

USING ARTIFICIAL NEURAL NETWORKS FOR TRANSPORT DECISIONS: MANAGERIAL GUIDELINES

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ABSTRACT

One information technology that may be considered by transportation managers, and which is included in the portfolio of technologies that encompass TMS, is artificial neural networks (ANNs). These artificially intelligent computer decision support software provide solutions by finding and recognizing complex patterns in data. ANNs have been used successfully by transportation managers to forecast transportation demand, estimate future transport costs, schedule vehicles and shipments, route vehicles and classify carriers for selection. Artificial neural networks excel in transportation decision environments that are dynamic, complex and unstructured. This article introduces ANNs to transport managers by describing ANN technological capabilities, reporting the current status of transportation neural network applications, presenting ANN applications that offer significant potential for future development and offering managerial guidelines for ANN development.

**THE RELATIONSHIP BETWEEN MEASURES OF OPERATIONS
EFFICIENCY AND FINANCIAL SUCCESS OF TRUCKLOAD MOTOR
CARRIERS: AN EMPIRICAL ANALYSIS**

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ABSTRACT

This research paper examines the statistical relationship between day to day performance and efficiency measures and financial performance in the motor carrier industry. Key findings are that carriers with more miles per tractor per year, a larger average length of haul, more revenue per mile, and more revenue per tractor per week tend to perform better financially as measured in three separate models by operating ratio, return on assets, or return on equity. Unexpectedly, for the eight publicly traded carriers included in the analysis, there was a negative relationship between empty mile percentage and financial performance, indicating that carriers with a higher empty mile percentage have better financial performance. Possible explanations for these counterintuitive results could be due to a focus on better customer service or driver satisfaction causing slight increases in empty miles. Therefore the increased costs resulting from empty miles could be offset by higher revenue or decreased costs in other aspects of the operation. These results suggest that managers should focus not on minimizing empty miles but rather on keeping them within an acceptable range.

**ANALYTICAL TECHNIQUES AND THE
AIR FORCE LOGISTICS READINESS OFFICER**

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ABSTRACT

As the Air Force implements the Expeditionary Combat Support System (ECSS), it is imperative that Air Force logisticians competently analyze logistics data. This exploratory study sought to determine which analytical skills are useful for Logistics Readiness Officers (LROs), as reported by active-duty LROs and their supervisors. The research question was answered through a comprehensive literature review and the use of survey methodology. Analysis of survey responses found that Forecasting, Graphical Statistics and Descriptive Statistics are the analytical techniques valued most. The survey also identified a potential gap between perceived usefulness and competence levels. These findings were similar to what has been found in the civilian sector.

**BENCHMARKING AND EVALUATING THE COMPARATIVE EFFICIENCY
OF URBAN PARATRANSIT SYSTEMS IN THE UNITED STATES: A DATA
ENVELOPMENT ANALYSIS APPROACH**

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ABSTRACT

The Americans with Disabilities Act (ADA) of 1990 encouraged public transit authorities to reassess the way they serve aging populations and physically-handicapped individuals requiring door-to-door services. As the demand for paratransit services rose dramatically the last few years due to a growing number of aging baby-boomers and injured Iraq-Afghanistan War veterans, many public transit authorities have been faced with the dilemma of meeting the growing demand while controlling costs in times of ongoing budget crises. To help public transit authorities better cope with such a dilemma, this paper evaluates the comparative operating efficiency of 75 selected paratransit agencies in the United States using data envelopment analysis (DEA) and then identifies the best-practice paratransit systems. Lagging paratransit agencies can use such systems as benchmark reference points to evaluate their performance against other systems. Finally this paper develops a profile of both efficient and inefficient paratransit agencies to discern a host of factors influencing the operating efficiency of paratransit systems.

TRIP PATTERNS IN AKURE, NIGERIA: A LAND-USE ANALYTICAL APPROACH

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ABSTRACT

Data on trips in land use parcels of Akure, a developing capital city in Nigeria, were collected and analyzed. Distance of each land use area from the central business district (CBD) was found to have played a significant role in trip attraction to it, while residential density was a major determinant of trip generation. Average numbers of daily work trips generated per capita ranged between 0.97 and 2.0, which compares with 0.8 to 2 specified in literature for developing cities. Total daily trips per capita for Akure-Nigeria (2.56) is higher than that of Mumbai-India (1.81), Chennai-India (2.08), and Harare-Zimbabwe(2.19). Availability, convenience, cost and promptness were found to be the major determinants of modal choice in the study area.