

PROCEEDINGS OF THE THIRTY-FIRST ANNUAL LOGISTICS EDUCATORS CONFERENCE



“From knowledge perfect movement”

Moscone Center
San Francisco, California
September 29, 2002

Edited by
Joe B. Hanna, *Auburn University*
Brian J. Gibson, *Auburn University*

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WELCOME AND ACKNOWLEDGEMENTS

Numerous individuals made the 2002 Logistics Educators Conference possible through their generous and timely efforts. I greatly appreciate the participation of Jim Kellso, Manager of Supply Network Research, Intel Corporation as this year's guest speaker. I want to thank our practitioner and academic panel members and facilitators for their efforts in pulling together two interesting, but distinctly different panels addressing university and industry collaboration. I want to thank the many members of this year's editorial review panel, listed separately, whose generous efforts helped us put together a fine schedule of presentations and proceedings of papers and abstracts. However, we certainly could not have pulled together the paper presentations or proceedings without the significant efforts of this year's conference team, specifically the track chairs Craig Carter, University of Maryland, Britta Gammelgaard, Copenhagen Business School, and Mike Garver, Central Michigan University, the proceedings editors and next year's conference co-chairs, Joe Hanna and Brian Gibson, Auburn University, and CLM staff members, Kathleen Hedland and Ann Flick. I would like to thank the CLM Education Strategies Committee for providing our team with the leeway to incorporate some of the many ideas you the conference attendees offered as suggestions for the conference. This is your conference. It will be as valuable as you make it through your attendance and participation as well as your suggestions for future conferences.

Finally, I would like to thank Bernard J. LaLonde, James Masters, and Terrance Pohlen for establishing such a fine tradition for the educators' conference over the years.

Daniel J. Flint
2002 Logistics Educators Conference Chairperson

**2002 Logistics Educators Conference:
Editorial review Panel**

Carol Bienstock	<i>University of Memphis</i>
Yan Dong	<i>University of Minnesota</i>
Martin Dresner	<i>University of Maryland</i>
Phillip Evers	<i>University of Maryland</i>
James Foggin	<i>University of Tennessee</i>
Howard Forman	<i>Drexel University</i>
Richard Germain	<i>University of Louisville</i>
Brian Gibson	<i>Auburn University</i>
Thomas Goldsby	<i>Ohio State University</i>
Joe Hanna	<i>Auburn University`</i>
Daniel Innis	<i>Ohio University</i>
John Kent	<i>Southwest Missouri State University</i>
Herbert Kotzab	<i>Copenhagen Business School, Denmark</i>
Sashi Kumar	<i>Maine Maritime Academy</i>
Ira Lewis	<i>Naval Post Graduate School</i>
Karl Manrodt	<i>Georgia Southern University</i>
David Menachof	<i>City University Business School</i>
John T. Mentzer	<i>University of Tennessee</i>
Soonhong Min	<i>Georgia Southern University</i>
Madhav Pappu	<i>University of North Texas</i>
Elliot Rabinovich	<i>Arizona State University</i>
Glenn Richey	<i>University of Oklahoma</i>
Antonio Rizzi	<i>University of Parma, Italy</i>
Thomas Speh	<i>Miami University</i>
Theodore Stank	<i>Michigan State University</i>
Andrew Stapleton	<i>University of Wisconsin, Lacrosse</i>
Jerry Wilson	<i>Georgia Southern University</i>
Donald Wood	<i>San Francisco State University</i>
Walter Zinn	<i>Ohio State University</i>

Agenda for 2002 Logistics Educators' Conference
(Sessions are in Room 305/307 unless indicated otherwise)

7:30 - 8:00	Registration	
8:00 - 8:20	Welcome and Opening Remarks	Daniel J. Flint, <i>University of Tennessee</i> Joel Sutherland, <i>Council of Logistics Management, Transplace</i>
8:20 - 8:30	Presentation of the E.G. Plowman Award	Daniel J. Flint, <i>University of Tennessee</i>
8:30 - 9:45	Panel: Placement of and Internships for Logistics Students: What's Working and What Isn't	Rick D. Blasgen, <i>Kraft Foods, Inc.</i> Rhoda Isaacs, <i>R.I. James, Inc. Executive Search</i> Clifford K. Otto, <i>Saddle Creek Corporation</i> Facilitator: Thomas L. Freese, <i>Freese and Associates</i>
9:45 - 10:00	Break (Room 301)	
10:00 - 11:15	Paper Presentations	
	Track 1: Current Research and Theoretical Developments (Room 303)	Session Leader: Craig Carter, <i>University of Maryland</i>
	Transportation Disruptions in the Supply Chain: Simulation as a Decision Support Tool	Martha C. Wilson, <i>University of Minnesota Duluth</i>
	Third-Party Warehousing Selection: A Comparison of National and Regional Firms	Chris Moberg, <i>Ohio University</i> Thomas W. Speh, <i>Miami University of Ohio</i>
	Track 2: Teaching (Room 309)	Session Leader: John Kent, <i>Southwest Missouri State University</i>
	Integration of a Commercial Warehouse Management System in Undergraduate Courses in Fulfillment Operations	Douglas Thomas, <i>Pennsylvania State University</i> Benjamin D. Hood, <i>EXE Technologies, Inc.</i> Robert Novack, <i>Pennsylvania State University</i>
	Teaching Logistics System Dynamics: An Active Learning Exercise	Mary Holcomb, <i>University of Tennessee</i> James H. Foggin, <i>University of Tennessee</i> Lloyd M. Rinehart, <i>University of Tennessee</i>
	Track 3: Research Methods (Room 310)	Session Leader: Britta Gammelgaard, <i>Copenhagen Business School</i>
	Benchmarking the Semiconductor Industry's Logistics Performance from Financial Statements	Christian Rossetti, <i>Arizona State University</i> Arnold Maltz, <i>Arizona State University</i>
	Mail Surveys in Logistics Research	Paul Larson, <i>Iowa State University</i>
11:15 - 11:30	Break (Room 301)	
11:30 - 12:15	Supply Chain Management Challenges	James R. Kellso, <i>Intel Corporation</i>
12:30 - 1:30	Lunch (Room 302/304)	
1:30 - 2:30	Panel: Industry/University Collaboration: A European Perspective	Sten Wandel, <i>Lund University</i> Graham Sharman, <i>Eindhoven University</i> Sven Ridsta, <i>Ericsson Radio Systems, AB</i> Gianpaolo Callioni, <i>Hewlett Packard</i> Melvyn Peters, <i>Cranfield University</i>

2:30 – 2:45	Break (Room 301)	
2:45 - 4:00	Paper Presentations	
	Track 1: Current Research and Theoretical Developments (Room 303)	Session Leader: Craig Carter, <i>University of Maryland</i>
	Demand Collaboration and Supply Chain Performance	Yan Dong, <i>University of Minnesota</i> Kefeng Xu, <i>University of Texas, San Antonio</i>
	Logistics Job Placement: The 2002 Perspective	Brian J. Gibson, <i>Auburn University</i> Robert L. Cook, <i>Central Michigan University</i>
	Track 2: Teaching (Room 309)	Session Leader: John Kent, <i>Southwest Missouri State University</i>
	Logistics Education: Undergraduate Program and Department Alternatives	Clyde K. Walter, <i>Iowa State University</i>
	Community Service in the Logistics Classroom: Second Harvest Food Bank	Marc Ruzicka, <i>University of Tennessee</i> Frank Davis, <i>University of Tennessee</i>
	Poster Board and Idea Exchange Session (Room 310)	Session Leader: Joe B. Hanna, <i>Auburn University</i>
	The Impact of September's Terrorist Attacks on Logistics Management	Richard L. Clarke, <i>Clemson University</i>
	Formatting Optimal E-Supply Chain Strategies: Theoretical Developments and Empirical Validation of an E-Based Supply Chain Strategy Optimization Model	Niels Skjoldager, <i>Infonizer</i> Thorkil Vinum, <i>Vinum & Company</i> Herbert Kotzab, <i>Copenhagen Business School</i>
	A New Framework for Logistics Performance Measurement: Extending the Focus to the Supply Chain	James Keebler, <i>St. Cloud State University</i> Soonhong Min, <i>Georgia Southern University</i>
	Let's go to Europe to Study Logistics? Results from a Pilot Study Examining European Master Programmes in Logistics and SCM	Herbert Kotzab, <i>Copenhagen Business School</i> Lars Boge Sorensen, <i>Copenhagen Business School</i> Ulrich Müller Steinfahrt, <i>Universität Erlangen-Nürnberg</i>
	Academic and Career Issues in Logistics: The More Things Change, the More They Stay the Same?	A. Michael Knemeyer, <i>John Carroll University</i> Paul Murphy, <i>John Carroll University</i>
	An United Arab Emirates Perspective: Teaching Methods in Specialized Business Program of Logistics Management	Philbert Suresh, <i>Translogistique Consultancy Services</i>
	"Triangulation" in Logistics Research: An Example	Ruth Banomyong, <i>Thammasat University</i>
4:00 – 4:30	Announcements and Closing Remarks	
	Daniel J. Flint, <i>University of Tennessee</i>	

