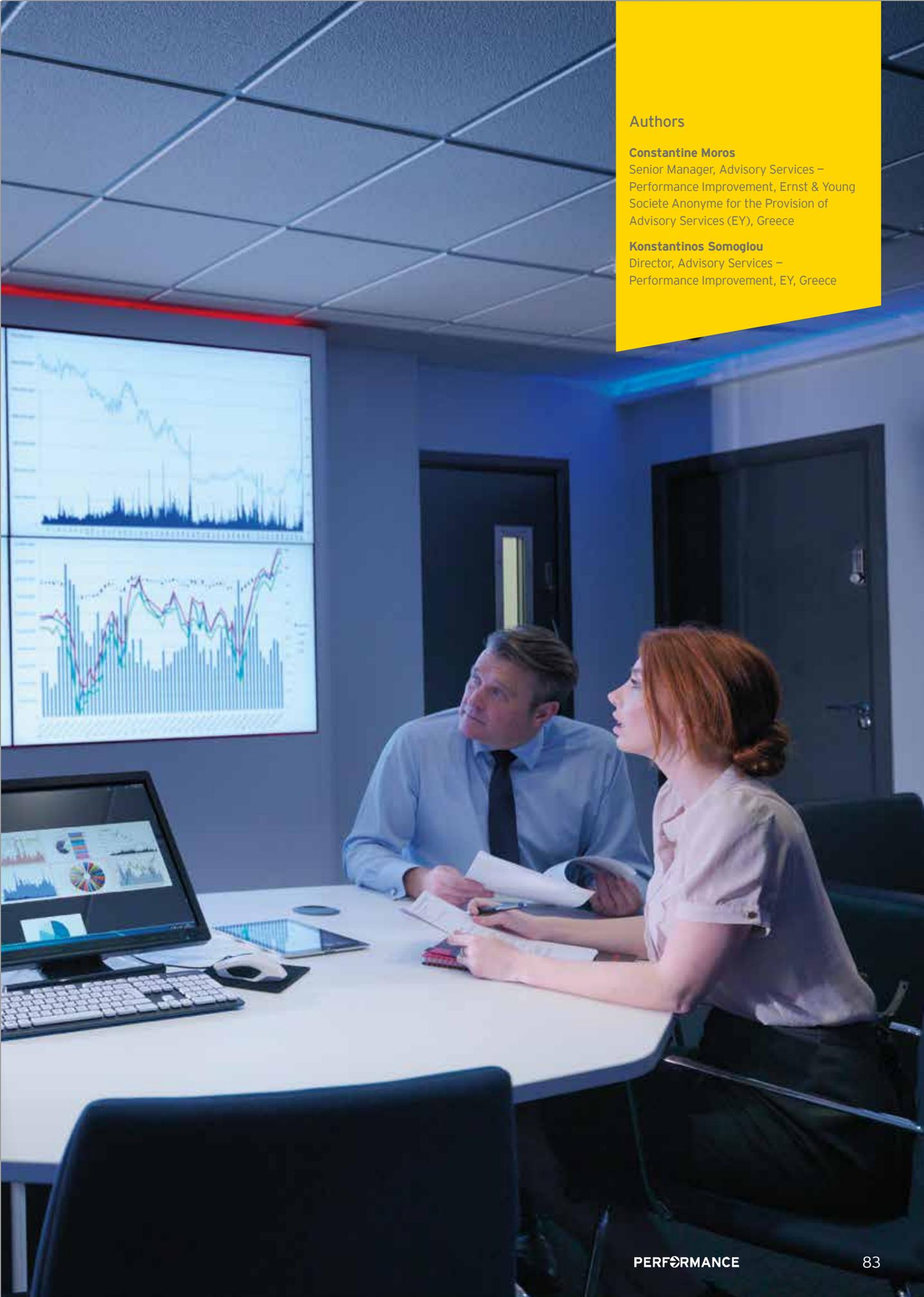


Improving personnel management in an era of IT transformation

Managing personnel, one of the most critical resources for organizations operating within service industries, is undoubtedly becoming more challenging and complicated as technological advancements are accelerating and subsequently competition is growing. We provide a conceptual framework and methodology for measuring, assessing and planning personnel capacity utilization (PCU) in a more accurate and dynamic way, where operational research, data analytics and relevant IT transformation opportunities are exploited with the end target of optimizing personnel productivity and efficiency levels.



