*Article*

# Public Personnel Management Process Capability Assessment

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## Abstract

Personnel management plays a critical role in the success of public organizations. Our literature review shows that there is a lack of systematic guidance on how to improve Public Personnel Management Process (PPMP) quality. Software Process Improvement and Capability Determination (SPICE) is a process assessment framework that is successfully used by software organizations during the past two decades. The framework can also be used as a baseline to generate process capability models for different specific domains/sectors. We have utilized this approach for the government domain and we developed the process definition of PPMP. To observe the benefits and usability of the model, we have performed a multiple case study, including the assessments of three organizations' PPMP capability levels and the development of action plans for PPMP improvement. The findings show that the proposed approach is applicable for identifying the PPMP capability levels and is capable of providing a roadmap for moving to the next level.

## Keywords

Public personnel management, human resource management, process improvement, process assessment, benchmarking

## Introduction

Governments are under pressure to improve service performance while keeping expenditures under control. As they attempt to adopt effective, transparent, and contributory

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administration measures, they are faced with the challenges of transformation and the need to reengineer governmental processes and systems (Ertürk, 2014). As a result of financial problems experienced by governments during the 2000s, a transformation for efficient and effective management of human capital has become increasingly crucial in government institutions.

Personnel management represents a significant portion of expenditures in government organizations (Pfeffer, 1998). It may be as high as 75% of the total operating cost (Pynes, 2008). As stated in (Holzer, Isaacs, & Lee, 2007), "No aspect of productive public administration in public organizations is more important than people—government's most extensive and expensive investments are people." Due to the realized importance of personnel management, there is a growing tendency toward viewing human resources as assets in which government should invest (Jacobson & Sowa, 2015).

Private organizations have attempted to apply many different techniques in their efforts related to personnel management. One of them is the technique of process improvement which is described as a strategic planning methodology aimed at identifying the improvable operations to provide simplified procedures and more efficient workflows. Although process improvement will provide structured execution of consistent and improved performance for the organization (Frame, 1999), the amount of research on process improvement of Public Personnel Management Process (PPMP) in governmental institutions is still limited in comparison with the private sector (Gould-Williams, 2003).

It is important to note that process improvement initiatives are effected by the particular characteristics of the public sector, where rigid hierarchies, regular changes in administrative directions, and constraints imposed by red tape exist. In addition, public organizations have a multitude of extra organizational linkages and interdependency across organizational boundaries. As a result of this, existing process improvement approaches cannot be used as is and should be adapted to the public sector context (Brown, Waterhouse, & Flynn, 2003; Greasley, 2004; Gulledge & Sommer, 2002; Ongaro, 2004; Ongaro & Rouban, 2008; Roodhooft & Van den Abbeele, 2006).

There are various well-accepted Process Capability/Maturity Models (PCMMs), such as Software Process Improvement and Capability Determination (SPICE) (International Organization for Standardization [ISO], 2003, 2004a, 2004b, 2012), and Capability Maturity Model Integration (CMMI) (CMMI Product Team, 2010) for software industry. These models are used as an evaluative and comparative basis for process improvement and/or assessment, assuming that higher process capability is associated with better performance. They are developed for the purpose of performing assessments of software and systems processes. As a result of the observed benefits of these models, which includes cost savings, increased involvement of employees, improved and predictable quality as well as productivity, generating consistency regarding process capture and use (Goldenson & Gibson, 2003), customizing them to different domains other than software development is the subject of increasing interest in the literature. Accordingly, many initiatives have been proposed for various domains such as automotive sector (Automotive SIG, 2010), enterprise processes (Ibrahim, 2008), IT security (Barafort, Humbert, & Poggi, 2006), IT service management (Malzahn, 2007),

knowledge management (Barafort, Renault, Picard, & Cortina, 2008), internal financial control (Ivanyos, 2007), industrial processes (Coletta, 2007), regulation compliance (Rifaut & Dubois, 2008), medical devices (Mc Caffery & Dorling, 2010), space (Cass et al., 2004) and industry 4.0 (Gökalp, Şener, & Eren, 2017).

We have utilized a similar approach for the public sector to improve governmental processes through the development and utilization of the Government Process Capability Determination Model (Gov-PCDM) (Gökalp & Demirörs, 2014a, 2014b, 2015a, 2015b, 2016a, 2016b, 2017). In the scope of the current study, the application of Gov-PCDM to PPMP is performed to provide a base for process improvement of PPMP. It pursues a structured and standardized approach by assessing PPMP to perform quality improvement initiatives in a consistent and repeatable manner. The approach enables public institutions to determine the capability level of their personnel management practices against a benchmark which is also used by other public institutions. Furthermore, it helps them to establish a program of continuous personnel development, to set priorities for PPMP improvement actions, to integrate personnel development with process improvement, and to obtain a culture of excellence.

The approach aims to fulfill four high-level requirements:

(a) enabling each public organization to evaluate its PPMP in detail;
(b) identifying the current state of its PPMP capability;
(c) comparing itself against other organizations evaluated with the same model;
(d) generating a roadmap for improving the PPMP capability level of the organization.

The research questions of this study are as follows:

**Research Question 1 (RQ1):** How can a public organization improve its PPMP by assessing its process capability?
**Research Question 2 (RQ2):** How can a public organization benchmark its PPMP capability against others?

This article is organized into six sections. In the second section, a literature review is provided, followed by a high-level description of Gov-PCDM. After this, the application of Gov-PCDM to PPMP is explained. Then, the results of a multiple case study are analyzed and the roadmaps which are derived for improvement of PPMPs in the organizations are presented. Finally, the conclusion is given before the appendix that contains the developed process definition of PPMP. The abbreviations commonly used in the study are listed in Table A2, at the end of the article.

## Literature Review

To highlight various approaches related to the goal of process improvement in the public sector, a review of relevant work on quality management models, e-government maturity models, business process improvement, and PPMP improvement is provided.

Quality management models are important because they aim to assess and measure public management qualities. E-government maturity models are reviewed because they are specifically developed for the public sector to measure maturity level of governmental e-services. Fundamental definitions related to business process improvement are summarized next to provide a brief explanation of the model-based process improvement approach used in this study. Finally, studies on process improvement within the scope of public personnel management are given.