TRANSPORTATION DISRUPTIONS IN THE SUPPLY CHAIN: SIMULATION AS A DECISION SUPPORT TOOL

Martha C. Wilson, University of Minnesota Duluth

ABSTRACT

This paper discusses the role of simulation modeling in assessing the system wide effects of a transportation disruption in a 5 echelon supply chain, and suggests a methodology for developing policies to ameliorate the impact. Two supply chain arrangements are studied: the traditional supply chain in which the final customer demand is not shared between partners, but available only to the retailer; and the vendor-managed inventory arrangement, in which only the tier 1 supplier and the retailer receive final customer demand information. Transportation disruptions can occur between four different points in the supply chain: the retailer and warehouse, the warehouse and the tier 1 supplier, the tier 1 and tier 2 supplier, and the tier 2 supplier and raw material supplier. Two metrics, unfilled customer orders and inventory fluctuations, are used to identify critical points of disruption. In both arrangements, the critical points that result in the most unfilled customer orders occur downstream between warehouse and retailer, and the tier 1 supplier and the warehouse. This impact is greater in the traditional supply chain arrangement than in the vendor-managed inventory environment. Although unfilled customer orders is a useful metric for comparing the effect of a disruption, inventory fluctuations are helpful in assessing system-wide impacts. Examining these fluctuations shows that the greatest impacts occur on the upstream partners, the tier 2 supplier and the raw material supplier.

The paper also discusses the role of system dynamics modeling to assess supply chain behavior, and presents a two-step methodology for capturing this behavior. The first step applies system dynamics, which uses continuous event simulation, to develop a robust model based on simple assumptions. The second step, which is left to future research, uses the results from the system dynamics model to develop more detailed discrete event simulation models to further guide policy development.

THIRD-PARTY WAREHOUSING SELECTION: A COMPARISON OF NATIONAL AND REGIONAL FIRMS

Christopher R. Moberg, Ohio University

Thomas W. Speh, Miami University

ABSTRACT

The size of the logistics outsourcing market has increased from \$25 billion in 1996 to an estimated \$50 billion in 2000 (Lieb and Randall, 1996). According to a recent study, warehousing continues to be the most frequently outsourced logistics activity, with 63.3% of respondents from several industries reporting use of third party providers for their warehousing needs (Langley, 2001). Based on the increased use of third party logistics providers overall and the large number of firms outsourcing the warehousing function specifically, one would expect that the logistics literature would contain numerous research studies focusing on third party warehousing. However, research on this topic is scarce. To address this deficiency in the literature, a survey was developed and distributed to current and potential third-party warehousing customers. This exploratory study had two main research questions. First, what criteria are most important to warehousing customers when selecting third party providers? Second, how effective are the typical national and regional third party warehousing firms at meeting the needs of warehousing customers on each of the examined criteria?

Method and Results

Because of the scarcity of research on the third party warehousing selection process, in-depth phone interviews were conducted with twelve warehousing experts representing various supply chain roles. Based on these interviews, a warehouse selection process survey was developed for warehousing customers. The survey was distributed to 1,460 manufacturers, wholesalers, and retailers in several industries. After eliminating returned surveys, the response rate was 11.4% (155/1,363).

The managers that responded in this study had an average of 18.02 years of warehousing/logistics experience and represented the highest levels of management in their firms, with 16.8 percent holding the title of corporate officer, 34.8% in director positions, and 45.8% in manager positions. The average annual global sales of firms in this research was 6.274 billion dollars, with 64.5% of the firms in the grocery/food/beverage industry and 22.6% in the consumer goods industry. Manufacturing firms accounted for 74.2% of the respondents, while 12.9% of the respondents were wholesalers and 11.6% were retailers. 75.48% of the firms in the sample reported the use of at least one third party warehouse provider in their network. When asked to provide the approximate percentage of national, regional, and local third party providers in their network, respondents reported that 40.13% of their third party business was handled by national third party firms, 32.50% by regional firms, and 21.93% by local firms.

The first goal of this study was to assess the importance of various selection criteria during the evaluation of third party warehousing providers. In the survey, respondents were asked to rate the importance of each selection factor from 1 (Not Important at All) to 5 (Extremely Important) when they are evaluating third party warehousing providers. Table 1 ranks the criteria from most important to least important based on the means to each question. The top selection criteria were responsiveness to service requirements, quality of management, and track record of ethical importance. The three least important criteria were investment in state-of-the-art technologies, size of firm, and national market coverage.

Table 1
Importance Ratings of Third Party Warehousing Selection Criteria

Rank	Criteria	Mean	std. dev.	n
1	Responsiveness to our service requirements	4.71	0.499	150
2	Quality of management	4.51	0.652	150
3	Track record of ethical performance	4.33	0.73	150
4	Ability to provide value-added services	4.13	0.898	149
5	Low costs	3.97	0.761	151
6	Specific channel expertise	3.94	0.807	149
7	Knowledge of market	3.73	1.06	151
8	Personal relationships with key contacts	3.64	0.996	151
9	Willingness to assume risk	3.64	0.83	150
10	Investment in state-of-art technologies	3.59	0.953	151
11	Size of firm	3.08	0.876	151
12	National market coverage	2.85	1.21	151

The second goal of this research was to compare the performance of national and regional third party warehousing providers based on the perceptions and experiences of their customers. Respondents were asked to rate each type of firm on each criteria from 1 (poor) to 10 (excellent). Based on the results of the t-tests in Table 2, regional third party warehousing providers are rated significantly higher than national firms in their performance on six factors, with national firms rated higher on one factor.

Table 2
Means Comparisons of Regional and National Third Party Firms

Rank	Criteria	Regional Mean	National Mean	n pairs	Prob.
1	Responsiveness to our service requirements	7.84	7.01	129	.000
2	Quality of management	7.32	7.20	130	.496
3	Track record of ethical performance	7.59	7.10	129	.002
4	Ability to provide value-added services	7.31	7.18	130	.386
5	Low costs	6.98	6.27	131	.000
7	Knowledge of market	7.35	6.36	130	.000
8	Personal relationships with key contacts	7.01	6.02	129	.000
9	Willingness to assume risk	6.55	6.39	127	.371
10	Investment in state-of-art technologies	6.09	7.50	130	.000
n/a	Consistency of service in multiple markets	6.59	6.64	125	.830
n/a	Order accuracy	7.99	7.80	130	.048

Conclusion

The importance to logistics practitioners of narrowing the focus of outsourcing selection research to specific logistics functions and of conducting empirical research cannot be overstated. As environmental factors continue to increase the pressure for logistics managers to outsource activities, it is the responsibility of researchers to empirically examine factors that may affect their decision. This research identified the importance of selection criteria in warehouse outsourcing and compared the perceived performance of national and regional firms in delivering important warehousing capabilities and services. It is hoped that this study will provide a key first step in the process of providing practitioners with information that can be used to make better decisions when selecting third party warehousing providers.

INTEGRATION OF A COMMERCIAL WAREHOUSE MANAGEMENT SYSTEM IN AN UNDERGRADUATE COURSE IN FULFILLMENT OPERATIONS

Douglas J. Thomas, The Pennsylvania State University

Benjamin D. Hood, EXE Technologies, Inc.

