (Lee, Johnson, & Joyce, 2008). Such controls check for available funding prior to processing a budget-consuming financial or procurement posting.

Financial postings are mapped at the ERP master data level to these funding buckets and once funds are exhausted, a hard stop is placed on the transaction (e.g. a purchase order). When deploying ERP in the public sector, it is important to understand the organization’s budget control requirements (Gossling, 2009). The types of budget control (e.g. operating, grants, capital) and the levels of budget control (e.g. department, division, section) may all materially affect functional requirements and associated configuration, as well as overall ERP project complexity.

Organizational Silos

The most cited factor contributing to public sector ERP success or failure is organizational change management (Claps & Anderson, Trends in Statewide ERP Implementations, 2009). Many public sector organizations are comprised of a complex mix of decision-makers and influencers (Marini, 1992). Organization charts only tell part of the story when it comes to understanding where power and influence are concentrated within these organizations, as many other factors may play into this. Successfully deploying large-scale enterprise applications can be aided by understanding and navigating the organization’s formal and de facto organization charts (Blake, 2010).

In open forms of government, power is often intentionally shared across the enterprise. Beyond formal divisions of power between executive, legislative, and judicial branches, there are often statutory or less formal concentrations of power which are as just as important to understand (Wildavsky & Caiden, 2004). For instance, Indiana county governments divide executive power between three elected commissioners, an elected Sheriff, and other elected officials (Indiana Chamber of Commerce, 2007). These elected officials may be from different political parties, have competing agendas, or simply dislike each other. A less formal concentration of power can be found at the federal or state level where large externally funded agencies, such as transportation and human services agencies, often have greater influence and potential impact on an ERP deployment than smaller agencies (Blake, 2010).

Because of the sharing of power in the public sector, it is often difficult to obtain client signoff on important configuration and project decisions (Blake, 2010), (Jamison, 2011). This can lead to project delays and cost overruns. At the same time, it is common to see elected officials or agencies exercise their statutory authority or political power to refrain from participating in an ERP project, or even publically distance themselves from, or politically capitalize on, a troubled a project.
Such silos complicate ERP implementation, often creating the need for complex system interfaces or duplicative processes and, ultimately, limiting the realized value of ERP. Because of organizational silos and their history of exercising independence, even ERP configuration foundations such as agreement on a unified chart of accounts or other master data may be difficult to realize (Blake, 2010).

**TRANSPARENCY AND PUBLIC INTEREST**

Few things differentiate public and private sector organizational governance more than the level and type of public transparency. Public sector organizations by their very nature are open to a very broad range of public scrutiny compared to organizations in the private sector (Claassens, 2005), (Bowman & Kearney, 2003). Beyond the openness of public sector organizations, there are public demands for greater public sector accountability (Bowman & Kearney, 2003). It typically takes litigation for a troubled private sector ERP deployment to generate such headlines. The threshold for media coverage in the public sector is much lower. The media is often more inclined to cover the dramatic aspects of a story (Good, 2003), and generating positive earned media coverage, as it is often termed, is difficult. There are substantially more articles about troubled public sector ERP projects than successful projects (Byrne, 2011). Thus, public interest and the media attention that comes with it can add significant risk to a public sector ERP deployment (Hickey, 2010).

**ELECTIONS**

Leadership changes like those that occur following elections may materially influence priorities and balances of power within an organization (Abney & Lauth, 1986), and impact planned or ongoing ERP deployments in the public sector. In election years, public sector organizations with elected officials often shift focus to constituent-facing services, leaving planned or ongoing projects such as an ERP deployment, on the back burner. Once the election is complete, administration changes or changes in the legislative body’s makeup may provide a catalyst for ERP investment or, as is often the case, cause a change in priorities which impacts an ERP project or plans for an ERP project (Kirkland, 2011). Elections may also lead to staff turnover, particularly political appointees, and changes in the overall power dynamics of the public sector organization. Given that most large public sector ERP projects are multi-year endeavours, it is likely that one or more election cycles will transpire during the project (Kirkland, 2011).

**EXTERNAL MANDATES**

Many public sector organizations either receive substantial categorical funding or are subject to unfunded legal mandates. Such mandates may be derived from other levels of government, voter referendums, or judicial decisions. External mandates may materially impact the public sector organization’s operations (Bowman & Kearney, 2003), financial management, human resource management, and procurement business practices, and in turn can impact ERP functional requirements. Reporting requirements imposed by the external funding sources may necessitate core ERP configuration changes such as adding master data (e.g. chart of accounts), additional dimensions to financial transactions, new cost allocation rules, or changes to organizational budget priorities (Weber, 2011). At the same time, these legally binding mandates may lead to business practices in conflict with delivered ERP best practices. Complying with external legal mandates may prove challenging for ERP software packages, and present added implementation risk in the form of potential litigation for vendors and public sector organizations.