## Quality Management Models in Public Sector

Quality is used as a rewarding strategic weapon for improving public services and citizens' satisfaction (Singh & Mansour-Nahra, 2006). In fact, there is a great pressure in public organizations for providing high-quality services, improving efficiency, and for conforming to government regulations (Robinson, 2003). This has resulted in a number of quality initiatives in public sector, one of which is Total Quality Management (TQM). It comprises organization-wide efforts to install and maintain a climate through which an organization continuously improves its ability to deliver high-quality services to customers. Important aspects of TQM include customer-driven quality, training, leadership, prevention of defects, and continuous improvement. ISO 9000 was published as an international standard in 1988 for the assessment and certification of TQM. However, TQM practice in public institutions is a controversial issue in the literature (Rago, 1994; Swiss, 1992; Üstüner & Coşkun, 2004). It is asserted in Swiss (1992) that TQM should be modified based on the characteristics of the public sector. Besides, the literature suggests that there is a necessity of process improvement together with TQM initiatives (Bendell, 2005; Greasley, 2004). Process improvement is the basis for several quality excellence models, including ISO 9001, European Quality Award, and Deming Prize (Bendell, 2005). Gov-PCDM, which has been developed for governmental process improvement specifically, aims to satisfy this necessity.

## E-Government Maturity Models

E-government is the use of information and communication technologies (ICTs) to improve the activities of government organizations. It provides electronically secure, seamless, and fast government services to be delivered to citizens through a common point of access. Benefits of e-government are as follows: reducing paperwork as well as loss of time, increasing individual participation, developing a democratic culture, and reducing extensive communication between agencies.

E-government Maturity Models are developed to provide IT-based assessment for facilitating the transition to e-government applications by evaluating technological, organizational, functional adequacy. Increased maturity level which is observed as a result of the assessment provides more sophisticated e-government structure. These models focus on e-services, web-based communication, and interoperability. There are

various examples of e-government maturity models in the literature (Andersen & Henriksen, 2006; Baum & Di Maio, 2000; Layne & Lee, 2001).

While e-government initiatives have the potential to improve the quality of governmental services, existing processes should be improved beforehand (Stemberger & Jaklic, 2007). Automation practices in governmental institutions have not provided the expected efficiency improvements, as the automation of processes are carried out without first eliminating process defects (Acar & Kumaş, 2008). As pointed out in the works by Hjort-Madsen and Gøtze (2004) and Isomäki and Liimatainen (2008), enterprise architecture in the public sector has to be transformed from being IT-centric to business-centric. However, only a few studies are related to the management and improvement of governmental business processes (Jovarauskienė & Pilinkienė, 2015). Gov-PCDM, specifically developed for governmental process improvement, is developed to fill this gap.

## Business Process Improvement

Hammer (2002) defines *process improvement* as "A structured approach to performance improvement that centers on the disciplined design and careful execution of a company's end-to-end business process." The observed benefits of the business process improvement initiatives are to downsize, reduce administrative costs, reform administrative systems, decentralize authority within agencies, empower frontline workers, improve service quality, and improve efficiency of agency work practice. Gov-PCDM is based on the model-based process improvement approach which involves the use of a structured framework to guide the improvement of governmental processes. In the process improvement domain, *process capability level* refers to how far an organization has progressed toward achieving continuous improvement in any specific area. As a process capability level increases, it becomes more standardized and measurable (Curtis, Hefley, & Miller, 2009). A *process capability model* represents process capability levels or stages as well as each level's characteristics and relationship to other stages. In addition, it provides a roadmap for implementing the critical practices of the business processes to reach the next capability level (Röglinger, Pöppelbuß, & Becker, 2012). By performing the critical practices in the roadmap, the improvement of the process is obtained.

In the past 10 years, an increased number of public sector organizations are focusing on implementing business process improvement methodologies. The motivation to make changes is driven primarily by the goals of reducing cost, increasing efficiencies, and improving quality (Ahmed, 2010; Oakland & Tanner, 2007). The literature reflects an increasing flow in the research stream of public sector performance assessment and benchmarking as stated in (Maheshwari & Janssen, 2013). Hong et al. (2012) also identify a growing need for assessment and benchmarking studies of complex business practices and proliferation of research studies in the area of public sector processes.

To fill this gap, a model-based business process improvement approach is applied to develop a specific government process capability level determination model, which

is entitled as Gov-PCDM (Gökalp & Demirörs, 2014a, 2014b, 2015a, 2015b, 2016a, 2016b, 2017). It is based on one of the well-accepted process improvement models, namely SPICE (ISO, 2003, 2004a, 2004b, 2012, 2015). The major reason for choosing this model is its well defined and commonly accepted structure. SPICE aims to provide a structured assessment framework for processes by facilitating a basis for use in process capability determination and process improvement as well as process rating which represents an objective snapshot of the current state of a process. Consisting of a set of technical standards documents for process improvement and capability determination, it is a reference model for the maturity models. It includes parts for giving organizations the minimum requirements for process assessment and process model design, for serving as a guide for the execution of process assessments, or for providing assistance regarding the application of assessments as part of process improvement.

Gov-PCDM has been developed by customizing SPICE according to the needs of the public sector by establishing the definitions of governmental processes to be able to assess them in a standardized manner. Several studies have already been available in the literature regarding the utilization of Gov-PCDM. First, an exploratory case study, including an assessment of a public process, was carried out (Gökalp, 2014). As a continuation of this work, a generic description of the proposed method, which is a disciplined guidance for governmental organizations to perform a process capability assessment, was systematically developed (Gökalp & Demirörs, 2015a, 2015b). Then, the method was applied to the public financial and physical resource management process (Gökalp & Demirörs, 2016a, 2017) and a public agency's specific processes such as a public investment management process in a ministry and a graduate student selection process in a state university (Gökalp & Demirörs, 2016b). The capability levels of these processes were determined and the roadmaps to improve them were derived as a result of these studies. The scope of the current study is the application of Gov-PCDM to PPMP in the context of a multiple case study to determine the process capability levels and generate a roadmap for PPMP improvement in all the cases.

## PPMP Improvement

Several well-known studies about quality improvement in the literature (Crosby, 1980; Deming, 1986; Ishikawa, 1985; Juran, 1989) emphasize the importance of effective personnel management process. It is also suggested that process improvement within the personnel department is fundamental to organization-wide structured approach of quality improvement (Blackburn & Rosen, 1993; Bowen & Lawler, 1992; Vouzas, 2004). However, according to Naff, Riccucci, and Freyss (2013), traditional personnel management policies and quality management philosophy are still incompatible. Evidence from an increased amount of literature on TQM failure indicates that personnel management aspect of quality programs is generally ignored. Several experts assert that completely successful and self-sustainable quality management requires a comprehensive refashioning of public personnel management practices (e.g., Schonberger & Knod, 1994).

The term "human capital" has been emphasized and some initiatives have been performed in Federal Government since 2002. The Human Capital Framework (HCF) which replaces the Human Capital Assessment and Accountability Framework (HCAAF) provides a comprehensive guidance on the concepts and systems for planning, implementing, and maintaining a human capital plan, as well as assessment of human capital management (HCM) (United States Office of Personnel Management, 2016). Government Performance and Results Act (GPRA) Modernization Act which is related to performance routines to encourage performance information use is published in 2010. Federal Human Capital Business Reference Model (HCBRM), which defines the end-to-end life cycle of HCM, includes functional categorization and definition, legal and regulatory alignment, and delegated policy oversight (United States Office of Personnel Management, 2017).