Robert A. Novack, The Pennsylvania State University

ABSTRACT

This paper describes efforts to simultaneously integrate commercial warehouse management system software and develop an undergraduate course addressing the design, operation and management of modern fulfillment systems. Students are assigned exercises in a full commercial instance of the EXceed Warehouse Management System provided by EXE Technologies. These exercises, along with other course assignments are designed to (1) teach students about the fundamental operation of a distribution or fulfillment center and the operational capabilities of a WMS, and (2) to demonstrate and emphasize the strategic roles that the distribution center and WMS play in the overall supply chain.

The course is divided into six modules: (1) Role of fulfillment operations in the supply chain (2) WMS system architecture and data requirements, (3) Warehouse and DC Processes and Activities, (4) Order Management, Customer Service and Inventory Control, (5) Facility Costing, Measurement and Productivity (6) Strategic Issues in Fulfillment.

Our objective in development and delivery of this course is to provide undergraduate business students with the opportunity to become intimately familiar with the basic operations of a warehouse management system. This is accomplished by a series of exercises where students (individually) define products, create orders for those products, receive and store those products in a warehouse, create customer requests for those products, and finally pick and ship the appropriate goods.

In addition to these basic activities, we have created exercises demonstrating the use of remote technology such as a radio frequency scanner. Such exercises are combined with classroom material to emphasize the importance of real-time information and visibility of that information across the entire supply chain. The role of such information in both e-commerce and traditional environments is already covered in the course. These exercises are intended to demonstrate realistic applications of those concepts.

To emphasize more tactical and strategic decisions, students in the course perform team WMS-related exercises where they extract and analyze data. Team labs include (1) evaluating target service levels and modifying inventory levels appropriately, (2) economically justifying insertion of a cross dock in a distribution network (not-WMS related) (3) perform ABC analysis and modify inventory control parameters (4) perform warehouse activity analysis and make stocking location and layout improvements.

It is our intent to make both the course content and the labs available for use at other academic institutions. We continue to work toward this goal as we refine the class material.

TEACHING LOGISTICS SYSTEM DYNAMICS: AN ACTIVE LEARNING EXERCISE

Mary Holcomb, University of Tennessee

James H. Foggin, University of Tennessee

Lloyd M. Rinehart, University of Tennessee

ABSTRACT

The many benefits of business simulations and games have been known and appreciated by managers and educators for over four decades. This paper examines the outcomes from a multi-version simulation designed to assist students to better understand logistics systems dynamics. The simulation – LOGEX – involved decision making in raw materials procurement, production scheduling, transportation (both inbound and outbound), and warehousing. In addition to a basic logistics system, other versions of LOGEX that introduced demand and raw materials order fill uncertainty were tested for teaching effectiveness. The purpose of this research is to enhance future simulation design thereby increasing student knowledge in the area of logistics systems tradeoffs.

BENCHMARKING THE SEMICONDUCTOR INDUSTRY'S LOGISTICS PERFORMANCE FROM FINANCIAL STATEMENTS

Christian L. Rossetti, Arizona State University

Arnold Maltz, Arizona State University

ABSTRACT

As supply chain management becomes a key source of competitive advantage, greater importance has been placed on the metrics that define supply chain efficiency. Executive management now seeks cross-functional metrics to measure internal supply chain efficiency as well as inter-company measures that reflect the entire supply chain's performance. Ideally, results could be compared to well-established benchmarks so that firms can understand their position vs. best-in-class performers. SCOR, the Supply Chain Operational Reference model is quickly becoming such a benchmarking tool.

Obtaining the information required for detailed inter-firm comparisons is difficult and time consuming. We propose that supply chain management exemplars can be identified through publicly available data. Logistics professionals may derive their own and their competition's supply chain metrics using quarterly financial data. These comparisons are important as logistics professionals are increasing judged and rewarded based on their contribution to financial results.

We consider three metrics in this paper: Finished Goods Inventory Days of Supply (FGDOS), Cash to Cash Cycle Time (CCT) and Finished Goods Inventory Holding Costs (FGICC). FGDOS is the number of days of finished goods inventory kept on hand to satisfy current sales. FGDOS is calculated by averaging the current and previous quarters' finished goods inventory and dividing by the cost of goods sold for the current quarter, then multiplying by the days per quarter. When the finished goods inventory is not reported separately the total inventory was multiplied by an empirically derived factor.

$$FGDOS = \frac{(FG_{beg} + FG_{end}) \div 2}{(COGS \div 91days/qtr)} \dots\dots or \dots\dots \frac{(0.35 \times TI_{beg} + 0.35 \times TI_{end}) \div 2}{(COGS \div 91days/qtr)}$$

COGS = the cost of goods sold for the period **FG** = $0.35 \times TI$: Where TI is the total reported inventory for the period.

Cash-to-cash cycle time (CCCT) is the total inventory days of supply (TIS_{days}) plus receivables days sales outstanding (REC_{days}) minus average payment period for materials (APM_{days}). Thus cash to cash cycle time is the time material spends in inventory (RAMA, WIP, and FG) plus the time it takes to collect revenue minus the time money is held before paying suppliers.

$$CCCT = TIS_{days} + REC_{days} - APM_{days} \quad \text{Where:} \quad TIS_{days} = \frac{(TI_{end} + TI_{beg}) \div 2}{COGS / 91days/quarter}$$

$$REC_{days} = \frac{AR}{Sales / 91days/quarter} \quad APM_{days} = \frac{AP}{Rama} \times FGDOS$$

Where:

AP = Accounts Payable AR = Accounts Receivable $RAMA$ = value of the raw material, which can be estimated by $0.14 \times TI$, where 0.14 is an estimate of the ratio of raw material to the total inventory, calculated using a method similar to the method previously described for FG to TI ratio. $FGDOS$ = Finished Goods Inventory Days of Supply

FGICC is the sum of all costs associated with finished goods inventory. These costs include: opportunity cost, shrinkage, insurance and taxes, total obsolescence, channel obsolescence and field sample obsolescence. $FGICC = OC + Shrinkage + Insurance + Taxes + Obsolescence$

We assume that shrinkage, insurance and taxes are minimal compared to obsolescence and opportunity costs. We estimate opportunity costs based on the companies weighted cost of capital. However, we do not include obsolescence since it could not be easily estimated from public data.

These metrics are then calculated for the Sematech Logistics Forum, a consortium of semiconductor manufacturers located in North America and Europe. The Logistics Forum is composed of the following US based companies: Intel, IBM, Texas Instruments (TI) Advanced Micro Devices (AMD), National Semiconductor (NSC), ON, Motorola, Agilent, Fairchild, and Conexant. Hewlett Packard is included to complement the data from Agilent, its recent spin-off. The other members, Philips, Infineon and ST Micro, are based in Europe. Ten years of quarterly data was compiled for the three metrics. The results are presented graphically for each group.

The average Finished Goods Days of Supply for the entire sample of firms is estimated to be 28 days as of September 2001. Our first calculation in September 1991 shows that FGDOS stood at 32 days. This amount dropped rapidly until early 1994. In 1994, FGDOS was approximately 22 days and the average hovered around that level for the next six years. The recent economic slowdown is apparent in September 2000. The average FGDOS increases steadily from that point onward approaching 28 days by the end of 2001. All companies had some increase in FGDOS in the slowdown but some were affected far more than others. Companies such as Agilent, Conexant, ON and ST each saw their FGDOS rise above 30 days.

The average Cash to Cash Cycle Time for the SEMATECH Logistics Forum is nine days, but the variance among companies is large. The cycle time to make a semiconductor varies from 20 to 40 days. Therefore a company can only achieve negative Cash to Cash Cycle Time if the payment terms with its customers are 20 to 40 days shorter than its payment terms with its suppliers. Some companies appear to have kept Cash to Cash cycle time near zero.

The average Inventory Carrying Cost for the SLF companies is 6.6% per quarter, translating to a non-compounded rate of 26.4%. As interest rates have dropped and firms have increasingly moved toward financing through shareholder equity firms have significantly decreased their FGCC. European firms have consistently had lower inventory holding costs than their US counterparts. Figure 7 shows the downward trend and several outliers.

