

MIT CTL Webinar: Supply Chain Education Partners

MIT-CTL Webinar:

Supply Chain Education Partners Project and Program Review

Featuring Projects from GM and Chiquita



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MIT CTL Webinar: Supply Chain Education Partners

MLOG-ZLOG Mission

These are **nine-month, on-campus** master degree programs designed primarily for supply chain management professionals with **industry experience**. The programs are designed to instill a system-wide and **global** perspective, analytical **problem-solving** techniques, and **change leadership** skills.

Guiding Principles

- Keep It Short & Focused – 9-month, on-campus program
- Keep It Small & Selective – 24- to 36-person cohorts
- Keep It Practical and Real – Strong industry involvement
- Reach Young Professionals – target of 3-8 years of experience
- Set a Global View – in students, sponsors, and study
- Focus on Problem Solving – combine theory & practice
- Imbed Leadership Skills – negotiate, persuade, & communicate



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Education Partners

- Started in 2002 with MLOG and in 2007 with ZLOG. Since then, over 100 student projects have been conducted with companies such as Adidas, Boston Scientific, Cardinal Healthcare, CAT Logistics, Chiquita, Cummins, CVS, Epson, General Mills, GM, Gillette, Intel, Lucent, Pfizer, Procter & Gamble, Reebok, Schlumberger, Shaw's Supermarkets, Shell Oil, Solutia, Unilever, Wal-Mart and others.
- Students benefit by being able to work closely with professionals on a challenging supply chain problem that will turn into their thesis.
- Companies benefit by having a student team bring new insights and approaches to a current supply chain project.
- MLOG: \$10,000 + membership in the MIT Supply Chain Exchange
- ZLOG: €10,000



Timeline: MLOG

2009-2010 MLOG Timeline

Date	Topic
June-July	Finalize project scope
August 7	Submit final scope document
Aug. 20, Aug. 27 & Sept. 3	Partner company presentations to the MLOG class (with optional info session for recruiting)
September 25	Finalize student-project matching
October - April	Project work with regularly scheduled meetings
January 14	Poster Session & Networking Night
May 7	Final Thesis due to MIT for graduation
May 14	Final Executive Summary due
May-June	Final presentation to partner company – date and format to be jointly agreed upon by company, student(s) and advisor
May 25-26	MLOG ResearchFest



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Timeline: ZLOG

2009-2010 ZLOG Timeline

Date	Topic
June-August	Finalize project scope
August 14	Submit final project scope document
Sep. 11 & Sep. 18	Partner company presentations the ZLOG class (with optional info session for recruiting)
October 2	Finalize student-project matching
October - April	Project work with regularly scheduled meetings
January 14	Poster Session & Networking Night
May 7	Final Thesis due
May 14	Final Executive Summary due
May 15-30	Final presentation to partner company – date and format to be jointly agreed upon by company, student(s) and advisor
May 24-26	ZLOG Research Event



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Joshua Merrill

Logistics Planning Manager

Chiquita Brands International Inc.



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Cindy Liu

MLOG Student



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David Gonsalvez

Technical Fellow

General Motors



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Paola Sarmiento

ZLOG Student



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Patricia Atienza

ZLOG Student



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Project Scoping (Chiquita)

Working Title	Analyzing the Level of Service and Cost Trade-Offs in Transportation
Key Research Question / Hypothesis	What is the cost to shipper and carriers of requiring/providing superior cold chain quality and customer service?
Project Description	<p>Chiquita Brands International considers themselves industry leaders in cold chain management and customer service. Chiquita and their salad division Fresh Express are continually touting their superior performance as a competitive advantage in the marketplace. Chiquita's contracted carriers are continually monitored and upheld to the strictest industry standards. This thesis project is designed to quantify the additional cost, if any, of superior cold chain management and customer service performance (e.g. on-time delivery).</p> <p>Specifically:</p> <ul style="list-style-type: none"> • How do strict cold chain quality standards impact the rates that shippers pay for freight? • How do strict customer service standards impact the rates that shippers pay for freight? • What types of additional costs do carriers incur when they meet strict cold chain and customer service performance standards? <p>It is understood that the thesis scope will evolve, dependent upon student interests and availability of qualitative and quantitative data.</p>
Data Type & Sources	Students will analyze historical Chiquita carrier rate and performance data as well as cold chain quality monitoring data from Sensitech . Furthermore, Chiquita will facilitate communication with their preferred carrier base for carrier insight and qualitative data gathering.
Company Contact	Joshua Merrill, Logistics Planner, Chiquita
Is	<ul style="list-style-type: none"> • A unique opportunity to study a transportation issue from both shipper and carrier perspective • Very relevant to today's transportation industry • Development of a quantitative model with qualitative insight • A project with cross-functional value between supply chain, marketing, and sales that will help drive improved profitability in a large company
Is Not	<ul style="list-style-type: none"> • Expected to be a consulting project with an all-encompassing solution for Chiquita