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The managerial challenge of monitoring, assessing and planning an organization's available human capital resource in the most accurate and efficient way has always been one of the most critical. The pressure comes from having to meet production or service delivery targets according to predefined time frames, volume-related KPIs and quality levels, and often conflicting responsibilities (between higher-level management and employees, as well as clients and suppliers), especially during periods of macroeconomic recession or sector disturbances.

PCU in service industries: importance and theoretical perspectives

During the late 1970s, manpower or personnel planning assumptions, which had been developed and matured during the 1960s, were criticized extensively. This was because the specific task transformed from a primarily scientific one, in which mathematical models were developed, to a managerial function necessary in day-to-day operations and driven by personnel strategy and policies within the context of an organization's strategic objectives.¹ It is worth remembering that these mathematical models are mainly grouped into two categories:

1. The demand-driven ones that attempt to forecast the future personnel needs, either by examining market requirements or taking a time-series approach

2. The supply-driven ones that are focused on investigating available personnel capacity for predicting the respective flows and expected future production²

From an industry viewpoint, service operations management is a field that gained importance over the last 30 years due to a dramatic shift in GDP contribution from products' manufacturing to front- or back-end services' delivery.³ This wider industry currently represents approximately 68% of global GDP,⁴ driven mostly by industries such as financial services, transportation, insurance, health care, telecommunications, education, leisure, professional services and retailing.^{5, 6} Consequently, maximizing available personnels' utilization (both in terms of service output as well as its respective quality level) and, in parallel, accurately matching forecasted service demand with future personnel capacity is considered to be one of the most imperative targets for establishing and maintaining a competitive advantage within an organization's broader operations strategy implementation efforts.^{7, 8}

From a theoretical perspective, in a typical service delivery system, where multiple, complex and evolving operational functions are required to be performed and managed by companies operating within the aforementioned service industries, the service strategy should define the resource input types and their necessary volume. It should also describe the nature and measurement of defined outcome types (e.g., operational, financial or experience based).⁹ As such, personnel management is considered to be a major input type (together



with processes, facilities, equipment and infrastructure). Personnel capacity planning, on the other hand, defines not only the level of operational or financial performance, but also the degree of agility achieved by an organization (defined as the simultaneous enhancement in service delivery, quality, flexibility and cost¹⁰) that drives its ability to adapt successfully to changing internal or external conditions.

As the pace of technological disruption is accelerating, the level of a company's IT transformation is considered a major catalyst in moderating the impact of PCU drivers on the actual outcome.



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PCU monitoring and planning is gradually evolving from a typical managerial activity to a strategic action.

Personnel capacity planning predominantly comprises the following sequential steps:

1. Demand forecasting – the predictability of which could vary due to numerous factors¹¹
2. Personnel requirements – determined in terms of skills and volume
3. Shift scheduling – in service sectors and divisions where it applies
4. Job tasks or functions' assignment
5. Personnel assignment – also known as rostering^{12, 13}

Our subject focus and derived project methodology lies within the second step of personnel capacity planning, specifically on how to accurately measure and efficiently manage PCU. This concept can be defined in two ways, either on an aggregated level as the ratio of actual service output to total available personnel capacity potential output within a certain time frame,^{14, 15} or on an individual level as the actual amount of an employee's time consumed (as a major input resource) in generating a specific volume of service output (measured in service volume delivered per task or function assigned) divided by the total available working time, usually within a day, week or month.¹⁶

PCU: major drivers and impact areas

On a macro level, PCU is defined based on each industry's or sector's specific conditions, particularities (e.g., retail banking versus utilities providers versus professional services¹⁷) and boundaries