The intent of this study is to facilitate interfirm comparisons using public data as an alternative to the more costly and difficult classic benchmarking process. One of the authors is routinely asked to identify “best in class” or “benchmarking” results for a variety of industries. In most cases, the specific data requested is either proprietary or does not exist. This study is a first attempt to see what is possible using published data, notwithstanding the reservations expressed by other logistics researchers. Since one author is also involved in a proprietary benchmarking project, a next step will be to see if the public data can be better explained when informed by proprietary results.

MAIL SURVEYS IN LOGISTICS RESEARCH: AN ANALYSIS OF PRACTICE AND RESPONSE RATES

Paul D. Larson, Iowa State University

ABSTRACT

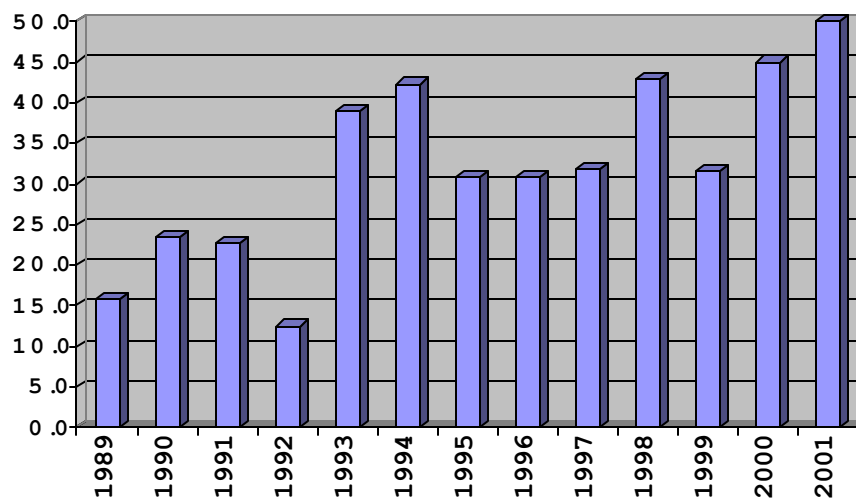
During 2001, half of all articles published in the *Journal of Business Logistics (JBL)* reported mail survey results. Despite the popularity of this data collection method, there have been calls for fewer mail surveys in logistics research—and more phone surveys and case studies. This paper reports results of a study on mail survey research practices and results, as published in the *JBL*.

The paper leads with a brief literature review on mail surveys and response inducement techniques. Next, it reports a content analysis of all *JBL* articles based on mail survey results, from 1989-2001, and a “survey on surveys” published in selected volumes of the journal. The paper closes with discussion on implications of the empirical results and suggestions for future research.

The classic logistics objectives imply a trade-off between service level and total costs. Logisticians strive to minimize total costs, while meeting customer service level requirements. Alternatively, logistics managers try to maximize service level subject to budget limitations. In analogous fashion, survey researchers work to maximize response rates, given limited survey administration budgets. The logistician spends his or her limited budget building safety stock, employing premium transportation, implementing information technology (IT), etc. to provide customer service. Similarly, the researcher allocates a portion of his or her budget to response inducement tools, such as monetary incentives, follow-up mailings and pre-qualification of the survey recipients.

From 1989 to 2001 (inclusive), a total of 88 articles reporting mail survey research results were published in *JBL*. This represents 31.9 percent (88/276) of all articles published in *JBL* during these 13 years. Figure 1 graphs the percent of *JBL* articles which report mail survey results, for each year from 1989 to 2001. Note that percent of *JBL* articles based on mail survey research exhibits a clear upward trend, reaching a high of 50 percent in 2001.

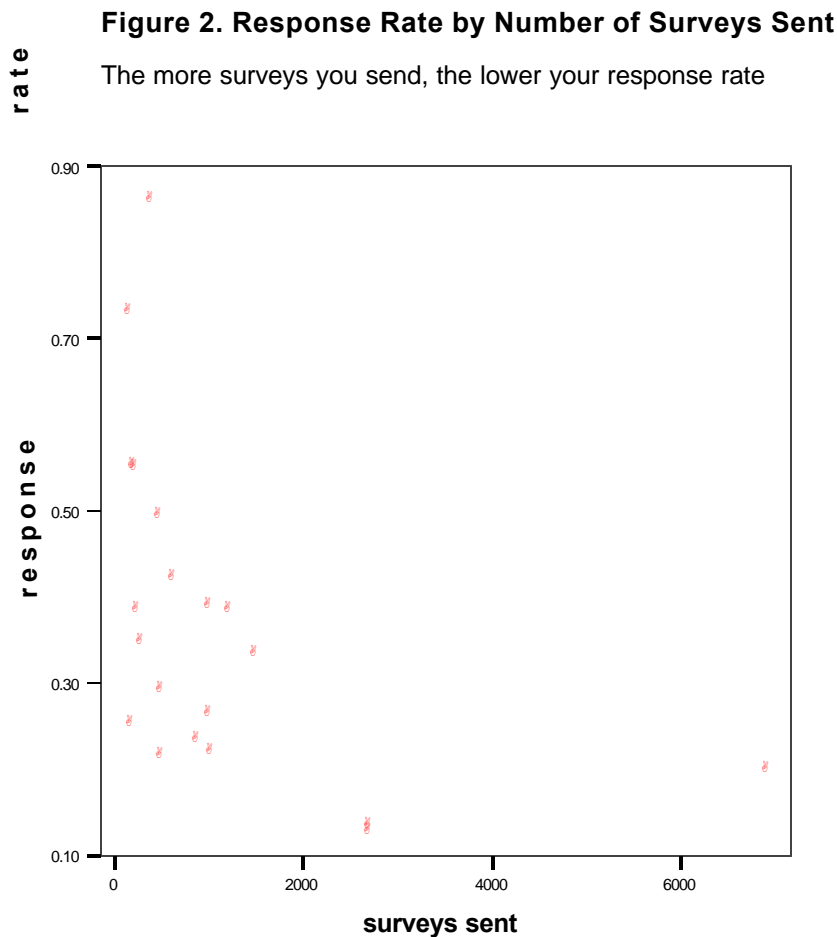
Figure 1. Percent of *JBL* Articles Reporting Mail Surveys, 1989-2001



In spring of 1999, a one-page survey was faxed to one author of every *JBL* article which: (1) reported results of a mail survey, and (2) was published in volume 18 or volume 19. After follow-up via e-mail, a total of 10 out of 16 surveys were returned, for a response rate of 62.5 percent. In autumn of 2001, surveys were faxed to one author of every *JBL* article reporting mail survey results in volumes 21 and 22. Again, after an e-mail follow-up, 10 out of 16 surveys were completed and returned. The 20 responses were combined for purposes of analysis.

The *JBL* content analysis and survey on surveys confirm the effectiveness of certain mail survey response inducement techniques. The following are proven techniques for increasing rate of response: pre-qualification of survey recipients, monetary incentives, personalization of cover letters, and follow-up mailings. If the budget permits, survey researchers are urged to use these tools during mail survey administration, to maximize response rate.

Figure 2 is a plot of response rate by number of surveys sent out in the initial mailing (wave 1). Analysis includes linear and power function regression of response rate on number of surveys sent. While the linear model is significant (at the .05 alpha level), the power function provides a superior fit with the data. The relationship between number of surveys sent and response rate is negative and significant. The more surveys sent out, the lower the response rate! Are some logistics researchers conducting mass survey mailings in anticipation of low response rates?



DEMAND COLLABORATION AND SUPPLY CHAIN PERFORMANCE

Yan Dong, University of Minnesota

Kefeng Xu, University of Texas, San Antonio

ABSTRACT

Demand collaboration is the process that facilitates supply chain communications in demand forecasting that allow the upstream supply chain partners to extract market specific information from their downstream partners. This process goes beyond simple sharing of sales information and forecasts generated based on sales and point-of-sales (POS) data, to fully take advantage of retailers' business insights and judgment. Embedded in many supply chain software solutions such as i2 Technologies, Manugistics and SAP, and in many industry-wide supply chain initiatives such as Collaborative Planning, Forecasting, and Replenishment (CPFR), it has a great potential in improving forecasting performance and supply chain planning efficiency. However, important issues such as whether and when demand collaboration will bring about a truthful revelation of private demand information and provide supply chain partners enough incentives for parties involved to participate remain a largely unexplored subject.