As a result of the literature review, it is observed that studies related to improving quality in the public sector ignore the importance of the process aspect of personnel management and do not focus on improving PPMP quality through the use of a standardized approach for assessment and improvement purposes. Accordingly, the aim of this study is to satisfy this need through the application of Gov-PCDM to PPMP to help public institutions improve the capabilities related to their personnel management practices.
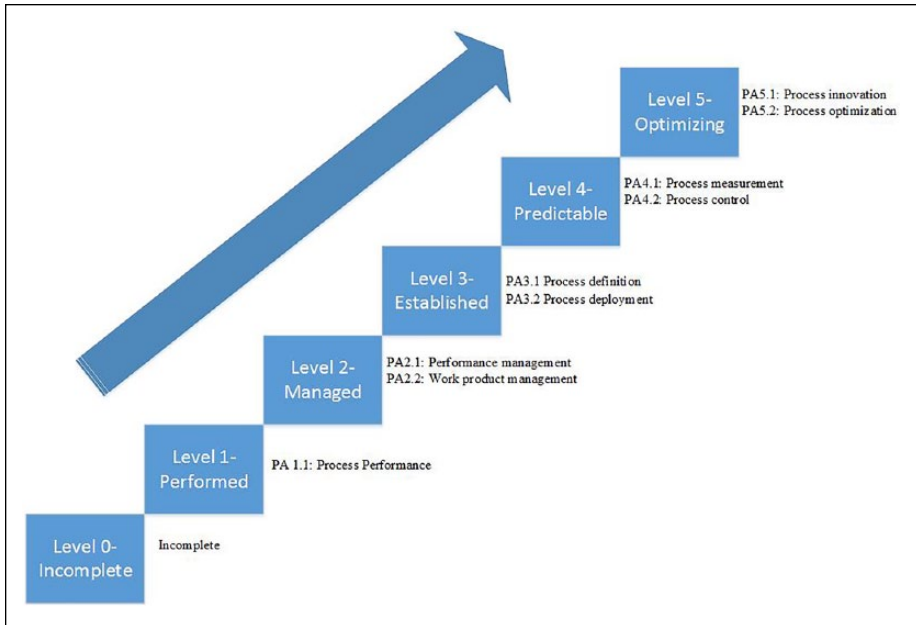
## Gov-PCDM

Gov-PCDM (Gökalp & Demirörs, 2014a, 2014b, 2015a, 2015b, 2016a, 2016b, 2017) has been developed for capability determination of processes performed in government institutions. The application of Gov-PCDM to PPMP, assessing the PPMP, and generating a guideline for process improvement are covered in the scope of this study.

Gov-PCDM is based on the assumption that the quality of business service depends on process quality which can be determined as process capability. High process capability can be achieved by applying an iterative procedure of process capability assessments and improvement. Process capability assessment is the systematic process of identifying gaps in organizational performance between what is and what could/should be. The output of the assessment is a list of improvement opportunities for increasing effectiveness and efficiency.

Gov-PCDM provides a base for improving governmental processes. It pursues a structured and standardized approach by assessing governmental processes to perform quality improvement initiatives in a consistent and repeatable manner, assisted by adequate measures with guidance on what to do to increase quality in government institutions.

The structure of Gov-PCDM is based on the well-accepted process improvement model of SPICE (ISO, 2003, 2004a, 2004b, 2012, 2015). SPICE comprises process capability levels which are in turn composed of *Process Attributes (PAs)* containing *Base Practices (BPs)* and *Generic Practices (GPs)*. PAs represent measurable characteristics which are required to manage the corresponding process and improve its capability. BPs refer to the unique functional activities of the process. Gov-PCDM
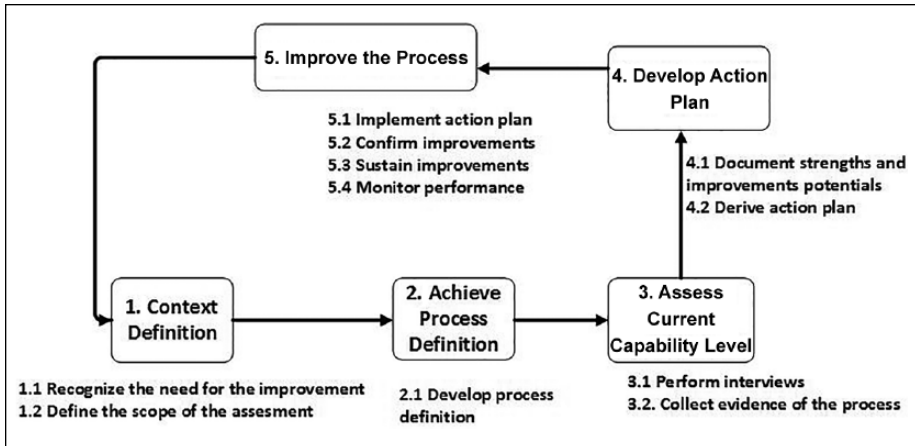
**Figure 1.** The Government Process Capability Determination Model structure (Gov-PCDM).

comprises the same process capability levels and PAs defined in SPICE. Process capability is classified into six levels: Level 0: Incomplete, Level 1: Performed, Level 2: Managed, Level 3: Established, Level 4: Predictable, and Level 5: Optimizing.

As illustrated conceptually in Figure 1, the framework is explained as follows:

- *Level 0—Incomplete:* The organization does not perform the process.
- *Level 1—Performed:* The organization performs the process, but it has no consistent way of performing its work, as most work processes are ad hoc. It comprises PA 1.1 Process Performance, which is assessed at this level.
- *Level 2—Managed:* Practices can be repeated in the organization. It comprises PA 2.1 Performance Management and PA 2.2 Work Product Management.
- *Level 3—Established:* The organization has the ability to identify which practices work best in its unique environment. It comprises PA 3.1 Process Definition and PA 3.2 Process Deployment.
- *Level 4—Predictable:* The organization begins to manage its processes through data describing its performance, and variations in performing best practices are reduced. It comprises PA 4.1 Process Measurement and PA 4.2 Process Control.
- *Level 5—Optimizing:* The organization uses its profound, quantitative knowledge of the practices which are continuously improved to enhance their capability. It comprises PA 5.1 Process Innovation and PA 5.2 Process Optimization.

**Figure 2.** Process improvement life cycle of Gov-PCDM.
*Note.* Gov-PCDM = Government Process Capability Determination Model.

Process improvement life cycle of Gov-PCDM is illustrated in Figure 2. The details of the life cycle are as follows:

1. Context definition: It includes recognition of the need for process improvement by the organization, where the top management decides on this need and defines the scope of the assessment.

