COMPUTER SIMULATION OF ADMINISTRATIVE PROCESSES FOR RESOURCE PLANNING AND RISK MANAGEMENT

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ABSTRACT

A variety of challenges are inherent to the provision and management of administrative services in a federal agency, including the Office of Research Services (ORS) at the National Institutes of Health (NIH). Many administrative functions are both regulatory and policy driven, and requirements are constantly changing. As the NIH research mission requirements change and evolve, the demand and nature of administrative support evolves as well. Resources need to be planned for and the proper tools are required to be in place in this dynamic environment in order to achieve success in providing the required administrative services, in a timely manner, with quality outcomes. The output of these processes in most, if not all, cases is 'intangible' and process visibility is limited. Computer simulation techniques will be utilized to develop a more in-depth understanding of these administrative functions, develop recommendations for improved resource allocation, productivity and quality improvement, and enhance communication and visibility of these processes among customers and stakeholders.

1 INTRODUCTION

An administrative function (AF) within the ORS supports the NIH mission by providing administrative services to all components of the ORS and Office of Research Facilities (ORF) in support of the NIH research mission. This AF advises customers on matters relating to general administration, which includes human resources, budget, travel, acquisitions, property, training, timekeeping, and issuance of staff ID badges, among others. The AF serves as a "centralized" resource for a variety of diverse program functions in ORS, such as the NIH police, veterinary resources, scientific equipment provision and repair, laboratory safety management, and many others. This centralized function is structured in teams of different sizes, specialties, and skills. Many aspects of administrative functions must be performed in a consistent manner according to policy/regulation, while meeting individual program needs.

2 OBJECTIVES

The goal of this project is to develop recommendations for the design of a high performing administrative system with high customer service satisfaction. The computer simulation will be utilized to model and test scenarios of administrative team composition based on different capacity, workforce capability, and

productivity combinations to address administrative demand of various organizations in ORS and ORF. These efforts will help improve the balance between customer service demand and availability of limited resources among ORS and ORF organizations.

The simulation will also be used to help identify bottlenecks and other pain points in the process to aid in the development of improvement and awareness of the right metrics to gauge the extent to which improvement has taken place.

3 METHODOLOGY

Focus groups representing all administrative functions and program staff were held to assess the extent to which customers were satisfied with current services, identify problems impacting program staff, and constraints affecting service providers. These focus groups surfaced an opportunity to standardize all processes to reduce uncertainty and achieve an improved level of predictability. Teams composed of service providers and users were formed to develop process maps (i.e., deployment flowcharts) for seventeen administrative processes. Useful metrics were selected and parameters estimated by engaging functional experts and customer representatives.

Input metrics such as service demand (e.g., recruitment actions, travel requests, property transactions), total service cycle time, and cycle time for the various steps in the process will be collected or obtained from existing data sources when available. Data variability will also be collected and utilized in scenario testing to assess the impact of variation in demand and uncertain cycle time. Processes will be modeled using various queueing disciplines and workload demand combinations.

Experimentation will be conducted to assess the impact of differing levels of staff resources, specialties, and skill levels in administrative teams to accommodate the various distributions of service needs among the different customer organizations. Results will be provided that will enable the assessment of different resource allocation levels to meet demand under different scenarios.

While working on the modeling and simulation, the Office of Quality Management will work with the functional organizations to collect observational (e.g., cycle time for critical path process steps) or historical data (e.g., service demand) when available and appropriate. These data will be used to validate results of the modeling and simulation effort, and to decide whether implementation efforts are timely.

4 CONCLUSION AND NEXT STEPS

As a result of this project, administrative tasks will be based on customer demand, available resources, and specific but varied levels of service needs of the different customer organizations. For example, travel needs may be greater in an organization with low employee turnover, while another organization may have low travel needs, high turnover, and local training needs. As a result of running scenarios using historical data, better alignment of workload with resources can be achieved throughout the business cycle.

REFERENCES

WSC BoD (Winter Simulation Conference Board of Directors) 2016. "Winter Simulation Conference." Accessed January 17, 2016. http://www.wintersim.org.