**SOCIAL GOALS**

Public sector organizations typically have business practices reflecting a broader set of goals than cost reduction and efficiency. Examples of such social goals include small, minority-owned, women-owned, or veteran-owned business contract participation targets (Capstack, 2010). Related practices may include preferential procurement rules or other practices designed to level the playing field for these businesses (Luby, Gansler, & Kornberg, 2004). Business practices driven by social goals may impact the ERP consultant project team makeup, and may create unique ERP functional requirements affecting configuration and reporting, particularly in the procurement or employee recruitment areas.

**PROCESS ORIENTATION**

Private sector organizations often define success by revenue growth, improved profitability, and stock price. In contrast, defining success for public sector organizations often proves elusive (Miller & Robbins, 2009). Most people would deem cost savings and efficiency improvements from implementing ERP as successes (Gossling, 2009). When those cost savings are generated from laying off government employees in the middle of a recession, fewer people would embrace this view (Hill, 2010). Such political considerations often lead public sector organizations to focus on process and compliance improvements, which are embraced by a broader constituency.
This focus often makes it difficult to realize the efficiency gains and cost cutting often used to justify investments in ERP, or to show tangible return on investment for a public sector ERP project.

**Differentiated Public Sector ERP Functionality**

ERP vendors traditionally focused on support for broad, horizontal processes, such as “hire to retire”, end-to-end processes supporting human capital management, and “procure to pay” processes. Public sector ERP implementations typically identify several processes that may be specific to the agency or public sector, which may not be reflected in these broad processes (Claps & Anderson, 2009). Figure 1 highlights many of these common challenges faced by the ERP functional area.

![Figure 1 - Unique Public Sector ERP Functionality](image)

**Public Sector Financial Management Challenges**
- Governmental accounting standards
- Fund accounting and budget availability checking
- Grant management and accounting

**Public Sector Human Capital Management Challenges**
- Employee recruitment
- Concurrent employment
- Time and attendance tracking

**Public Sector Procurement and Logistics Challenges**
- Extended formal procurement process
- Disadvantaged business participation
- Defense procurement and logistics

**Public Sector Budget Preparation Challenges**
- Employee-level personnel expenditure forecasting
- Text handling and automated budget publishing
- Budget decision packages

**Government Accounting Standards** - A key differentiator between public sector and private sector financial management is the difference in accounting rules. Despite a broad movement around the world to better align public sector and private sector accounting rules in many countries, differences persist (Hughes, 2009). Unique public sector accounting practices often drive ERP configuration requirements.

**Fund Accounting and Budget Control** - Fund accounting is an accounting approach pervasively found in the public sector. Funds, which in the public sector have a different meaning than in private sector financial management, are used to segregate and control funding from various sources (Granof, 2007). Each fund has its own set of balancing accounts for financial reporting. There are often legal or other restrictions for a given fund. Funds are often used, at least in part, as a basis for budget availability checking. Under such a system, funds are encumbered (committed), once it is verified that sufficient funding exists, such as upon creation of a purchase order for goods or services. Fund accounting and budget availability checking drive many configuration considerations during ERP deployment in the public sector (Jamison, 2011).

**Grant Management and Accounting** - Beyond differences in accounting standards and the use of fund accounting, public sector organizations have complex financial management and reporting requirements associated with the administration of grants. Public sector organizations may serve as a grantee or grantor. Some are both grantee and grantor (Capstack, 2010). Grant management requirements can prove challenging for ERP systems, as differences between the grantor and grantee’s fiscal years, chart of accounts, budget control, and reporting requirements must often be reconciled within the system.

Over time, most public sector-focused ERP vendors have incorporated functionality to support these, and other common public sector financial functional requirements. However, the deployment of this public sector functionality often proves challenging to implementation teams due to a lack of extensive public sector financial management expertise (Capstack, 2010).

**PUBLIC SECTOR FINANCIAL MANAGEMENT**

Public sector financial management and accounting differs substantially from the private sector. These differences often have a far-reaching impact on the configuration and deployment of ERP software applications. The following are some of these differences.

**PUBLIC SECTOR HUMAN CAPITAL MANAGEMENT (HCM)**

Public sector organizations are often subject to complex recruitment, compensation and benefits, and personnel administration rules. Designed to ensure integrity and accountability, these rules often drive business practices which are not frequently encountered in the private sector.
This situation is exacerbated by the prevalence of employee collective bargaining units, civil service or merit employees, tenured staff, and political or executive appointees. Such employee groups often have distinct recruitment, compensation and benefit, and even termination rules. In spite of the maturation of ERP in the public sector, many of these complex business requirements pose ERP implementation challenges (Jamison, 2011) such as the ones examined in the following paragraphs.