2. Achieve process definition: The process needs to be defined to perform the assessment for Level 1. The process definition established based on the requirements defined in SPICE (ISO, 2003) is characterized by *process purpose* (the objective of accomplishing the process), *outcomes* (the observable consequences expected from successfully performing the process), BPs (a list of actions that may be used for the achievements of the outcomes), and *work products* (individually recognizable bodies of information created and stored for human use).

3. Assess current capability level: Process capability assessment is performed by the assessment team consisting of participants in the organizations responsible for the quality assurance and by a competent assessor formally certified by the International SPICE Assessors Schema. Accordingly, the assessment team follows SPICE (ISO, 2004a) as the documented procedural approach for conducting the assessment. The assessment team collects and systematically validates the information gathered during the assessment, using evidence collection methods such as interviews and information-gathering documents which are specifically defined for that process. After carrying out the assessment, the team analyses and synthesizes the obtained information to determine the state of current process capability level by discovering the weaknesses, risks, and strengths of the process. Finally, the assessment team assigns a rating to the

**Table 1.** Process Capability Level Ratings.

| Process attributes | Level 1 (performed) | Level 2 (managed) | Level 3 (established) | Level 4 (predictable) | Level 5 (optimizing) |
|---|---|---|---|---|---|
| PA 1.1 Process Performance | L.A. or F.A. | F.A. | F.A. | F.A. | F.A. |
| PA 2.1 Performance Management | — | L.A. or F.A. | F.A. | F.A. | F.A. |
| PA 2.2 Work Product Management | — | L.A. or F.A. | F.A. | F.A. | F.A. |
| PA 3.1 Process Definition | — | — | L.A. or F.A. | F.A. | F.A. |
| PA 3.2 Process Resource | — | — | L.A. or F.A. | F.A. | F.A. |
| PA 4.1 Process Measurement | — | — | — | L.A. or F.A. | F.A. |
| PA 4.2 Process Control | — | — | — | L.A. or F.A. | F.A. |
| PA 5.1 Process Change | — | — | — | — | L.A. or F.A. |
| PA 5.2 Continuous Improvement | — | — | — | — | L.A. or F.A. |

*Note.* L.A. = Largely Achieved; F.A. = Fully Achieved.

PAs so as to establish a profile of the capability level of the process and creates the assessment report containing the results of the assessment.

The capability level of the process is determined by rating the PAs as shown in Table 1. Each PA is measured by an ordinal rating that represents the extent of the achievement: F.A. (Fully Achieved) (86%-100% of achievement), L.A. (Largely Achieved) (51%-85% of achievement), P.A. (Partially Achieved) (16%-50% of achievement), or N.A. (Not Achieved) (1%-15% of achievement). A process is determined to be at capability level k if all PAs below level k satisfy the rating F.A., and the level k attributes are rated as F.A. or L.A., as defined in SPICE (ISO, 2003). To illustrate, to determine whether a process has achieved capability Level 1, it is necessary to determine the rating of PA 1.1 (Process Performance) as L.A. or F.A. If the PA 1.1 is rated as N.A. or P.A., it is determined that the process capability is at Level 0.

Level 1 assessment is performed concerning the BPs, outcomes, and work products described in the process definition of PPMP given in the appendix, with the focus of checking whether the process is performed according to the corresponding process attribute PA 1.1. The PPMP capability level can be assessed based on SPICE owing to this developed process definition. PAs from Level 2 to Level 5 are assessed as provided by SPICE (ISO, 2012).The

achievement of PA is determined by checking BPs for PA 1.1 or GPs for other PAs. BPs and GPs are measured the same as measuring PAs by rating F.A., L.A., P.A., and N.A., based on evidence.

4. Develop action plan: After the capability determination of PPMP, SPICE is followed for process improvement. Based on the assessment report, the improvement potentials of the assessed process are prioritized to establish the order of execution for the action plan including activities, tasks, responsible people, resources, schedule, cost, and risk. It has been implemented by the organizations by considering their specific circumstances such as existing resources, business goals, and budget.

5. Improve the process: The order of priority for improvement potentials in the action plan must take the business goals of the organization into consideration, and then they should be implemented. After the improvement implementation has been confirmed, sustainability of the improvement should be inspected and performance of the process should be monitored. Sustaining improvements and monitoring the performance is a long-lasting step, sometimes covering a period of 1 year. After successfully completing this step, the next improvement cycle can be started if any need for the process improvement is recognized.

## Application of Gov-PCDM to PPMP

The application of Gov-PCDM to PPMP aims to provide a staged framework for transforming a public institution by steadily improving successful public personnel management practices through increased PPMP capability level. Practices in each maturity level increases the level of sophistication of public personnel management by adding a new system of public personnel management practices to those implemented at earlier maturity levels. In a mature public institution, responsible personnel perform repeatable public personnel management practices and it attracts, organizes, motivates, develops, and retains the personnel capacity needed, more effectively.

The process improvement life cycle shown in Figure 2 is followed.

### Context Definition

The need for the process improvement for PPMP is recognized and top management decides to pursue improvement initiative for PPMP.

### Achieve Process Definition of PPMP

Process definition of PPMP is established based on the requirements defined in SPICE. The development of the process definition of PPMP is illustrated in Figure 3. The draft version of the process definition of PPMP is achieved by one of the authors by harmonizing existing quality improvement models and standards such as FEAF (Federal Enterprise Architecture Framework) (Chief Information Officers Council, 2007), APQC (American Productivity & Quality Center) (APQC, 2012), SPICE (ISO, 2003),
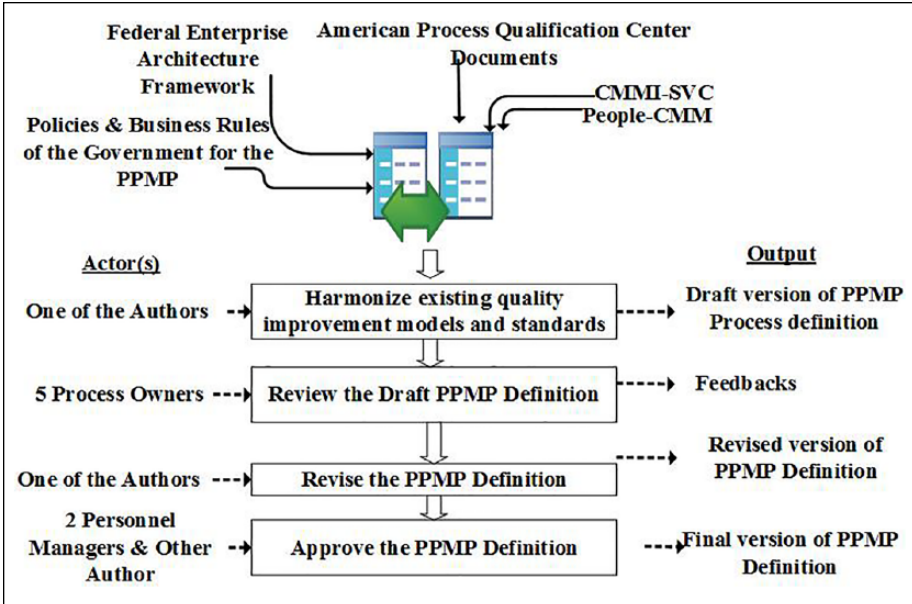
**Figure 3.** The development of process definition of PPMP.
*Note.* PPMP = Public Personnel Management Process.