This study applies simulations in a game-theoretic approach to investigate the effectiveness of demand collaboration in a supply chain where a capacitated manufacturer serves two retailers. We find that the allocation rules used by the manufacturer to divide total supplies among retailers under supply shortage, and the nature of private demand information as reflected by demand correlation over time, significantly influence the retailer collaborative behavior. For instance, the allocation mechanism based on the shares of retailer claims is found to be impossible in leading to truthful revelation of private information by retailers. In contrast, the allocation mechanism based on the shares of retailer sales history is found to offer solid benefits in certain circumstances and becomes the main focus of the study. Specifically, if this allocation mechanism is implemented, truthful revelation of private information from retailers is expected to hold under perfectly correlated demand over time. With this demand pattern, the concerns that information may be manipulated by parties possessing it can be easily addressed, based on a minimum level of trust between parties. When demand is imperfectly correlated over time, such concerns become legitimate – there is an incentive for retailers to exaggerate their private demand information to a certain extent.

With regard to the ability of demand collaboration to improve supply chain efficiency, the nature of demand, in terms of correlation over time, again plays an important role in determining the extent to which supply chain profitability is improved. When the demands over time are highly correlated, demand collaboration can improve supply chain performance very significantly. The risks of implementing demand collaboration under uncorrelated demand should not be understated, although it may not cause any negative effect for one or more parties involved. After all, establishing demand collaboration systems between supply chain partners takes time and effort. It is critical to better understand the environmental characteristics involved in this process, and create a win-win solution.

LOGISTICS JOB PLACEMENT: THE 2002 PERSPECTIVE

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ABSTRACT

Successful job placement of logistics graduates is highly beneficial to university logistics programs as well as organizations offering logistics positions. A critical aspect of job placement involves understanding the preferences and perceptions of students and employers regarding jobs.

The purpose of the paper is to report the results of two parallel surveys involving U.S. undergraduate logistics students and logistics employers. The surveys focused on each groups' preferences and perceptions regarding job placement issues. Results provided in this paper include a demographic profile of the respondents, their organization/functional area preferences and their perspectives on selected job selection factors and issues. It is hoped that these research results will provide logistics students, educators, and employers with information that can be used to improve logistics student job placement.

More than 750 students from 26 U.S. universities and 78 recruiters from U.S. companies participated in the research. The student participants range in age from 20 to 52 years. They are also geographically well dispersed, including residents of 31 U.S. states, the District of Columbia, and 26 foreign countries. The employers represented in the research range from very small organizations to Fortune 500 companies. The majority of companies represented in the study were logistics services providers while manufacturers and retailers also participated. Individuals completing the employer survey possess significant expertise on the research topic, with nearly 30 percent having ten or more years of recruiting experience.

Students were asked a series of questions regarding their job search activities. General information was sought regarding organization and position preferences, as well as interview activities. Specific issues regarding job selection factors, benefits and compensation, geographic location, and workload levels were also studied. Parallel questions were asked of the employer respondents regarding the specific issues. They were asked to provide their perspective regarding student preferences.

A number of noteworthy findings emerged from the analysis of these questions:

- 2002 graduates are interested in staff-oriented responsibilities more so than operational activities. The most desired position type was supply chain management, followed by logistics analysis and planning, and purchasing and supply management.
- Interview activity and success among the respondents is quite limited. At the time of the study, nearly 40 percent of the Spring 2002 graduates had yet to participate in on campus interviews and an even greater percentage have not been invited for company site visits.
- Student respondents have a strong vision of what they desire in a position. Most importantly, they seek growth opportunities, stability, and a good environment with a satisfactory salary.
- When comparing students' salary expectations versus employers' actual offers, the group means were not significantly different at the lower end of the salary scale. However, the

students were overly optimistic regarding the upper end of the salary scale as compare to the actual offers made by the employer group (a difference of more than \$7,000).

- Students are clearly more geographically flexible than predicted by the employers. Over 48 percent of the students will consider a broad array of national and international locations while less than 24 percent limit themselves to specific cities or states.
- It is clear that many students do not have a reasonable understanding of the workload levels they face in logistics positions. Statistical analysis revealed that the employers require significantly more hours per week than students expect to work

Two employer-focused issues were also addressed in the study. Data was collected regarding the importance of various factors: (1) criteria used to review candidates' credentials in the screening process: and, (2) criteria used in candidate evaluation and selection. In the student questionnaire, respondents were asked to predict how employers would rate each criterion.

Relevant findings from this part of the study include:

- During the screening process, employers place the greatest emphasis on the ability of candidates to communicate effectively. Practical experiences and skills are also important screening criteria. However, a number of criteria, including university attended, had lower mean importance ratings.
- Communication and other interpersonal skills were among the most important factors along with cognitive abilities (e.g., the ability to prioritize, plan, and organize) in the employer's evaluation and selection process. Students displayed a solid ability to predict the importance of these factors.

Overall, the results revealed in the paper's discussion, tables, and figures provide important insights into the placement preferences and perceptions of the key stakeholders. These insights and findings can be used to make the placement process more productive. A summary of the key implications of the research for each stakeholder group includes:

- Recruiters can use the enhanced knowledge of student desires and beliefs to develop more effective hiring practices. They must continue to refine their understanding of student perceptions and expectations (which may be a moving target as economic/societal conditions change) in order to hire and develop a satisfied, productive, low turnover staff.
- Students can use the employer-based information to build a job search strategy and to better prepare for interviews. Students must sell their unique capabilities, skills, and attributes as employers look for specific competencies and experiences. It is also important for students to realize that economic conditions impact the types of positions available, the time required to obtain a position, compensation offers, and workload requirements.
- Educators can use the comparative information to better understand and bridge the perceptual gaps between recruiters and students. Educators should add internship/co-op experiences to the curriculum so that students will have a more realistic view of upcoming career and workload responsibilities. Additional "real world" exposure to the logistics field through site visits and tours, guest lectures from recent graduates, and frank discussion of the realities of the work world is needed. Finally, faculty can use the research results to identify key employment and career issues that warrant discussion in the classroom.

**LOGISTICS EDUCATION:
UNDERGRADUATE PROGRAM AND DEPARTMENT ALTERNATIVES**

Clyde Kenneth Walter, Iowa State University

ABSTRACT

The educational backgrounds of logistics professionals, as reported in the CLM career survey, were compared with the program names and departments of universities offering logistics education, and a contrast was noted. The analysis confirmed the observation that most programs were affiliated with marketing departments, but 9 out of 10 logistics managers had bachelor's degrees in majors other than marketing. The differences may have implications for students and their advisors, employers, faculty, university administrators, professional organizations, and for researchers.

COMMUNITY SERVICE IN THE LOGISTICS CLASSROOM: SECOND HARVEST FOOD BANK

Marc E. Ruzicka, The University of Tennessee

Frank Davis, The University of Tennessee

ABSTRACT

Beginning in the 2001-2002 school year, our business school modified its MBA program to be a seventeen-month, modularized program. This replaced the traditional, two-year, four-semester MBA program. Each faculty member that taught first-year MBAs was challenged to redesign their syllabus to incorporate teaching in “modules” that usually lasted one month in duration. In addition, the logistics faculty needed to design coursework that included the introduction of Supply Chain Management to all first-year MBA students. Most assignments were team assignments, but one individual student assignment needed to be developed. Instead of requiring each of the ninety MBA students to summarize a fictitious business case, the instructors partnered with the local Second Harvest food bank. Second Harvest developed ninety actual logistical problems, one for each student, that the organization encounters on a weekly basis. This paper reviews the process that the authors used to develop a partnership with Second Harvest, describes how the student assignments were developed, reviews the results of the students’ papers, and proposes the adoption of Second Harvest as the national charity for logistics academics.

THE IMPACT OF SEPTEMBER'S TERRORIST ATTACKS ON SUPPLY CHAIN MANAGEMENT

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ABSTRACT

Supply chain managers in the United States have had to deal with many uncertainties and supply disruptions in the recent past, but none so potentially significant as the terrorist attacks of September 11, 2001. While there have been costly strikes by teamsters and longshoremen, devastating floods and earthquakes, and major transportation equipment shortages, none of these events resulted in new congressionally-mandated cargo security measures. A new aviation security bill that includes new airfreight security provisions was enacted just ten weeks after the attacks. A new federal agency, the Transportation Security Agency, has been created to oversee security across all transportation modes. Other bills that will likely have major impact on the movement of imports to and through the U.S. by ocean, rail and motor carriers are currently being debated in Congress.

