Research Update

Trucking Logistics

Profiling Best Practices: A Cross-Center and Cross-Industry Exploratory Analysis of Box Plant Trucking Logistics in the Paper Industry (Joint with Trucking Industry Program, TIP)

Summary

Although trucking logistics operations in the pulp and paper industry can be complicated and costly, the literature contains very little information on the relative costs and benefits of alternative logistics operations, including outsourcing, long term contracts, and private carriage. The industry's logistics planning, primarily involving the scheduling of trucks and labor, appears to be largely accomplished locally and seems to lack the efficient coordination necessary to achieve supply-chain management excellence. This research seeks to identify practices in trucking logistics that box plants might utilize to obtain materials and disburse products more economically.

Transport logistics typically make up 8% - 15% of costs. Improvements in transport logistics generate value through improved customer service. Although these improvements are valued, their value is not known and an objective of the study is to gain insights on the channels through which improvements in trucking logistics impact costs and some idea of the magnitude of these impacts.

Key Questions

- What are the business models that corrugated box plants currently employ to meet their trucking logistics needs?
- How to evaluate existing trucking logistics practices in the corrugated box-plants?
- What are the criteria that reflect best practices in truck transportation logistics operations for materials going to corrugated box plants and finished goods transported via truck to end users?

Value Proposition

Firms in many sectors have achieved significant economies by taking advantage of opportunities made possible by innovation in trucking logistics. Box plants may benefit substantially by incorporating lessons learned from these innovators.

Key Results to Date

This project, now in its beginning phases, integrates the skill and knowledge of researchers in two Sloan Foundation Industry Centers – CPBIS and the Trucking Industry Program – and two university settings – Georgia Tech and the University of Michigan. Focusing on production and shipment of corrugated boxes, the investigators will identify business models that corrugated box plants currently employ to meet their trucking logistics needs; create benchmarks for evaluating existing trucking logistics practices in this segment of the pulp and paper industry; and develop a set of criteria that reflect best practices in truck transportation logistics operations for materials going to corrugated box plants and finished goods transported via truck to end users.

Specific accomplishments to date include:

1. Understanding the characteristics of several commonly used business models.
2. "Game theory" based contracting procedures between logistics service provider(s) and their users from box-plants (and box-users).
3. A list of criteria for evaluating box-plant's trucking logistics practices.
4. A list of survey questions helping us understand box-plant logistics operation details.

Implications for Industry

1. Provided industry with a means of evaluating business models from other industries and assessing their potential lessons for box-plant's logistics operations.
2. Provided box-plant managers with insight into the "theory" supporting the contracting processes of logistics service.
3. Created a list of quantitative (and qualitative) criteria for helping box-plants to evaluate their performance in logistics operations.

Anticipated Results and Implications

1. Industry can continuously monitor the measures created from our "evaluation criteria" to understand the logistics performance and compare them to benchmarks collected from our studies.
2. By compiling the results from the "questions for best practices" answered by "representative" box-plants, paper companies can understand the strengths and weaknesses in their box-plant logistics operations and identify pathways to improve their performance.
3. By comparing company's business models to other models employed by competitors, a paper company can make possible changes to improve their logistics business operations.

Industry Involvement and Impact

Representative corrugated box plants will be identified for an in-depth analysis of their trucking transport logistics. The case studies will entail creation of a detailed profile of the transport logistics operations in each of the selected plants. Information will be obtained through personal meetings and telephone conversations with logistics managers and the collection and analysis of relevant profiling data. Identification of measurable indicators to describe and evaluate the logistics operations environments of box plants will then enable an investigation of factors leading to successful logistics.

Publications and Reports

- Hyoungtae Kim and Jye-Chyi Lu (in the final stage of preparation), "Supply Chain Management under Uncertain Logistics Operations and Contingent Events."
- Chayakrit Charoensiriwath and Jye-Chyi Lu (completed in July 2003), "Bargaining Power in Competition under Retail Price and Manufacturing Service."
- Prasoon Gupta, Sean Lucy, Karen Ellis, Jye-Chyi Lu, Patrick McCarthy and Jeff Liker (June 2003), "A list of Survey Questions for Best Practice Studies"
- Maciek Nowak, Jye-Chyi Lu, Patrick McCarthy and Jeff Liker (2002), Conference Presentation – Profiling Best Practices: A Cross-Center and Cross-Industry Exploratory Analysis of Box-Plant Trucking-Logistics in the Paper Industry, Informs Meetings at San Jose, CA in October, 2002.

For additional information, please contact:

Jye-Chyi Lu, *Industrial and Systems Engineering, Georgia Tech*
Tel 404-894-2318
JCLU@isye.gatech.edu

Patrick McCarthy, *School of Economics, Georgia Tech*
mccarthy@econ.gatech.edu

Jeff Liker, *Industrial and Operations Engineering, University of Michigan*
liker@umich.edu

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