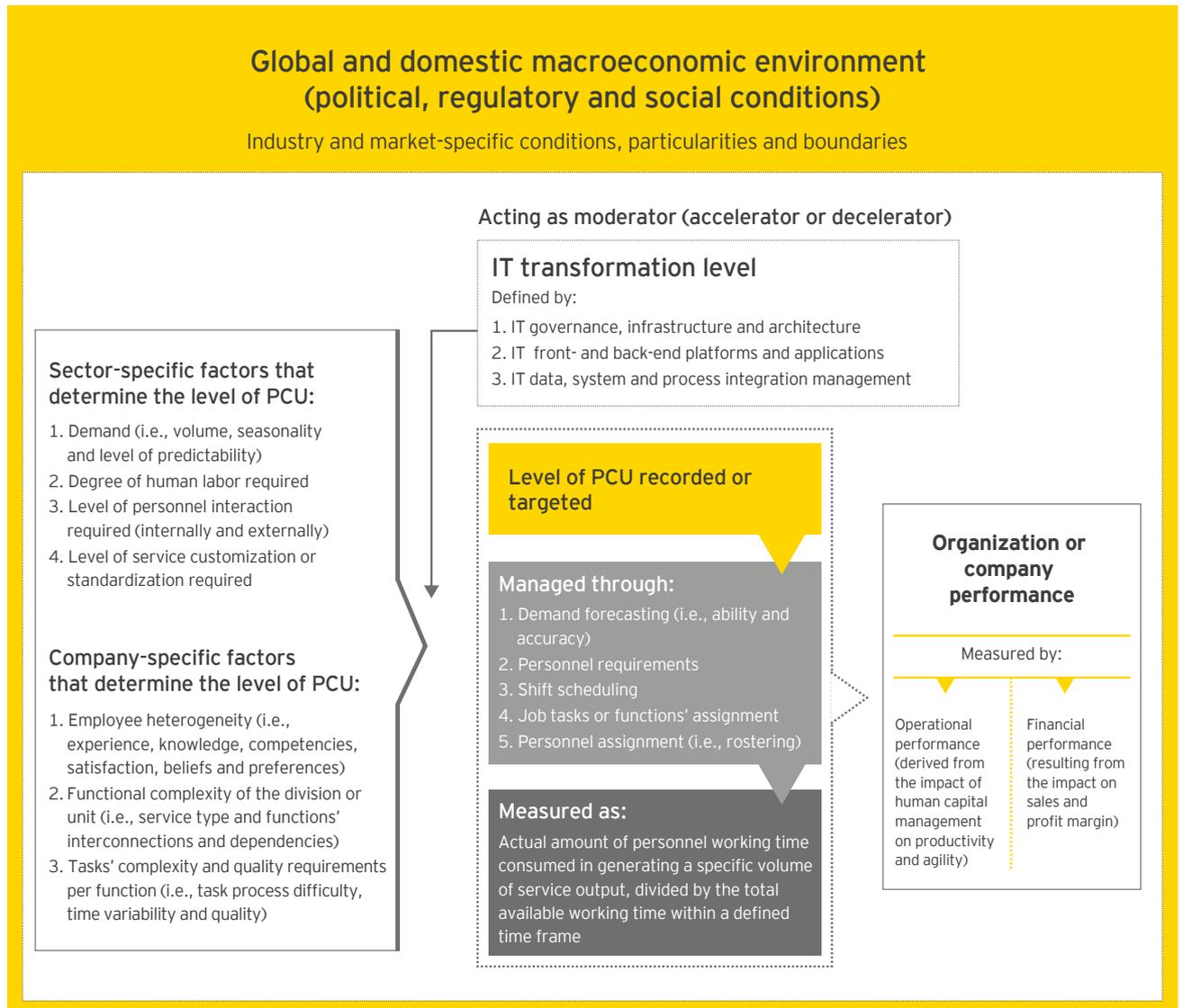
(e.g., demand and supply of retail salespeople versus software programmers). However, there are also a number of other important factors that need to be taken into consideration, such as:

- ▶ Demand in terms of volume, seasonality and predictability level^{18, 19}
- ▶ Degree of human labor intensity
- ▶ Level of personnel interaction (internally among divisions and employees, and externally with clients, suppliers and other stakeholders)
- ▶ Degree of service customization or standardization²⁰

On a micro level, the major drivers of a company's PCU are characterized by the following:

- ▶ Employee heterogeneity,²¹ in terms of individual experience, knowledge and competencies, as well as satisfaction, beliefs and preferences^{22, 23}
- ▶ Functional complexity of the divisions or units in relation to the nature of the service provided (e.g., front end versus back end) as well as the interconnections and dependencies of the assigned set of functions
- ▶ The tasks' complexity and quality requirements per function²⁴ in terms of the process difficulty and time variability in completing one service unit per each task, as well as the volume of service units completed for each task, within the acceptable quality parameters, the available personnel and the specified time frame²⁵

Figure 1. Conceptual PCU landscape: drivers and outcomes



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Depending on their significance for each sector, division and set of functions, as well as tasks, these drivers, as Figure 1 highlights, have a direct impact on PCU levels. They also have an indirect effect on an organization's operational efficiency and financial performance, mainly translated in human capital productivity and corporate agility and, subsequently, sales^{26, 27} and profit margin^{28, 29, 30} improvement or deterioration. In an era of accelerated IT transformation, where the opportunities generated by the emerging themes of digitization, process automation and big data exploitation are on every COO's to-do list (and increasingly on every CEO's agenda), the subject of optimizing personnel management becomes even more crucial. Especially as all types of technological advancements, each with a different degree of impact, act as primary moderators to the way PCU is managed, measured and improved.