Immediately after September 11th, the federal government began using its existing resources and search/seizure authority of the Coast Guard and the Customs Service to step-up inspections of cargo, ships and trucks and to look at "everything and everybody" crossing U.S. borders. These actions, while certainly justified, slowed pipeline flows and caused disruptions in supply chains. There were reports of delays of up to 20 hours for trucks moving new automobile parts from Canada into neighboring automobile assembly plants in Michigan (Tower 2001). Because of the many supply chain dependencies it would appear increases in order cycle times and increases in delivery variability may have a ripple effect for many logistics managers. It's normal practice for logistics managers to increase safety stocks when they expect greater uncertainty in the supply chain. Logistics managers may also decide to switch to faster, but higher-priced airfreight transportation, outsource more, use fewer carriers and depend more on private transportation. These are some of the potential impact of the 9/11 terrorist attacks.

The purpose of this study was to determine what logistics managers think the impacts of new cargo security measures will be on supply chain operations. Since all modes of transportation were immediately and significantly disrupted by the 9/11 attacks, many logistics managers had first-hand experience with the impacts of terrorism on their supply chain operations. While it is impossible to know for sure what specific cargo security requirements will be mandated by Congress in the future, it is important to understand what impacts on supply chain management are already perceived by logistics managers as changes to normal operations. Thirteen hypotheses were formulated based on the above discussion of transportation disruptions that occurred since 9/11 and expected responses to delays and uncertainties with transportation. The hypotheses were grouped into four logistics areas: customer service, freight costs, outsourcing and transportation mode/carrier selection. The first four hypotheses deal with impacts of terrorism on logistics customer service.

H1: Logistic managers believe that order cycle times for imported parts and goods will be much longer.

H2: Logistics managers believe that order cycle times for finished goods orders to their customers will be lengthened.

H3: Logistics managers believe that reliability of delivery will be much lower.

H4: Logistics managers believe more safety stock will be required.

H5: Logistics managers believe that the 9/11 terrorist attacks will cause freight cost (in general) to be higher.

H6: Logistics managers believe that freight costs will absorb a bigger share of total logistics costs.

H7: Logistics managers believe there will be more outsourcing of outbound transportation.

H8: Logistics managers believe there will be more outsourcing of inbound transportation.

H9: Logistics managers believe there will be more use of international airfreight.

H10: Logistics managers believe that fewer carriers will be used to move inbound freight.

H11: Logistics managers believe that fewer carriers will be use to move outbound freight.

H12: Logistics managers believe there will be more use of private transportation for inbound freight.

H13: Logistics managers believe there will be more use of private transportation for outbound freight.

The results show that logistics managers believe increased security measures both actual and anticipated, will significantly affect logistics customer service, transportation cost and performance, and mode/carrier selection. As expected the survey findings indicate that more safety stock will be required to deal with the extra level of uncertainty brought about by the terror attack of 9/11. On the issue of how the terror attacks have affected shippers' propensity to outsource transportation, the survey results were unexpected. The logistics managers who responded to the survey did not agree that there would be more outsourcing for either inbound or outbound transportation. The findings on the impacts of the terror attacks on transportation mode selection were more consistent with the hypothesized results. There was fairly strong agreement that the 9/11 attacks would prompt greater use of in-house transportation. The survey was done only three weeks after the terror attacks. While much has changed since then, there is still a great deal of uncertainty over new security measures that might be enacted. No one knows for sure what the continued impacts will be. Once Congress passes or tables pending security legislation the picture may become clearer. At that point, a more comprehensive survey on a broader scale should be done. It is clear now however that it won't be business as usual in the critical area of transportation. Security will be at least equal in importance to speed and efficiency in the movement of cargo, especially international cargo. Supply chain managers will have to deal with increase security and more uncertainty throughout their supply chains for a long time to come.

FORMULATING OPTIMAL E-SUPPLY CHAIN STRATEGIES: THEORETICAL DEVELOPMENT AND EMPIRICAL VALIDATION OF AN E-BASED SUPPLY CHAIN STRATEGY OPTIMIZATION MODEL

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ABSTRACT

This summary presents the key findings of the paper with the above title, which concerns the formulation of optimal supply chain strategies in complex environments. The complexity can be immense in supply chains with many actors, having different strategies and business objectives, as well as various goals for the supply chain, which can make real-life supply chain integration a daunting task to achieve for business executives.

Current models for Supply Chain Management (SCM) agree that the sharing of business information is a crucial element, which binds supply chains together end-to-end. However, there is not consensus as to which of the many SCM-business processes should be coordinated on a tactical or operative level across the chains in such a manner. Recent SCM theory concentrates on strategic collaborative planning and execution.

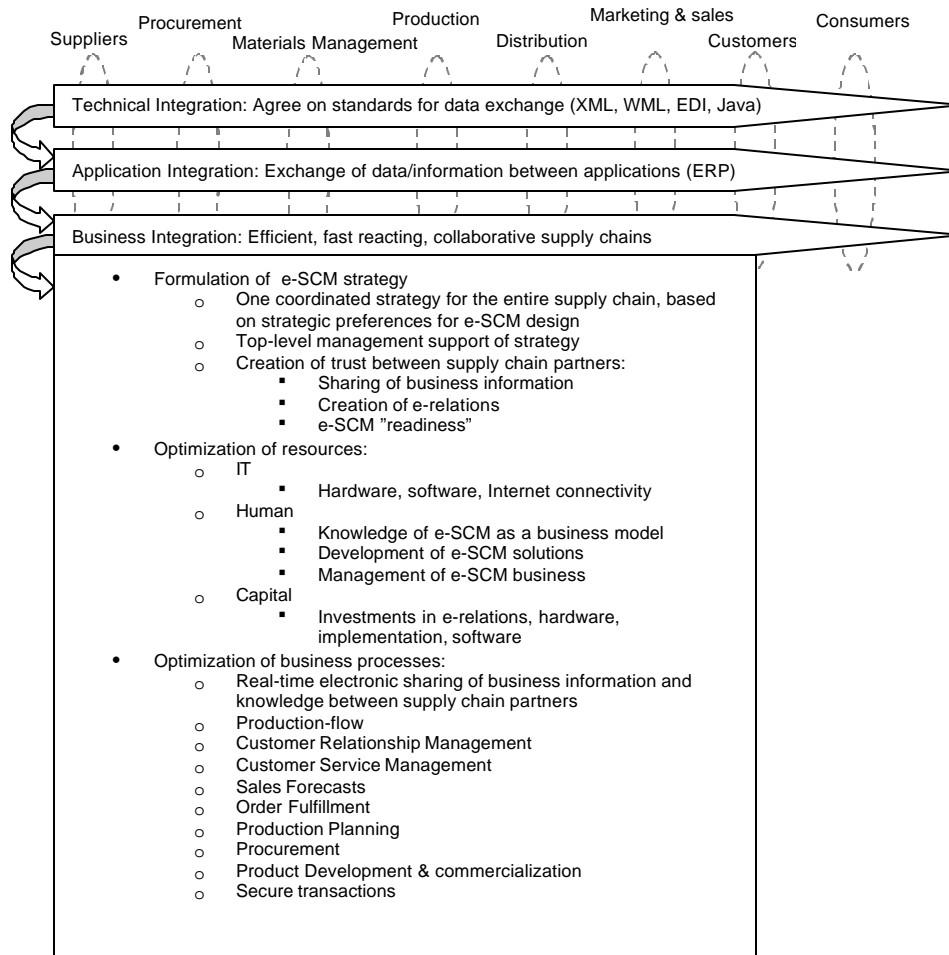
Also, the sharing of business information seems to be an acceptable assumption in dyadic business relationships, in which two companies agree on aligning processes and share the information necessary to conduct SCM and achieve efficiencies in the operations. However, most supply chains involve far more than just two companies, which may not have the same interests, understanding of SCM, resource levels, willingness to invest in necessary IT infrastructure and consequently might also have a different strategic focus.