CMMI-SVC (CMMI Product Team, 2011), and People-CMM (Curtis et al., 2009), based on the policies and business rules of the PPMP. The process definition draft is formally reviewed by five PPMP owners who are working in the personnel department in public organizations. They are requested to provide verbal and written feedback on the following questions: (a) Are the major elements of the process definition of PPMP, such as purpose, outcomes, and BPs, well defined and articulated? (b) Is there any information you want to add in the process definition of PPMP? The feedback is used to refine and revise the model. The revised version of the process definition of PPMP is reviewed and approved by two executives in two different governmental organizational units and one of the authors who has both professional and academic experience in using SPICE (ISO, 2003). Consequently, the final version of the process definition of PPMP given in the appendix is obtained.

The details of the process definition of PPMP are given in the appendix. It includes BPs covering strategy formulation and review, personal record management, performance management, resourcing, employee communications and behavioral management, competency assessment, separation, as well as remuneration, benefits, and rewards.

## Assess Current Capability Level

Multiple case study in three different organizations was carried out to collect data on cases with different characteristics. PPMPs performed in three ministries of two

countries were evaluated based on Gov-PCDM. The capability levels were determined and a guideline for process capability improvement was produced as a result of the assessment for each organization.

The case studies were conducted according to the protocol template proposed by Yin (2013). The following sections describe these studies.

*Multiple case study design.* The research strategy of this study matches many of the qualitative research attributes (Creswell, 2013). The data need to be collected in its natural settings, and the assessor is the key instrument in collecting the data. There are various forms of data, and inductive data analysis needs to be conducted:

- *The objective of the study* is to investigate whether the proposed approach can be utilized for the assessment of process capability level determination of PPMP and for the achievement of roadmaps for PPMP improvement.
- The following *research questions* are defined in accordance with the objective above: RQ1: How can a public organization improve its PPMP by assessing its process capability? RQ2: How can a public organization benchmark its PPMP capability against others?
- *The design type of the case study* is one of multiple cases—embedded, as it was applied in three government organizations in two countries to assess their PPMPs.
- *The measure used in the research* is the capability level of the PPMPs of each organization.
- *Field procedure, data collection, and limitations* are based on SPICE. The methodology for data collection during the case studies is related to the Gov-PCDM life cycle activities, roles, and work products mentioned above, in the section "Government Process Capability Determination Model." To support the application of this methodology in the different organizations involved, SPICE is used to ensure assessment planning, assessment performing, data collection, and creating documents in a standard manner.
- *The objectivity of the judgment:* Gov-PCDM is developed based on SPICE which complies with theory of measure related requirement of establishing a mapping between a PA and its rating as N.A., P.A., L.A., and F.A. To deal with the effects of subjectivity in this measurement process and reduce uncertainty in the results, Gov-PCDM has explicit indicators. In addition, the requirement of documenting an assessment report which includes evidence reduces subjectivity.

*Multiple case study implementation.* The PPMP capability level assessments were performed in three governmental organizations.

*Case 1*: A government institution that has around 40 departments, approximately 800 employees. Personnel department is responsible for carrying out all work to employees. Semi-structured interviews were conducted with 10 different people: one of them is the head of the personnel department, three process

stakeholders who are not part of the personnel department, and six process owners working in the personnel department. The duration of interviews for each person was around 70 min. *Case 2*: A government institution that has approximately 90 employees. Interviews were conducted with five different people: one is the head of the accounting office, two process stakeholders working in another department, and two process owners working in the accounting office. The duration of the interviews for each person was around 40 min. *Case 3*: A government institution that has approximately 140 employees. Interviews were conducted with eight different people: one is the head of the accounting office, two process stakeholders working in another department, and five process owners working in the accounting office. The duration of the interviews for each person was around 50 min.

Visits to each organization took place on two separate days to perform the PPMP assessment. Evidence gathering techniques included conducting semi-structured interviews with process stakeholders to be evaluated (so the documentation including law, decree-law, policies, or other documents used for the process was inspected) as well as the process owners responsible for actual execution of the PPMP. The purpose of the information derived from the obtained data is to provide a view of the current state of the PPMP. The assessment team used this information to create the assessment report (Gökalp, 2016).

Level 1 assessment was carried out with the focus of checking whether the BPs given in the PPMP definition are performed according to the corresponding process attribute PA 1.1. PPMP Capability Level 1 Assessment results are shown in Table 2. The rating is performed based on evidence gathered from the semi-structured interviews, reported in the assessment report in Gökalp (2016), as follows: F.A. (Fully Achieved) means 86% to 100% of achievement of the BPs, L.A. (Largely Achieved) means 51% to 85% of achievement of BPs, P.A. (Partially Achieved) means 16% to 50% of achievement of BPs, N.A. (Not Achieved) means 1% to 15% of achievement of BPs. The values of the PAs shown in Table 3 were obtained following the strategy presented in the work by Pino, Garcia, Serrano, and Piattini (2006).The assessment team determined the final rating of PA 1.1 based on the BPs' ratings. The same logic is valid for calculating BPs ratings based on the sub-base practices' (sub-BPs) ratings. One example for grading BPs based on evidence gathered during assessment is as follows. *For sub-BP of 1.1 (B.P.1.1): Develop Human Resource Strategy for Case 1*. The assessment team investigated the documents of yearly performance plan as well as governmental regulations for the public personnel management and discovered that HCM strategy is written in the yearly performance plan, and HCM policies are strictly defined in public personnel regulation. Accordingly, it was reported that human resource strategy had been developed (100% achievement of this sub-BP), and thus this sub-BP was rated as Fully Achieved (F.A.). The summary of the ratings of BPs is given in Table 2.