The moderating factor of IT transformation

The core of an organization's IT strategy is typically focused on analysis and decision-making related to IT principles, systems and services, as well as IT governance, operating model, capabilities and sourcing. These type of decisions outline the IT transformation journey of any company, which is usually translated to changes in IT architecture, infrastructure, platforms and applications, as well as data and process management enhancement.³¹ As the pace of technological disruption is accelerating (e.g., digital technologies, cloud and mobile

computing, robotics process automation and data analytics), the level of a company's IT transformation is currently considered a major catalyst in moderating the impact of the primary sector- and company-specific PCU drivers on the actual PCU outcome. For example, imagine a corporate scenario where a back-end IT platform automatically collects the volume of service tasks' output, provides more accurate and dynamic calculations of PCU levels across divisions, roles, functions and time frames, and delivers (over a front-end IT reporting application) a more robust personnel monitoring and planning method and tool for senior executives. In this example, not only has personnel productivity improved but, more importantly, areas and processes for further potential performance advancement through IT could be identified and investigated dynamically.

In a recent global EY survey³² that focused on digital transformation, 74% of executives responded that IT transformation, such as that described in the previous paragraph, could have a substantial impact on how they conduct business operations and processes. Moreover, 90% of the respondents' companies are facing increased competition in various areas of their value chain from companies that have embraced digital transformation. As a result of this IT transformation landscape, both in terms of perceived importance as well as impact, PCU monitoring and planning is gradually evolving from a typical managerial activity to a strategic action: one that could not only utilize any relevant technological advancements, but

may also become a valuable source of insights generated by PCU data analytics. As Elias Vyzas, Partner, EY, Greece and Head of CSE Center of Excellence for Data and Analytics, points out: "PCU management transformation should be focusing on service standardization and automation optimization through IT, with an end target of employing relevant data and predictive analytics to generate insights and implement PCU adjustments based on them."

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Elias Vyzas

Head of CSE Center of Excellence for Data and Analytics, EY, Greece

Proposed PCU project framework, methodology and assessment

Our methodology, which has been successfully implemented in a series of projects across a range of sectors (such as banking), takes into consideration the increasingly important moderating element of IT transformation and combines operational research with automation level mapping and, subsequently, data and predictive analytics. The framework for initiating and managing such a project is based on a bottom-up approach in the sense that it is focused on each job role and its association with specific job functions, tasks and the respective available working time consumed per service output generated and per defined time frame. It then aggregates this analysis and assessment into a divisional, departmental or even organizational level. Furthermore, our engagement management approach is defined by the methodology shown in Figure 2, which includes five subsequent phases, each of which has specific objectives with explicit decisions to be made and respective analysis to be conducted before moving to the next phase.

Mapping and validation phases

During the mapping and validation phases, in addition to defining the project's scope and focus in terms of the organization's examined divisions, units and functions, their strategic importance should also be identified in terms of their value chain contribution, current operating efficiency status and future operational excellence targets. Consequently, the examination

should be extended to the organizational structure and the respective personnel head count, categorized by hierarchy levels, job role types and capability categories. These can be driven by a fit-for-purpose definition per job role type that defines the typical profile requirements and expectations per each job role.

Following this, the organization's IT landscape should be mapped and examined, mainly in terms of back- and front-end infrastructure (i.e., systems, applications, data and processes) as well as the derived degree of IT maturity along with the perceived current automation level (i.e., in terms of job functions, tasks, processes) and the strategic IT targets.

At this point, by using EY's PCU assessment tool, we can support the organization define and validate the number of examined job functions. This can also assist in providing very accurate short descriptions for each job function that can then be mapped to respective job roles per division and unit. Following this, there are certain other major parameters that have to be recorded (with the use of the assessment tool) in order to reach a customized outcome. These include standard personnel working time, overtime, regular leave and long-term absence definitions, as well as the classification of each job function to specific service or product types, operational risk degree and frequency (e.g., recurring, periodical versus nonrecurring and exceptional job functions). Once all the steps have been completed, the estimation of total and available personnel capacity per division, unit, job role and time frame can be finalized.

