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http://hdl.handle.net/10945/51543
Supply Chain Decisions in Governmental Organizations

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In 2014, we issued a Call for Papers (CfP) for a Focused Issue on *Supply Chain Decisions in Governmental Organizations*. We motivated the CfP with the following statement:

“National and local governments worldwide have been under increasing pressure to do more with less. Increasing debt and slow growth has put pressure on governmental organizations to become efficient; an effort—we could argue—best achieved with the appropriate use of sound operations management and decision sciences methods.”

“Governmental organizations differ from non-governmental organizations in many ways that affect their decision-making process. Practical objectives (e.g., building and maintaining public infrastructure, operating and maintaining military or law enforcement organizations, planning and developing qualified personnel) are colored by annual budgets, political objectives, and cultural priorities.”

We received several contributions that addressed different kinds of supply chain decisions in government organizations in both military and civilian environments, and selected three excellent articles that are featured in this issue.

MANAGING A SELF-SUSTAINING SUPPLY CHAIN

Apte, Khawam, Regnier and Simon (2017) discuss the challenge of maintaining a self-sustaining supply chain during a disaster response operation. A self-sustaining supply chain is characterized by the partial consumption of the supplies that it carries to the final user. It is a particularly relevant concern in military logistics and in disaster response operations when the delivery location lacks logistics infrastructure to support the logisticians who are bringing the supplies to its destination. For this reason, a substantial amount of the resources that enter in the self-sustaining supply chain are consumed within the supply chain, and only a fraction of the supplied resources arrive at the destination.
Assuming a humanitarian logistics environment, the authors investigate how self-sustainment affects the cost of operating a self-sustaining response supply chain. The analytical model considers several parameters, including demand, round-trip distance, resource consumption per unit distance, total capacity per trip, among others. The authors identify a multiplier effect associated with these variables. It indicates how much of the resources must enter the supply chain for 1 unit of demand to be satisfied. Conceivably, if resource consumption per unit distance is too high, relative to the capacity per trip or to the round-trip distance, then all resources are consumed by the supply chain, and it is not possible to meet demand at the destination. This suggests that, in disaster-prone areas, public administrators must take the right precautions to enable self-sustainable response supply chains that are nimble and can operate using limited resources.

CUSTOMER PREFERENCES IN A METROPOLITAN PUBLIC TRANSPORTATION NETWORK

Scott, George and Prybutok (2017) survey factors that impact public acceptance in a mass transit system. Other things being equal, environmental footprint increases with population growth and with economic development. Finding ways to increase the use of public transportation is a valuable public policy that can mitigate the environmental impact of population growth. In this pursuit, the authors select four independent variables that could affect a working professional’s decision to choose different modes of public transportation: Perceived Public Transportation Security, Knowledge (about the transportation alternatives), Price, and Convenience.

The survey was conducted with working professionals in a metropolitan area that has a variety of transportation options, so it was important to understand how commuters made their traveling choices. The study provides a foundation for the public administration decision maker to prioritize future investments in public transportation according to the public’s preference.

Although different authors have discussed the importance of perceived security, prior analyses haven’t always considered the perception of security, but a data-driven measurement of personal risk. Considering that individuals make their decision based on risk perception and not risk measurement, this study makes a significant contribution by collecting safety perception data from commuters. An important insight is that different factors affect the commuters’ attitude towards public transportation. It is not just knowledge of the alternatives, or personal safety, or price, or convenience that drive a commuter’s attitude towards public transportation and, consequently, her decision-making process. It is all of them. Therefore, public administrators must consider all these factors when expanding a mass transit system.

DESIGN OF AUCTION PARAMETERS TO REDUCE THE EFFECT OF COLLUSION

Padhi, Wagner and Mohapatra (2017) use a design of experiments approach, associated with a systems dynamic model, to identify parameters that would improve
public procurement auctions to reduce the effect of collusion. Public procurement auctions are often used to select suppliers and award contracts through competitive bidding for government contracts. Auctions help select the lowest bid supplier from a pool of qualified bidders, in a transparent process that allocates public funds efficiently. However, in an environment with repeated auctions, it is not uncommon for price fixing and other corrupt practices that defeat the objectives of the process to occur. It is also possible that the winning bid, if it is too low, would encourage the winner to adopt shoddy quality standards to stretch its profit margin.

The authors analyzed public information about 158 roadwork contracts in the province of Orissa in India, awarded in the period 2001–2008. The information has a large data set including number of bidders, reserve price, winning bid, bid period, date of tender and name of winners. A first-level analysis showed that some irregularity was likely: number of bidders decreased, while winning bid price increased over time of the study. Figure 3 in the article shows a very elaborate causal-loop model that illustrates how different variables affect each other: prequalification score, number of bidders, number of independent contractors, profit margin of contractors, among others. This figure should inspire additional research on public procurement auctions. The authors converted the causal-loop model into a stock-flow model that was used in a simulation with actual parameters developed from the data. The analysis allowed the authors to address the critical question: How can one design auction parameters to minimize the effect of collusion?

The three papers of this issue illustrate the variety of relevant subjects in government supply chains that warrant further investigation by decision scientists.

REFERENCES