**Table 2.** PPMP Capability Level Assessment Results.

| Base practices | Case 1 | Case 2 | Case 3 |
| --- | --- | --- | --- |
| BP1: Create and manage HR planning, policies, and strategies | F.A. | L.A. | L.A. |
| B.P.1.1 Develop HR strategy | F.A. | L.A. | L.A. |
| B.P.1.2 Develop and implement HR plans | F.A. | P.A. | P.A. |
| B.P.1.3 Monitor and update plans | F.A. | P.A. | P.A. |
| BP2: Manage reward and recognition | N.A. | N.A. | N.A. |
| BP3: Manage employee performance | L.A | N.A. | N.A. |
| B.P.3.1 Define performance objectives | F.A. | N.A. | N.A. |
| B.P.3.2 Develop performance management approaches/feedback | P.A. | N.A. | N.A. |
| B.P.3.3 Review, appraise, and manage employee performance | P.A. | N.A. | N.A. |
| B.P.3.4 Evaluate and review performance program | P.A. | N.A. | N.A. |
| B.P.3.5 Manage team performance | P.A. | N.A. | N.A. |
| BP4: Recruit, source, and select qualified staff | F.A. | L.A. | L.A. |
| B.P.4.1 Create and develop employee requisitions | F.A. | L.A. | L.A. |
| B.P.4.2 Recruit/source candidates | F.A. | F.A. | F.A. |
| B.P.4.3 Screen and select candidates | F.A. | F.A. | F.A. |
| B.P.4.4 Manage preplacement verification | F.A. | F.A. | F.A. |
| B.P.4.5 Manage new hire/rehire | F.A. | L.A. | L.A. |
| B.P.4.6 Track candidates | P.A. | N.A. | N.A. |
| BP5: Develop and train employees | L.A. | P.A. | P.A. |
| B.P.5.1 Manage employee development | F.A. | L.A. | L.A. |
| B.P.5.2 Develop and manage training programs | L.A. | P.A. | P.A. |
| B.P.5.3 Develop and manage employee orientation programs | F.A. | F.A. | F.A. |
| B.P.5.4 Manage employee relations | N.A. | N.A. | N.A. |
| B.P.5.4 Develop functional/process competencies | L.A. | P.A. | P.A. |
| B.P.5.5 Develop management/ leadership competencies | N.A. | N.A. | N.A. |
| B.P.5.6 Develop team competencies | N.A. | N.A. | N.A. |
| B.P.5.7 Evaluate the overall effectiveness of the agency's employee development approach | P.A. | N.A. | N.A. |

*(continued)*

**Table 2. (Continued)**

| Base practices | Case 1 | Case 2 | Case 3 |
|---|---|---|---|
| BP6: Support staff interaction and collaboration | L.A. | P.A. | P.A. |
| BP7: Empower teams | N.A. | N.A. | N.A. |
| BP8: Evaluate staff performance | P.A. | N.A. | N.A. |
| BP9: Provide feedback on performance | N.A. | N.A. | N.A. |
| BP10: Motivate personnel | L.A. | L.A. | L.A. |
| B.P.10.1. Manage employee satisfaction | N.A. | N.A. | N.A. |
| B.P.10.2. Deliver programs to support work–life balance for employees | N.A. | N.A. | N.A. |
| B.P.10.3. Develop family support systems | F.A. | F.A. | F.A. |
| B.P.10.4. Ensure employee involvement | N.A. | N.A. | N.A. |
| B.P.10.5. Manage internal communications | F.A. | P.A. | L.A. |
| B.P.10.6. Manage and administer employee benefits | F.A. | F.A. | F.A. |
| B.P.10.7. Manage workplace health and safety | L.A. | L.A. | L.A. |
| BP11: Maintain staff information | F.A. | L.A. | L.A. |
| B.P.11.1. Manage employee information | F.A. | L.A. | L.A. |
| B.P.11.2. Manage employee communication | F.A. | L.A. | L.A. |
| BP12: Manage redeployment and retirement of employees | F.A. | F.A. | F.A. |

*Note.* PPMP = Public Personnel Management Process; BP = Base Practice; HR = human resources; P.A. = Partially Achieved; N.A. = Not Achieved; L.A. = Largely Achieved; F.A. = Fully Achieved.

## Analysis of the Results

The result of this assessment in the case studies is that the capability level of the PPMP performed in Case 1 is Level 1 and in both Case 2 and Case 3 are Level 0 with the rationale shown in Table 1, based on the collected and validated evidence. The ratings of PAs are shown in Table 3.

### Develop Action Plan

In this phase, strengths and weaknesses of PPMP were identified based on assessment findings. Process-related risks were assessed, and their potential consequences were identified. Opportunities for improvement were derived based on the identified

**Table 3.** PPMP Assessment Results.

| Process attributes | Case-1 | Case-2 | Case-3 |
|---|---|---|---|
| PA 1.1 Process Performance | L.A. | P.A. | P.A. |
| PA 2.1 Performance Management | L.A. | P.A. | P.A. |
| PA 2.2 Work Product Management | L.A. | P.A. | P.A. |
| PA 3.1 Process Definition | L.A. | | |
| PA 3.2 Process Deployment | L.A. | | |
| . . . | | | |
| Result | Level 1 | Level 0 | Level 0 |
| | Performed | Incomplete | Incomplete |

*Note.* PPMP = Public Personnel Management Process; PA = Process Attribute; P.A. = Partially Achieved; L.A. = Largely Achieved.

weaknesses of PPMP for each case. A prioritized list of improvement areas was compiled from all of the factors listed above. The roadmap to improve the capability level of the PPMP was derived from the assessment evidence for each case. The aim was to turn negative evidence into positive ones of the BPs. The aim of satisfying Level 1 requirements is to achieve all BPs as Fully Achieved (F.A.). A guideline to improve the PPMP capability level was derived based on the assessment findings, which are listed as follows:

For Case 1, Case 2, and Case 3

1. Develop employee performance management system:
   - Identify process performance experience, skills, knowledge, and needed trainings to deploy the process
   - Identify, collect, and monitor employee performance indicators
   - Set targets for employee performance indicators, monitor, and adjust them if necessary
   - Evaluate and review the performance program
   - Create personnel performance criteria
   - Evaluate staff performance
   - Provide feedback on performance
2. Develop rewarding/incentive mechanism.
   - Identify rewards and make arrangements to give them to deserving employees
3. Provide lessons learned database.
4. Separate unproductive employees.

## For Case 2 and Case 3

5. Develop, implement, and update human resource plans.

6. Reengineer the organization and set a department to deal with personnel management.
    - Recruit, source, and select qualified staff
    - Develop and train employees
    - Manage orientation and training programs
    - Manage employee relations
    - Develop functional/process competencies
    - Evaluate the overall effectiveness of the agency's employee development approach
    - Support staff interaction and collaboration
    - Empower teams
    - Motivate personnel
7. Develop a personnel management information system to maintain staff information.
8. Develop knowledge sharing platform.
9. Document job definitions.

## Improve the Process

For the case studies, the top management of the organizations in three cases approved the allocation of necessary resources for implementing the action plan. The planned timeline is 18, 15, and 12 months for Case 1, Case 2, and Case 3, respectively. Sustaining improvements and monitoring the performance is a long-lasting step. As a result of confirming sustainability of the improvements, the improvement cycle will be completed and a new iteration of assessment for improvement can be initiated for improving PPMP capability by one additional level.