Analysis, assessment and enhancement phases

During these phases, the project team should categorize all the examined job functions according to two major metric types: service output volume or full time equivalent (FTE). In our experience, measuring job functions using the service output volume metric provides many advantages in terms of PCU assessment objectivity and accuracy. However, using the FTE metric for a significant portion of examined job functions is unavoidable as, in most organizations, there are many job functions for which service output is not or cannot be recorded on a purely quantitative basis.

In parallel with the service output recorded per job function, other essential attributes are also verified, such as:

- ▶ Estimated range of service time per unit of output
- ▶ Average service time, its volatility and the rework effort per job function, as well as time period examined
- ▶ Degree of each job function's process automation provided through the current IT landscape
- ▶ Estimated level of service demand coverage, which is also affected by any available and relevant service demand backlog information

Once PCU levels per job function, role, unit and division are estimated, an identification and examination of any outliers (that seem to be incorrect or abnormal) is applied in order to establish the reasons behind those and suggest adjustments for finalizing

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Figure 2. PCU project methodology



them in any aggregation level. Having done this, the PCU results should be mapped across the four quadrants of the PCU Assessment Matrix. As Figure 3 indicates, each job function category, job role type, unit or division is positioned in the matrix according to the following:

- ▶ Standardized PCU level (denoted by the size of the bubble in percentage form)
- ▶ Average service time range (e.g., in absolute terms on a minute range)
- ▶ Level of recorded process automation, supported by the current IT landscape (i.e., systems, platform, front and back-end applications, etc.) and driven by any IT transformation efforts

It is worth noting that, according to the matrix's conceptual design (which is supported by relevant academic research regarding process variation sources and reduction,^{33, 34} process management exploration and exploitation³⁵ and business process redesign),³⁶ a higher level of average service time range per unit of service output indicates a higher potential for standardization and operational efficiency benefits. Moreover, a lower level of process automation indicates a higher potential net benefit, derived by further utilizing available technological advancements on all operational

components of an organization's value chain in order to increase any automation-driven performance improvements.

Depending on the number and importance of the examined job function categories, job role types, units or divisions positioned on each of the four quadrants (A-D), the organization should prioritize its assessment process. Having done this, for each prioritized quadrant being examined, management should consider potential performance improvement initiatives driven by IT transformation, by following the main principle specified by each quadrant. For example, for divisions positioned in quadrant A, the company should consider improving the position of the job role types, units or divisions in the matrix by implementing a set of specific process automation, standardization and efficiency activities. These should result in a higher level of process automation and a lower level of average service time range. Divisions that are positioned in quadrant D and, theoretically speaking, have achieved a relatively higher level of process automation and lower level of average service time range should consider the sustainability of their position, depending on a periodical cost-benefit analysis and the respective evolving net benefit status.

The focus should be on developing a customized PCU planning model, rooted in predictive analytics, integrated into IT platforms, and included in the regular personnel management and planning decisions.