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Project Scoping (GM)

Working Title	Global Supply Chains – Tariff and Duties Optimization
Key Research Question / Hypothesis	How do you optimize total landed costs for global supply chains including the impacts of tariffs and duties?
Project Description	In the automotive industry (and several other manufacturing industries) production material is sourced globally and vehicles (finished product) are shipped to markets across the globe. However, material sourcing decisions are often made several years ahead of actual production and made individually within product programs due to staggered life cycles. The research in this project will be to develop robust methods and models to evaluate and optimize the enterprise supply chain cost including the impacts due to tariffs and duties across the lifecycle time horizon as well as across the product portfolio.
Data Type & Sources	Data will be provided for a set of example products - number of product variants, content of those variants, supply chain costs such as logistics rate tables, inventory requirements, tariff tables, container and miscellaneous costs. Data sources will be mainly internal from GM (under confidentiality) and data obtained through benchmarking exercises
Potential Methodology	<ul style="list-style-type: none"> • Survey and benchmarking of current processes in various global manufacturing industries • Modeling (simulation, optimization, forecasting) of the process • Hypotheses of alternate methods/business process and validation
Partner Contact	David Gonzalez, Technical Fellow, GM
Is	<ul style="list-style-type: none"> • Brief review of current methods used with research/literature review of company actions and results • Analysis of specific Supply Chain details to identify/illustrate opportunities • Robust structure for performing this type of analysis • Extrapolation of results to develop actionable "principles" • Limited to automotive/manufacturing supply chains (though lessons learned could also include lessons from other industries)
Is Not	<ul style="list-style-type: none"> • Development of a specific recommendation for a single product/ single company • Solely a literature review or high level summary of different industry approaches



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Project Scoping (Josh)

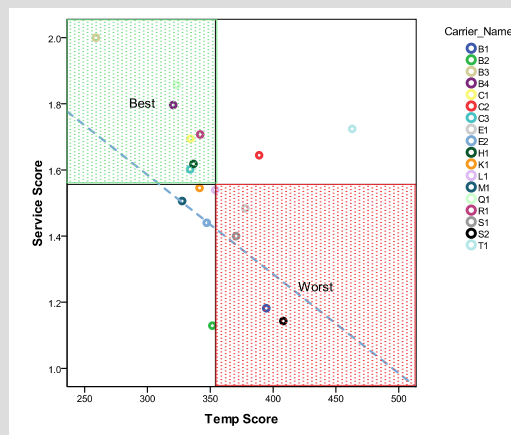
Be Realistic

1. Keep the scope well-defined and concise
2. Have all the data ready to go BEFORE start of project (or even before presenting - good test)
3. Scope the project so that the time commitment from the partner is minimized (other priorities will no doubt arise and you don't want to shorthand the student)
4. Include a scalable component - in case you do end up with extra time/resources, but keep it optional
5. Have research methodology/plan/timeline already thought through (If YOU can't figure it out, you can't expect someone with no background in the problem/industry to figure it out in 9 months - to your satisfaction)
6. Remember this is a thesis, not a consulting project - the problem needs to be interesting and applicable to a wider supply chain audience
7. Be flexible to let the student take the project where they want to take it (ideally the student will run with the project - just don't count on it)