## Interviews With the Stakeholders

The assessment results were presented to senior managers of the organizations, process stakeholders, and process owners, in a meeting. The ratings for each BP and evidence for that rating were explained. The derived guideline for process improvement was also shared. They reported the main benefits of the assessment as realizing the need for PPMP assessment and improvement, and they aim to follow this same approach for future process improvement cycles to move from a chaotic and unpredictable PPMP to a tangible one.

To check the usefulness and adequacy of the proposed approach, follow-up interviews were conducted with all members after the meetings. The interviews took about 10 min. The open-ended structured questionnaire shown in Table 4 was utilized. Interviews were conducted with 26 people in total; 11, six, and nine people (six, two, and five of them are process owners) in Cases 1, 2, and 3, respectively. Ten of them have more than 5 years' work experiences. Eight of them have 3 years' work experiences, and eight of them have less than 2 years' work experience.

**Table 4.** Results of Interview With the Stakeholders.

| Question | Survey type | Response |
|---|---|---|
| Q1. Are measuring process capability and obtaining guideline for improvement useful? | 5-point Likert-type scale | Median: 4 |
| Q2. Do you think that applying these suggestions will improve the process performance? | 5-point Likert-type scale | Median: 4 |
| Q3. Is there any information you want to add in process definition of PPMP? Please write, if any. | Open-end | No |
| Q4. Is there any missing item in guideline for improvement list? Please write, if any. | Open-end | Interoperability |

The findings in the conducted interviews as can be seen in Table 4 support the proposed approach. The medians of the responses for the first two questions are calculated as 4 out of 5-points Likert-type scale. Only three people responded as 3 out of 5 for these questions. Overall, respondents think that achieving a roadmap to guide what to do for increasing process capability is useful, and all of the suggestions indicated in the roadmap will improve the process performance of PPMP. They also confirm that the process definition of PPMP, given in the appendix, covers all outcomes and BPs of the process. While answering the last question, two of the responders pointed out some possible improvement areas including providing interoperability between involved parties, such as public service commission in Case 2 and Case 3. However, this is out of the scope of the proposed model and is primarily related to e-government initiatives.

## Threats to Validity

The following issues have been considered to address the threats to validity of the case studies:

- The case study design and the information collection procedure were checked against the checklists for case studies proposed by Kitchenham, Pickard, & Pfleeger (1995).
- *The construct validity* considers whether the constructs in the case study are well-structured or subjective to the judgment. To avoid these problems, the information is collected from the participants with different roles (process owner, process stakeholder, and executive member) and from multiple sources, including documentation (laws, decree-laws, regulations), interviews, and observations of the participants.
- As for *internal validity*, application of multiple case study is remarkably significant to overcome this threat. A logical chain of evidence was established while performing the study and reporting the results. The evidence collected

during the case studies were given in detail in the assessment report. Different sources of evidence were utilized for analysis of the results and answering the research question. The resulting outputs were validated by the related stakeholders by conducting the interviews.

- Regarding *external validity*, Gov-PCDM was initially applied on different processes other than PPMP (Gökalp & Demirörs, 2014a, 2016a, 2016b, 2017) to check the assessment methodology. These first application results were reviewed and approved, and the protocol and the field procedure of the case study were refined. Then, the approach was applied to Case 1. After that, the replication material of the case study was applied to Case 2 and Case 3. It is ensured that the replication logic was applied consistently in the cases, and consistent outputs were achieved through multiple executions of the same or different cases.

- Regarding *reliability*, following activities were performed to avoid reliability problems and to ensure that other researchers can perform the same study following the methodology. A case study protocol defined by Yin (2013) was followed, where the objectives, corresponding research questions, plan, and sources of the evidence of the case study are identified, and the assessment method is defined in Gov-PCDM in detail. In addition, the replication material of the case study was developed. It was observed that following this material results in similar findings and conclusions.

## Conclusion

Although the concept of process improvement models is not new, the application of process improvement models to the public sector, and specifically PPMP, has not been extensively studied. To fill this gap, a structured model of Gov-PCDM and its specialization for PPMP are developed and applied in three public organizations, in this study.

To provide PPMP improvement, SPICE, one of the well-accepted Process Capability Maturity Models is taken as the baseline. Accordingly, the process definition of PPMP is constructed based on the requirements stated in SPICE (ISO, 2003). Thus, the PPMP capability level can be assessed based on SPICE owing to this developed process definition. The method for developing the PPMP definition and for conducting process assessment is described, followed by a multiple case study in three organizations, which is performed to check the applicability of this approach.

The results of the multiple case study highlight that the proposed approach is successful at identifying PPMP improvement opportunities at different process capability levels and is capable of providing a roadmap for moving the process capability level to the next step. The interview results show that PPMP participants think that obtaining a roadmap for increasing process capability is useful, and all of the suggestions indicated in the roadmap will improve the process performance of PPMP. They also report the main benefits of the assessment as realizing the need for measuring PPMP capability level in their specific environment. They have decided to use the results of the assessment for planning and executing improvements on their process.

Overall, the proposed approach provides a baseline for initiating and maintaining a continuous process improvement cycle for PPMP in government organizations. It enables each government institution to evaluate its PPMP in detail, which in turn helps identify the current state of its PPMP capability as well as generate a feasible improvement roadmap for moving to the next process capability level. With this, the institution can also be benchmarked against its peers that are evaluated by using the same approach.

To address our research questions stated in the introduction, the execution of the process capability assessment of PPMP and achieving process improvement roadmap are shown in the study and they can be benchmarked with each other because of the application of a standardized approach.

A limitation of the study is that the number of case studies limits the generalizability. Additional case studies in different agencies and countries are required to be performed to be able to generalize the results.

Future studies include developing a tool for providing self-assessment of PPMP by process owners. Thus, an employee working in the personnel management department can assess the process to observe the weaknesses and to improve their PPMP without any help. In addition, the application of the framework in the context of other governmental processes as well as nongovernment, public organizations is planned. In its current form the proposed approach is generic and therefore will not require any major modifications for such cases. The findings from these case studies will show if the model is applicable in the wider public sector context. The objective is to obtain, from a representative collection of case studies, the feedback necessary for further evaluation, refinement, and validation of this methodology. Macro-level changes such as global economic shift to Southeast Asia and aging society can affect the personnel management strategies of public agencies. The proposed approach is planned to be continually revised and improved to reflect changing agency objectives and managing process improvement of PPMP.

## Appendix

### Public Personnel Management Process Definition

The final version of the developed PPMP definition is given as follows:

Process name: Public Personnel Management Process (PPMP)
Process purpose: The purpose of the PPMP is to provide the organization with individuals who possess the skills and knowledge to perform their roles, motivate through clear career paths, and to work together as a cohesive group.
Process outcomes: As a result of successful implementation of the PPMP:
1. Committed work is matched to human resources, and individuals are recruited, and employees with the right skills and competencies selected, and transitioned into assignments.

