

REVENUE MANAGEMENT USING ROBUST OPTIMIZATION TO SET TRANSPORTATION RATES FOR USTRANSCOM

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ABSTRACT

United States Transportation Command (USTRANSCOM) acts as a third party logistics provider for the Department of Defense (DoD). As such, they provide a myriad of cargo shipment options to include but not limited to air freight, door-to-door, port-to-port and rail car. Under a government program known as the Transportation Working Capital Fund (TWCF), USTRANSCOM is allowed to operate as a non-profit business and charge customers to recover their operating expenses. Each year USTRANSCOM must set rates for each of its cargo shipment options. These rates are set for origin-destination pairs by commodity type and mode of transportation. The rates have to be set 2 years in advance so that DoD organizations can plan for their budgetary needs through the normal DoD planning, programming, budgeting and execution process and are therefore based on a forecast of future demand on a given route and future rates they will be charged by commercial carriers with whom they contract. The goal of this research is to test several techniques to set rates that are robust to differences between forecasted and actual demand as well as forecasted and actual commercial carrier costs. These techniques include Stochastic Programming, Stability Radius, Info-gap Decision Theory, Goal Programming and Robust Optimization.