We argue that current State-of-the-Art e-business and supply chain management, combined into the concept of e-SCM, as well as the use of transaction cost theory, network theory and resource-based theory, altogether can be used to form a model for analyzing supply chains with the purpose of reducing the uncertainty of formulating optimal supply chain strategies.

The E-Supply Chain Strategy Optimization Model (E-SOM) is therefore presented as a way to analyze supply chains in a structured manor in regards to strategic preferences for supply chain design, relations and resources in the chains with the ultimate purpose of enabling the formulation of optimal, executable strategies for specific supply chains. Research results based on data from primarily US based companies has been used to validate the usefulness of the model. This model is illustrated on figure 1 on the following page.

E-SOM has proven to be valuable in identifying key factors, which enable executives to comfortably formulate and execute strategies for their supply chains.

Figure 1: E-Supply Chain Strategy Optimization Model (E-SOM) – a framework for e-SCM



Optimal supply chain strategies can now be formulated for each supply chain, instead of having a “generic” strategy for all supply chains, which may not be executable in complex environments.

These conclusions are based on the partial results of the research design, measuring overall strategic preferences from a conjoint analysis, and the resource data, measuring the “practicable” technical, human and financial possibilities. This information combined with the relation data, measuring willingness to share different types of information, allows the user of the Strategy Optimization Model framework to create a unique profile of the current supply chain situation, and the future possibilities in any given supply chain. By assembling and consolidating partial results, such as the strategic preferences from the conjoint analysis or the IT resource measurements, the applicator of the model is able to isolate problems in the supply chain. The applicator of the Strategy Optimization Model will be able to spot whether the identified problems are related to a specific company in the supply chain or if the problems are related to the majority of the participating companies in the supply chain.

From an ROI perspective the Strategy Optimization Model framework seems like a promising tool to evaluate new SCM and e-business investments, as well as increasing the survival rate for current e-business initiatives.

A CALL FOR IMPROVED LOGISTICS PERFORMANCE MEASUREMENT: EXTENDING THE FOCUS TO THE SUPPLY CHAIN

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Soonhong Min, Georgia Southern University

ABSTRACT

Supply chain coordination is becoming more important to individual firm performance. The purpose of this paper is to present a new framework for logistics performance measurement in today's business environment, where interdependencies of trading partners is growing in strategic significance. A review of the relevant literature is provided and the contributions of various researchers are shared. Significant gaps in the literature are identified. A new framework characterized by seven key principles is proposed to guide the shift in focus in logistics measurement to the extended enterprise of the supply chain. Finally, areas for consequential future research are presented.

All seven CLM-sponsored studies on logistics performance measurement published between 1978 and 1999 may be summarized with four significant findings:

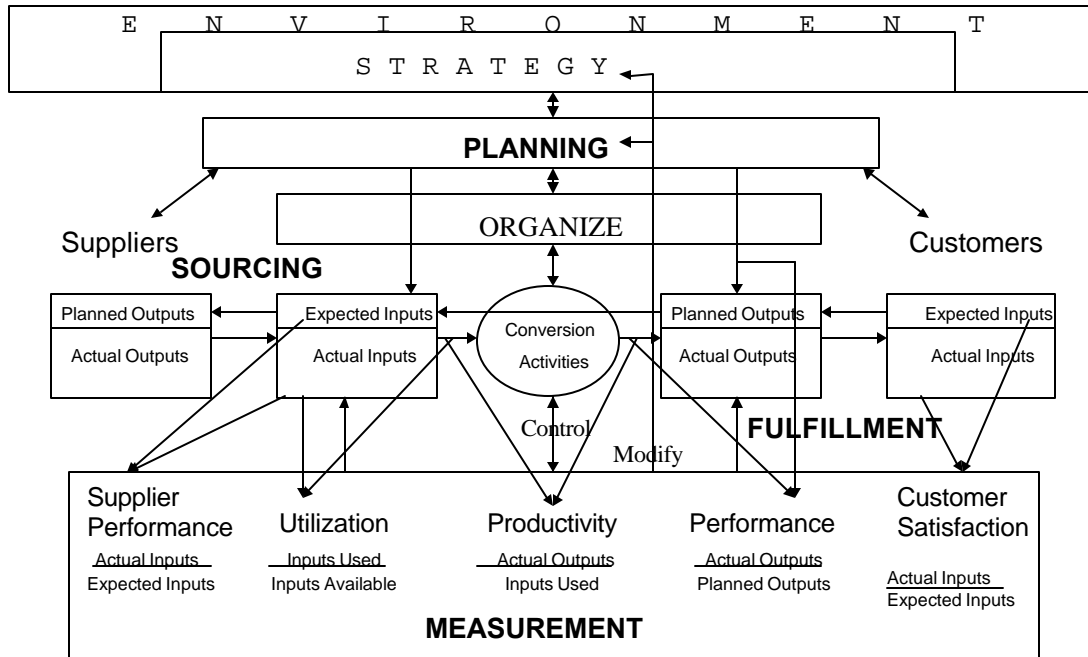
- (1) There is great opportunity for supply chain logistics cost reduction.
- (2) There is an insufficiency of collected data, information, and measurement.
- (3) There is a widespread inability to articulate the cost-benefit of supply chain management.
- (4) Many of the logistics savings cross supply chain corporate boundaries.

These studies demonstrate that logistics performance measurement, even in the best performing companies, has much room for improvement. These studies create a compelling call to action for research on, and application of, improved logistics performance measurement.

The literature has not adequately addressed the need to designate or identify both *customers* of measures and *owners* of measures. Suppliers of products or services often unilaterally determine what should be measured and assign an acceptable (to themselves) value to be achieved. The customer of the product or service is often not included in those decisions. A consignee, for example, might react differently to their experience of "on-time, complete delivery" if they were included in determination of what should be measured and decide what values for the measures would be acceptable. Certainly, the supplier is best directed if the customer's needs and expectations are known. Often, no one person, or team of people, within the supplier's firm takes personal ownership to the measures developed or values achieved on behalf of the customer. Consequently, file cabinets are filled with performance reports that are non-informing and non-actionable. The purpose of logistics measures can be understood, and appropriate administration can be effected, *only* when customers and owners of the measures exist and collaborate. This is important because customers of measures must be involved in predetermining the expected or required performance, for they ultimately judge the resultant performance based on the emergent value of the outcome measure. Joint determination between owners and customers of measures is crucial to achieving customer satisfaction and improved supply chain performance.

Additionally, the focus of previous studies has been somewhat restricted to the measurement of the functional performance of a single firm and, as a result, the views of different but closely related functional areas and/or firms have not been reflected in developing logistics performance measurements. Moreover, this narrow focus, limited to the accounting and operational view of logistics in single functions or firms, produces a sub optimizing set of decisions for the firm and the extended enterprise. The literature does not provide a systemic, strategic view of logistics measurement in the supply chain.

Planning is an essential antecedent to measurement. A performance goal must be predetermined before it makes sense to measure the performance. The value of a measure can only inform a decision if it can be compared to a stated goal. Otherwise it is non-actionable and not worth calculating. The calculation of performance always requires comparison of actual output to planned output.



This study provides insights that have produced a new framework to guide research on and implementation of logistics performance measurement in the context of the extended business enterprise. This new framework is based upon these seven key principles: (1) planning is an essential antecedent of measurement, (2) measurement is necessary for control, (3) choice of strategy matters, (4) activity-based measurement is required, (5) logistics measurement spans multiple firms, (6) relationships and outcomes need to be measured, and, (7) measurement criteria depends on the level of analysis. A supply chain orientation is necessary to construct supply chain goals, strategies, planning and governance structures. The multi-firm dimensionality of supply chain management adds greater complexity and challenge to performance measurement. Significant and consequential research in the area of logistics and supply chain performance measurement is greatly needed.

