# MEASURING THE PERFORMANCE OF A THEORY OF CONSTRAINTS ENHANCED SUPPLY CHAIN: A SIMULATION STUDY

**Researcher: David Hall**

**Thesis Advisor: Dr. Bih-Ru Lea (leabi@mst.edu)**
**Thesis Committee: Dr. Frank Liou** and **Dr. Vincent Yu**
University Of Missouri-Rolla, Rolla, MO 65409

## ABSTRACT

In this report, a project to create a Balanced Scorecard based strategic performance control software prototype for a state department of transportation (DOT), which is automated, using SAP Strategic Enterprise Management (SEM) System and Business Warehouse (BW) is examined. A focused prototype emphasizes the appearance and interpretability of the balanced scorecard data for a Improve Safety strategy of a state Department's of Transportation strategic level performance system with the objective of easy of interpretability by high level state Department of Transportation managers or external parties such as the public, legislature, United States Department of Transportation, Governor, etc. The impact of the prototype on accountability, traceability, timeliness of information, continuous improvement, and data visualization in an attempt to address implementation issues such as is investigated. Accordingly some of the main barriers to implementation are budgetary control/constraints, employee buy-in, data collection, data timeliness, and data manipulation.

In this project report, the conceptual development of strategic performance measurement software prototype for a Department of Transportation using the Balanced Scorecard approach will be discussed. The ultimate goal of the project is to provide a limited prototype to show a proof of concept of integrated and distributed performance measurement software, which links strategy to operational measures to provide accountability and traceability to varying stakeholders. This project shows a Balanced Scorecard approach using SEM/BW provides the required data visualization, data warehouse integration, traceability, accountability, and drilldown capabilities required by a Department of Transportation in a strategic performance measurement system.