**Employee Recruitment** - Employee recruitment in the public sector often brings to life functional gaps in ERP software. This is particularly true in the case of merit hiring. Under merit hiring systems, applicants are often required to take competitive examinations or are scored based on measureable criteria such as educational attainment, veteran status, or other factors (Blake, 2010). Such systems often require the maintenance of publically auditable records for test results and other evaluation metrics. Few, if any, commercially available ERP systems fully support these requirements. Therefore, core ERP employee recruitment functionality is often customized to support these requirements or, as is more often the case, niche third-party public sector recruiting software packages, such as NEOGOV, are used.

**Concurrent Employment or Dual Appointments** - It is common in public sector organizations for employees to hold more than one position concurrently. For instance, a faculty member at a University may simultaneously serve as dean and as a professor. Such an arrangement often means total employee benefits, taxes, or statutory payments are based on the combined compensation for the two positions (Blake, 2010). Many ERP systems were not designed to support such employment situations, and this often necessitates complex workarounds or software customization.

**Time and Attendance** - Even basic processes such as time and attendance tracking often pose challenges for ERP systems when deployed in the public sector. This area is one root cause of many implementation problems if data validation is not forced at the point of entry, and can cause downstream issues with payroll (Claps & Anderson, 2009). In some instances, computer-based time and attendance tracking systems are not practical (Blake, 2010). This is often the case for municipal public works employees or corrections officers who lack ready access to computers. Accordingly, traditional time clocks, mobile devices, and telephone solutions are often required for a segment of public sector employees (Phillips, 2011). Best of breed software and hardware tools to address this need from vendors, such as Kronos, are often implemented in advance of ERP projects (Phillips, 2011) and provide real-time rules validation of related data improving time and attendance management efficiency and compliance (Claps & Anderson, 2009). Such systems often need to be interfaced, and this may add substantial implementation effort to an ERP project.

**Faculty Contract Pay** – University professors and public school teachers can often elect to work on and/or are paid on contracts spanning 9, 10, or 12 month periods. Managing these contracts presents many challenges for ERP systems in terms of compensation and benefits administration (Blake, 2010). Accordingly, public school and university ERP human resources management module implementations are often more complex from a functional configuration perspective.

**Defense Compensation, Allowances, and Benefits** – Defense agencies, in contrast to civilian agencies, present unique challenges for ERP HCM components including the volume and diversity of federal job classifications, managing global cost of living adjustments, and tracking and differentiating numerous allowances versus pay types (Weber, 2011).

**PUBLIC SECTOR PROCUREMENT AND LOGISTICS**

The mission of the procurement function, whether in the public or private sector, is to manage the delivery of goods and services through the supply chain in a cost-effective manner (Johnson, Leenders, & McCue, 2003). However, at the operational level, the procurement and logistics functions are significantly different between these organization types. Public sector procurement can best be described as process-oriented. These processes reflect the legal and ethical restrictions designed to ensure open and competitive public sector procurements that safeguard public funds (Weber, 2011).

Given the great deal of money involved, the challenge for public sector procurement officials is to create and promote an environment of procurement process transparency to limit the opportunity for, or the perception of, improper purchasing transactions (Randall, 2005). For example, governments that have been dominated by a single political party for a significant duration may appear to be at risk for favouring vendors who have political connections, or those who contribute to the campaigns of state and local politicians (Capstack, 2010). Similarly, public spending should not be used to enrich public officials or employees, or to confer favours to preferred constituents. Public sector procurement and logistics processes are examined in the following paragraphs.
Extended Formal Procurement Processes - In contrast to procurement practices in the private sector, public sector procurement is often more formal with additional steps designed to ensure transparency, integrity, and public accountability for contract awards and purchases (Jamison, 2011). Such procurement process steps, including formal advertising and public protest periods, often necessitate functionality not readily found in commercially available ERP or supplier relationship management systems (Capstack, 2010). Hence, ERP firms have added public sector-specific procurement solutions to their public sector ERP product portfolios. Deploying these solutions requires differentiated skills and expertise from standard ERP supply-chain management capabilities.

Disadvantaged Vendor Participation - Public sector organizations strive to provide equitable access and contracting opportunities to all vendors. In support of that commitment, they often provide weighted scoring or set target participation targets for traditionally disadvantaged businesses (Weber, 2011). This is done in order to ensure public contracts are proportionally awarded to minority-owned, woman-owned, or veteran-owned businesses, in some instances even where vendor bids do not make the lowest responsive bid (Blake, 2010). Such practices and the related compliance tracking often prove challenging for ERP procurement or supplier-relationship management modules, which are typically designed around such goals as reducing the cost of goods and services and leverage.