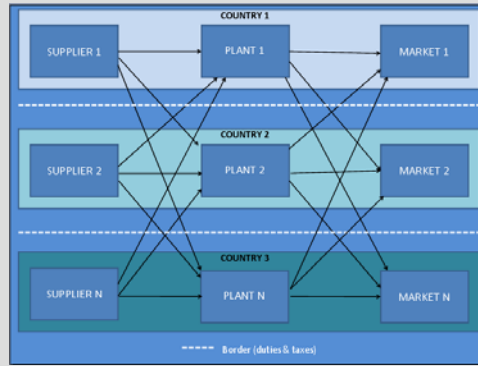
Project Results (Chiquita)

- No correlation is found between shipping cost and cold chain quality (temperature).
- The most expensive carrier doesn't necessarily provide the best cold chain quality and customer service level.
- Carriers do well in customer service generally do well in temperature too.
- For the shipper, it is possible to find a carrier performing remarkably in both service and temperature with reasonable or even low rates.



Project Conclusions (GM)

- Small changes on the model variables could generate large impacts on the distribution network costs, therefore under an optimized scenario the optimal path could change drastically.
- Low costs countries: capacity & risk; production in low cost regions is viable under the actual international trade picture, if this varies, transportation and duties costs can exceed current savings in labor costs.
- Local company owned supplier: necessary buffer as local requirements change unpredictably.
- Frequent supply chain performance review is needed to measure current results and to make it robust for various macro scenarios.
- This model should be used as a tool to analyze and foresee possible changes on the distribution network when any of the included variables change including import taxes and protectionist measures.



Project Deliverables

- Thesis
- Executive Summary →
- Presentation ↩

Global Supply Chains Tariff & Duties Optimization

Students:
 Patricia Atienza
 Paola Sarmiento

Advisors:
 Mozart Menezes
 Alejandro Serrano

Analyzing the Level of Service and Cost Trade-Offs in Cold Chain Transportation

By **Qiwei (Emily) Liu**
 Thesis Advisor: Chris Caplice

Summary: This thesis discusses the tradeoff between transportation cost and the level of service in cold chain transportation. Regression models are built to quantify the additional cost of superior quality cold chain for both the shipper and the carriers, and analyze the relationship between such cost and customer service level. The correlation is found between transportation cost and the level of service in cold chain transportation. Therefore carriers with best cold chain management don't necessarily charge the highest.

Qiwei is a graduate student program manager for Cold Chain, No. 10 Zhongyuan Road in HUST. She worked for Microsoft International.

KEY INSIGHTS

1. The cost associated to reach the cold chain high standards of optimizing quality and freshness can be quantified.
2. Shipping cost does not correlate to either customer service level or temperature performance. Sometimes, carriers with best performance charge less than normally performed carriers.
3. Carriers do well in customer service generally do well in temperature too.

Introduction:
 The fresh fruit and vegetable distributing business requires high level of cold chain management and customer service to keep products fresh. The cold chain is the management of the temperature of perishable products in order to maintain quality and safety from the point of slaughter or harvest through the distribution chain to the final consumer".

according to the definition of Cold Chain from the Global Cold Chain Alliance (GCCA) in 2009. Superior performance in cold chain management, especially during transportation, is a competitive advantage in the marketplace. Clients monitor its contracted carriers to ensure adherence to the strict cold chain standards. This thesis quantifies the additional cost, if any, of superior cold chain management and customer service and takes a quantitative approach to demonstrate the relationship among the quality standards required, the cost associated, and the customer service level reached.

The motivation for the thesis is to conceptualize and quantify the relationship between transportation costs and cold chain performance to check whether there is any correlation between cost and cold chain performance level as well as customer service level. The thesis defines cold chain temperature performance and service level by a quantitative approach and also evaluates the cold structure from carrier perspective to check whether there is any



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**Joshua
Merrill**
Chiquita



**Cindy
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MLOG Student



**David
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**Paola
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ZLOG Student



**Patricia
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MLOG

www.mit.edu/mlog/research

Master of Engineering in Logistics Program
MIT - Cambridge, Massachusetts

ZLOG

www.zlc.edu.es/zlog

Master of Engineering in Logistics Program
MIT-Zaragoza Program – Zaragoza Logistics Center, Spain



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