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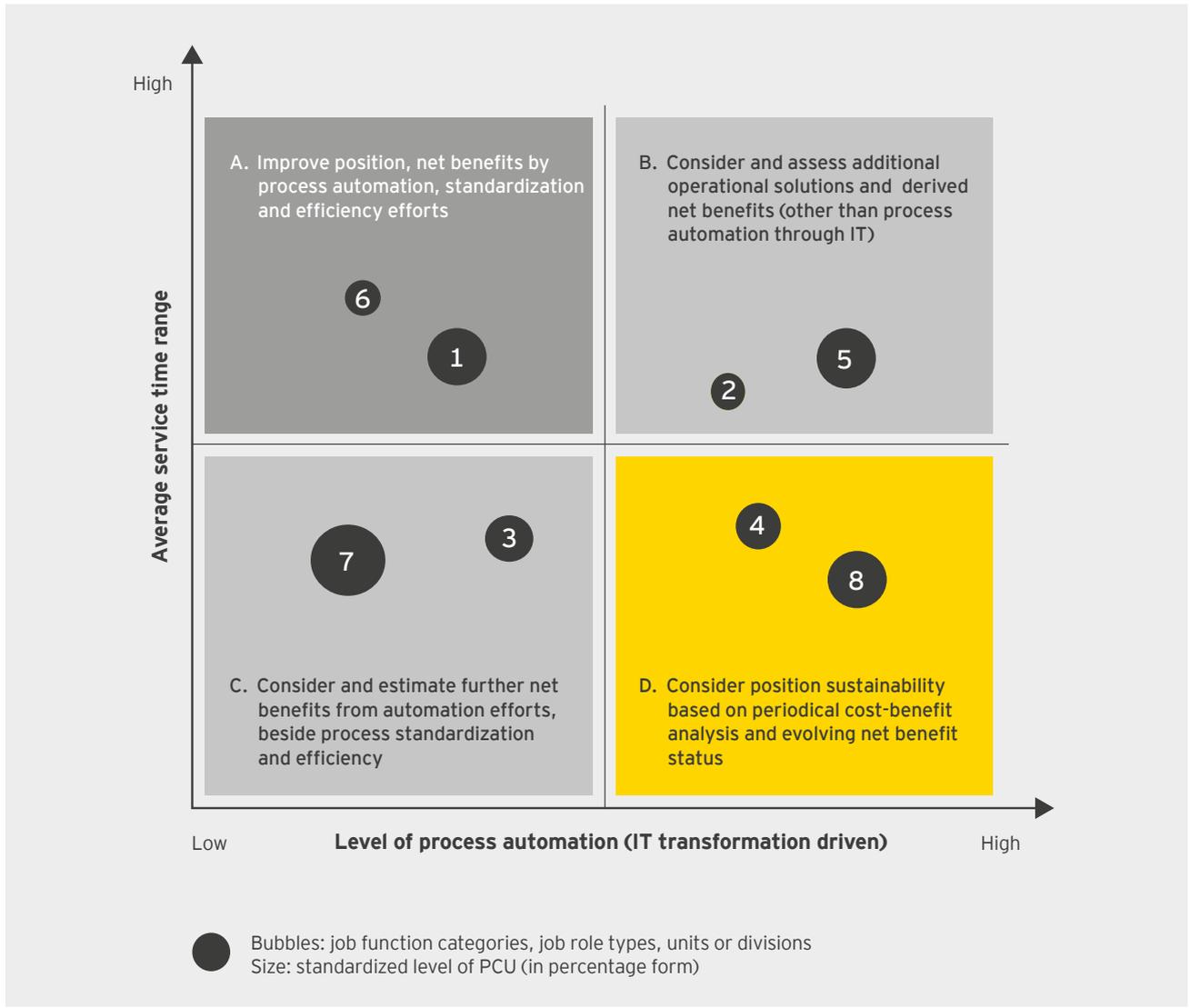
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Figure 3. PCU Assessment Matrix





The long-term benefit with potentially the highest positive impact is the radical change in the way in which the organization perceives and manages its personnel in an era of IT transformation.

As indicated by the methodology, once the assessment of improvement areas and initiatives is completed, by utilizing data analytics, scenarios should be run in order to quantify the potential for enhancement of personnel productivity and optimization of PCU management. Often though, such improvements are typically once-offs due to the static (most probably historic) nature of such an analysis. For this reason, a company should be conducting a dynamic PCU assessment analysis. The focus should be on developing a customized PCU planning model that could be rooted in predictive analytics, integrated into the most appropriate back- and front-end IT platforms, updated frequently, and then included in the regular personnel management and planning decisions per business case through training and communication.

Potential benefits from enhancing PCU management

The experience that we've gained, having completed a significant number of PCU enhancement projects, leads

us to a number of observations. Firstly, organizations with a culture that supports and promotes the notion that human capital is the most valuable resource tend to initiate projects not just to optimize their PCU and subsequently the productivity and efficiency of the services provided, but also because they realize that personnel management and planning enhancement is a critical component to new service development, either through radical or incremental service design innovation.³⁷

Moreover, it is worth keeping in mind the major recorded qualitative benefits of enhanced PCU:

- ▶ More accurate and dynamic monitoring of personnel allocation and utilization across all divisions through a single, standardized methodological approach
- ▶ Dynamic identification and management of PCU inefficiencies across job function categories, job role types, units and divisions
- ▶ The practical link generated between PCU, IT transformation initiatives and operational strategic targets

Quantitatively speaking, the personnel productivity gains from such a project could range between 3% to 11% of personnel capacity that could be relocated or reutilized in higher value-added service operations across an organization's value chain investments and activities. Most importantly, though, the benefit that could be sustained in the long term, and potentially has the highest positive impact, is the radical change in the way in which an organization perceives and manages its personnel in an era of necessary IT transformation acceleration. ■

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