Defense Procurement and Logistics - Defense agencies come with their own set of functional challenges when contrasted with civilian agencies. Complex supply chains, extensive contracting requirements, multiple inventory control points, global contracting needs (e.g. requirements to procure locally around the globe), and large maintenance projects (overhaul of ships, aircraft, etc.) all contribute to unique ERP functional requirements (Weber, 2011). Additionally, defense agencies must also plan for execution of their core operational mission beyond this ERP functionality. Tracking of organizational units, personnel, equipment, and budgets is really the largest challenge for defense agency systems. SAP Defense Forces & Public Security (DFPS) provides extended ERP functionality specifically designed to address such defense agency challenges (Weber, 2011).

PUBLIC SECTOR BUDGET PREPARATION

Historically, leading cross-industry ERP vendors have been slow to respond to the unique budget preparation requirements of the public sector. However, with the recent introduction of public sector-specific budgeting offerings from the leading ERP vendors, there appears to be an emerging focus on meeting the unique budget requirements of the public sector. Until these solutions mature, ERP budget preparation implementation challenges will likely remain.

The mechanics of public sector budgeting are differentiated from private sector budgeting in many respects. Such differentiated public sector budget preparation requirements include:

Employee-Level Personnel Expenditure Forecasting - Public sector organizations often develop personnel budgets at the employee and position level, since a major proportion of public sector budgets are made up of personnel costs. Supporting this requirement for large public organizations necessitates tight integration with human resources management modules, and robust compensation and benefits parameter-driven personnel expenditure forecasting tools. Such functionality is not delivered, nor easily configured, in budgeting software designed primarily for private sector organizations (Wiggins, 2011).

Text Handling and Automated Budget Publishing - Because of the transparent nature of public sector budgeting, public sector budget reports and budget books include extensive amounts of justifying and descriptive text. Producing these budget books, which may be hundreds of pages, is too often a labour-intensive process involving tedious data manipulation and reconciliation (Gossling, 2009). Many ERP budget preparation modules or third party planning software packages limit text-storing capabilities, or leverage document management systems for storing budget-related text. Such approaches significantly impair the ability to automate the publication of text-intensive budget books (Wiggins, 2011).

Budget Decision Packages - Public sector organizations often require the ability to develop budget increases or reduction packages which are segregated from the base budget until approved. Such packages may include expenditure and related staffing changes, revenue, performance information, descriptive information about the budget package, and long, detailed text justifications (Wiggins, 2011). This functional requirement is often unsupported by ERP budget preparation modules, necessitating cumbersome system workarounds or offline tracking.
Prepared for Public Sector ERP Deployment

Public sector ERP deployment often comes with added project risks when contrasted with the private sector ERP projects identified throughout this chapter. Most ERP project management and risk management best practices employed in the private sector have applicability to public sector ERP deployments. Table 2 includes public sector ERP implementation expert recommendations for risk management abatement practices which may prove valuable for public sector ERP deployment.

**Table 2: Public Sector ERP Expert Guidance**

- Secure strong executive sponsorship with control over functional and technical support organizations such as information technology, financial management, human resources, payroll, purchasing and budget (Jamison, 2011). This may prove vexing in the public sector, where formal or statutory and de facto organization silos make such executive alignment difficult.
- Staff the project with experienced public sector ERP deployment project management who can effectively navigate the organizational dynamics of public organizations (Byrne, 2011).
- Include public sector functional experts, with deep understanding of public sector governance and business practices, for each ERP functional module (e.g. Budget Preparation, Procurement, Logistics, etc.) on the consulting and client project teams (Kirkland, 2011).
- Plan for common gaps in public sector ERP functionality, and proactively develop strategies for addressing them (Byrne, 2011).
- Plan for client, staff, skill and availability limitations, particularly information technology staff (Jamison, 2011). Frequently, public sector organizations have difficulty attracting and retaining strong information technology professionals.
- Understand the organization structure, where power and influence are concentrated, identify silo organizations, and develop strategies for building consensus across silos on key implementation decisions (Blake, 2010).
- Be prepared for media scrutiny of the project, and proactively manage project communications internally and externally (Byrne, 2011).

Conclusion

There are many differences between ERP deployment in the public and private sectors. Such differences can be tied to the unique dynamics of public sector governance, and how they commonly impact ERP functional requirements, configuration, and implementation projects. This chapter has highlighted some of these unique public sector dynamics and their potential impact on ERP projects. It is intended to augment a broader understanding of ERP applications and their deployment practices and is therefore not intended to be a comprehensive reference for public sector ERP deployment.
References


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Further Readings

Questions

1. How might the unique public sector requirements discussed in this chapter impact ERP configuration?
2. How might organizational silos be addressed in the planning phase of a public sector ERP deployment?
3. How is public sector organizational governance unique from the private sector?
4. What common factors differentiate the leading public sector ERP software vendors?
5. How might the budget process impact a public sector ERP implementation?