2. HCM planning, policies, and strategies are developed to ensure governmental organizations are able to recruit, select, develop, train, and manage workforce in accordance with merit system principles.
3. Objectives related to committed work are defined against which performance can be measured. Feedback regarding performance against these objectives is provided to continuously enhance performance to ensure agency employees are demonstrating competencies required of their work assignments.
4. Individuals are compensated and rewarded based on their contribution and value to the organization.
5. Individual and group workforce activities and information are coordinated.
6. A comprehensive employee development approach is designed, developed, implemented, or enhanced to ensure that agency employees have the right competencies and skills for current and future work assignments.
7. Knowledge is readily available and shared for interaction.
8. The employee separation program is conducted to assist employees in transitioning to nongovernment employment and facilitates the removal of unproductive, without retirement.

*BPs. BP1: Create and manage human resources (HR) planning, policies, and strategies:* Develop a strategy for public personnel management, including how needed skills and competencies will be identified, developed, or acquired, personnel performance evaluated, career development established, and personnel are motivated and matched to current and future business needs, at both the organizational and unit levels.

Subfunctions of the practice are as follows:

B.P.1.1 Develop human resources strategy
B.P.1.2 Develop and implement human resource plans
B.P.1.3 Monitor and update plans

*BP2: Manage, Reward, and Recognition:* Provide to recognize and reward high performance, with both base pay increases and performance bonus payments.

*BP3: Manage Employee Performance:* Design, develop, and implement a comprehensive performance management strategy that enables managers to make distinctions in performance and links individual performance to agency goal and mission accomplishment. Define objective criteria that can be used to evaluate candidates and assess staff performance.

B.P.3.1 Define performance objectives
B.P.3.2 Develop performance management approaches/feedback
B.P.3.3 Review, appraise, and manage employee performance
B.P.3.4 Evaluate and review performance program
B.P.3.5 Manage team performance

*BP4: Recruit, Source, and Select Qualified Staff:* Establish a systematic program for recruitment and selection of high-quality, productive employees with the right skills and competencies of staff competent to meet the needs of the organization.

B.P.4.1 Create and develop employee requisitions
B.P.4.2 Recruit/source candidates
B.P.4.3 Screen and select candidates
B.P.4.4 Manage verification
B.P.4.5 Manage new hire/rehire
B.P.4.6 Track candidates

*BP5: Develop and Train Employees:* Design, develop, and implement a comprehensive employee development approach to ensure that agency employees have the right competencies and skills for current and future work assignments.

B.P.5.1. Manage employee development
B.P.5.2 Develop and manage training programs
B.P.5.3 Develop and manage employee orientation programs
B.P.5.4 Manage employee relations
B.P.5.4 Develop functional/process competencies
B.P.5.5 Develop management/leadership competencies
B.P.5.6 Develop team competencies
B.P.5.7 Evaluate the overall effectiveness of the agency's employee development approach.

*BP6: Support Staff Interaction and Collaboration:* Support personnel interaction and collaboration to enable staff to work together as a cohesive group.

*BP7: Empower Teams:* Empower teams to perform their job, by ensuring that they have

- an understanding of their job;
- a shared vision or sense of common interest;
- appropriate mechanisms or facilities for communication; and
- support from management for what they are trying to accomplish.

*BP8: Evaluate staff performance:* Evaluate the performance of the personnel with respect to their contributions toward the goals of the organization as a whole. Ensure feedback is discussed with the staff.

*BP9: Provide Feedback on Performance:* Ensure feedback is provided, at least annually, to the personnel through formal personnel evaluations on the results of their performance.

*BP10: Motivate Personnel:* Provide adequate remuneration and benefits to personnel in accordance with their individual contributions and value produced for the organization.

B.P.10.1. Manage employee satisfaction
B.P.10.2. Deliver programs to support work–life balance for employees
B.P.10.3. Develop family support systems
B.P.10.4. Ensure employee involvement
B.P.10.5. Manage internal communications
B.P.10.6. Manage and administer employee benefits
B.P.10.7. Manage workplace health and safety

*BP11: Maintain Staff Information:* Maintain adequate records of personnel, including personnel details, information on skills, training completed, and on performance evaluations.

B.P.11.1. Manage employee information
B.P.11.2. Manage employee communication

*BP12: Manage redeployment and retirement of employees:* Provides conducting efficient and effective employee separation programs that assist employees in transitioning to nongovernment employment; facilitates the removal of unproductive, nonperforming employees; and assists employees in transitioning to retirement.

*Work Products:* Work products of the PPMP are listed in Table A1. They are classified as inputs and outputs. For example, as a result of achieving Outcome 1, personnel management (PM) plan is produced as an output. The same document is used as an input to for achieving Outcome 2.

**Table A1.** Work Products of PPMP.

| Inputs | Outputs |
| --- | --- |
| PM plan (Outcome 1) | PM plan (Outcome 2) |
|  | PM policies (Outcome 2) |
|  | PM strategies (Outcome 2) |
| PM needs analysis (Outcome 1) | PM needs analysis (Outcome 2) |
| National privacy laws (Outcome 1) |  |
| Personnel record (Outcome 1) | Personnel record (Outcomes 4, 5, 7) |
|  | Personnel performance criteria (Outcome 3) |
|  | Organization, project, individual training needs (Outcomes 1, 5, 6) |
|  | Personnel performance evaluation (Outcomes 2, 7) |
|  | Personnel performance review record (Outcome 7) |
| Training record (Outcomes 3, 5, 6) | Training record (Outcomes 3, 5, 6, 7) |

*Note.* PPMP = Public Personnel Management Process; PM = personnel management.

**Table A2.** Abbreviations.

| Abbreviation | Definition |
| --- | --- |
| CMMI | *Capability Maturity Model Integration:* a process level improvement training and appraisal program. |
| F.A. | *Fully Achieved:* There is evidence of a complete and systematic approach to, and full achievement of, the defined process attribute in the assessed process. |
| Gov-PCDM | *Government Process Capability Determination Model:* a model developed for governmental business process capability determination based on ISO15504. |
| ISO/IEC15504 SPICE | Also termed Software Process Improvement and Capability Determination, is a set of technical standards documents for the computer software development process and related business management functions |
| L.A. | *Largely Achieved:* There is evidence of a systematic approach to, and significant achievement of, the defined process attribute in the assessed process. |
| N.A. | *Not Achieved:* There is little or no evidence of achievement of the defined process attribute in the assessed process. |
| P.A. | *Partially Achieved:* There is some evidence of an approach to, and some achievement of, the defined process attribute in the assessed process. |
| PA | *Process Attribute:* a measureable property of process capability |
| PPMP | Public Personnel Management Process |
| TQM | Total Quality Management |

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## Declaration of Conflicting Interests

## Funding

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