A summary of the motivation, contribution, and results of

Optimal Configuration of a Service Delivery Network: An Application to a Financial Services Provider

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This paper is motivated by a problem facing a Fortune 500 financial service firm that was examining its service delivery network for opportunities to extract greater profits. The company's wide array of service products are delivered through a network of geographically-dispersed, third-party, inbound call centers that vary in service and revenue-generation capabilities, and costs. Optimally configuring a service network in this context requires managers to balance competing considerations of costs (including applicable discounts) and anticipated revenues, while determining which service partners to select and what type and volume of calls to assign to each chosen vendor. Given the large scale of call center operations in financial service firms, the service network configuration problem is important and economically significant.

Stemming from recent outsourcing trends in the financial service industry, the service network configuration problem is new and has not been addressed in the academic literature. This paper develops a systematic approach to model and solve this problem. Our novel approach integrates decision problems (vendor selection, call distribution, staffing, and scheduling) that were previously addressed individually (in a hierarchical manner). Moreover, by synthesizing results from analytical queuing models and embedding them in the framework of a mathematical programming model, our modeling approach captures the problem's complex considerations in a tractable model that is conducive for practical application. Additionally, our model is robust and can accommodate several variants and extensions that arise from practical considerations.

We implemented our model and used it to configure the service network of our industry partner. Results at the large financial services firm showed that our model can significantly enhance profits. In addition, by applying data from randomly-generated instances to our model, we demonstrate that our approach (i) is robust to changes in a variety of problem parameters, and (ii) consistently outperforms two heuristic rules for vendor selection and call assignment.