**LET'S GO EUROPE TO STUDY BUSINESS LOGISTICS?
RESULTS FROM A PILOT STUDY EXAMINING EUROPEAN MASTER
PROGRAMMES IN LOGISTICS AND SCM**

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ABSTRACT

As logistics and Supply Chain Management (SCM) become more and more important in today's business environment, academic educators are requested to offer attractive and state-of-the-art programmes. The Logistics Educators Conference offers a forum to obtain successfully tested results of best-in-class-teaching of logistics/SCM. However, the presentations of logistics/SCM syllabi are rather focused on North-American education although a high share of educators from outside the US has attended these conferences. Some exceptions were identified during the 1990's, such as the contributions of Kotzab, Riebesmeier & Novak (1995), Gammelgaard (1997) or Christiansen et al. (2000) who presented specific peculiarities of teaching logistics/SCM at their European home universities. The importance for European educators to compare their efforts with others is increasing mainly due to the Bologna declaration of the Ministers of Education of the European Union member countries in July 1999. The Bologna declaration (2000) demands an integrated European education, where European students can study at any European university. One attempt to integrate 16 universities, which offer a common internet-based course in Global Supply Chain Management, was introduced at last year's Educators Conference by Delfmann & Albers (2001). Still there is a lack of knowledge on where to study logistics and/or SCM in Europe, which e.g. the European Logistics Association tries to reduce by presenting an academic directory on European Programs in Logistics of eleven selected European universities (ELA 2001). Kotzab & Müller-Steinfahrt presented a first picture of European logistics/SCM education at the ELA Educators Conference in Athens 2000. Our attempt continues this endeavour.

Several efforts have been made in order to get a better overview of where to study logistics in Europe such as the ELA-Compendium on Master Programs in Europe, that includes a presentation of 15 different master programs offered by 19 European universities (ELA 2001) or the study of Kotzab & Müller-Steinfahrt (2000), presented at the 2000 ELA-Educators Conference, including an analysis of 87 European and 122 German educational institutions. These studies give a diverse picture of logistics/SCM education in Europe, showing that academic education in logistics is rather locally driven than offered at a pan-European level. Different logistics approaches, different languages, different academic degrees and different study durations have been the main significant findings.

Based on these experiences, we started an initiative to reduce the identified knowledge gap on logistics education. The overall goals of this attempt were a) to give a structured overview of master programmes in business logistics in Europe; b) to identify to which degree the programmes are integrated in order to fulfil the requirements of the Bologna declaration and c) to analyze whether logistics education contain the appropriate content to give students managerial, technical and social skills for their future as logisticians. Based on a list provided by the International Office of the Copenhagen Business School, we sent an email-survey to the International Officers of our 283 partner universities (59 % European schools). We received 154

responses (86 from European schools). As we concentrate in this phase on European schools, we evaluated the valid European replies in several steps. First, we eliminated those schools, where the respondent answered positively, however the school offered only single logistics courses. We analysed in a second step the content of the web pages of the remaining 22 schools and had to reduce the final sample to 17 universities and business schools, which logistics/SCM programs are listed in Table 1.

Country	School	Department (in local language)	Website	Name of the Programme (translated to English)
Austria	Fachhochschule Steyr	Internationales Logistikmanagement	www.fh-steyr.at	International Logistics Management
	Wirtschaftsuniversität Wien	Institut für Transportwirtschaft und Logistik	www.wu-wien.ac.at/inst/transport/tafel.html	Transport Economics and Logistics
		Produktionsmanagement	indi.wu-wien.ac.at/	Operations Management
Belgium	Université Catholique de Louvain	Unité de Production et de Gestion des Opérations/Institut d'Administration et de Gestion	www.prod.ucl.ac.be/enseignement/index.html	L'enseignement en gestion de la production et des opérations
Germany	Europa-Universität Viadrina	Lehrstuhl für Allgemeine Betriebswirtschaftslehre insb. Industriebetriebslehre	viadrina.euv-frankfurt-o.de/~ibl/	Industriebetriebslehre
	Gerhard-Mercator-Universität Duisburg	Lehrstuhl für Betriebswirtschaftslehre – Logistik und Verkehrsbetriebslehre	www.uni-duisburg.de/logistik/	Logistics and Transportation
	Universität Mannheim	Lehrstuhl für ABWL und Logistik insb. Verkehrsbetriebslehre	www.bwl.uni-mannheim.de/Ihde/	Logistics and Transportation
	Universität zu Köln	Seminar für Planung und Logistik	www.uni-koeln.de/wiso-fak/planung	Logistics Management and Planning
	Westfälische Wilhelms - Universität Münster	Institut für Supply Chain Management	www.wiwi.uni-muenster.de/~01/index.htm	Supply Chain Management
Spain	ICADE Madrid	No information available	www.upco.es/pag/instpostgrado	Master en Logística Integral
Finland	Svenska Handels-högskolan, Hanken	Marketing and Corporate Geography	www.shh.fi/index_eng.htm	No information available
	Vaasa Universitet	Information Technology/Industrial Management	http://www.uwasa.fi/itt/	Master of Science in Production Economics
	Åbo Handelshögskola/Turku School of Econ. and Bu	Department of Marketing/Logistics Studies	http://www.tukkk.fi/markkinointi/log/eng/defaulteng.htm	Logistics Studies
France	Groupe ESC Brest	No information available	www.esc-brest.fr/fr/espaceformation/s/logistique.htm	Logistics management
Great Britain	Lancaster University	Management Science	www.lums.lancs.ac.uk/MA_SCI/Masters/Courses/Logistics.htm	Msc in OR & MBA
Greece	Athens University of Economics & Business A.S.O.E.	Decision Science	www.decision.aueb.gr	MSc in Decision Sciences: Logistics Specialization
Netherlands	Erasmus Universiteit	Department Management of Technology and Innovation	www.fbk.eur.nl/DPT/VG6/welcome.html	Logistics and Operations Management
Poland	University of Gdansk	Katedra Logistyki	http://kl.univ.gda.pl	Transportation and Logistics

Table 1: List of the Universities and their relevant master programmes (included in the pilot study)

Like in previous studies, we faced certain problems finding relevant information, mainly due to a lack of language (although the authors are fluent in Danish, English, Swedish, German and French). Most of the websites contained the relevant information only in the local language; the English pendant did not include everything. The analysis of the programmes' courses into a global valid framework had been difficult, because of national differences in the logistics approaches (see Pfohl 2002).

ACADEMIC AND CAREER ISSUES IN LOGISTICS: THE MORE THINGS CHANGE, THE MORE THEY STAY THE SAME?

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Paul R. Murphy, John Carroll University

ABSTRACT

The rules continue to rapidly change for the logistics discipline. However, despite the increased corporate visibility and importance of logistics, there continues to be a marked imbalance between the demand for, and the supply of, college educated entry-level logisticians (Beiderman 2001). The current study is in response to this persistent shortfall of talented students to fill entry-level jobs in the logistics discipline. The study presents the results from a study of over 200 students enrolled in a required core course for business majors at a state-supported university. Two primary issues were investigated: 1) student familiarity with logistics vis-à-vis other business majors and 2) student perceptions of logistics in terms of academic and career issues. Key findings from the study include:

- students exhibit relatively low familiarity with logistics vis-à-vis other business majors
- students are essentially neutral to career related issues in the logistics discipline
- students are somewhat unwilling to consider logistics as an academic major
- in terms of demographic comparisons, the findings were relatively robust in regards to GPAs and job commitments
- the findings were slightly less robust in regards to the demographic comparisons involving gender and when major was chosen

These and other findings appear to have significant implications for various logistical constituencies. The fact that logistics can be a relatively unfamiliar major at a school with a long-standing program suggests that both existing and prospective logistics programs face substantial challenges in attracting logistics majors. The findings of the present study appear to indicate that the sophomore year is extremely important for choosing one's major. Therefore, existing or prospective logistics programs should recognize the importance of making contact with students during their sophomore year in school.

The need to reach prospective majors early in their academic careers is supported by previously discussed findings by Knemeyer and colleagues (1998) that suggest an introductory course in logistics is an influence on students selecting logistics as a major. However, introductory logistics management is not a required course at many business schools. Thus, logistics programs should explore other creative means for reaching these students during this critical time. As an example, one of the authors from this study has made guest lectures on logistics in introductory marketing courses.

As pointed out above, the results indicate that students were essentially neutral with respect to career issues related to the logistics discipline. Although further research may be necessary, this neutrality may be linked to the relative unfamiliarity with the logistics major. These findings have implications for universities as well as professional organizations. For example, universities and professional organizations can emphasize the plethora of entry-level jobs, pay levels, and opportunities for career advancement along with the challenging and exciting nature of the work.

Professional groups such as the Council of Logistics Management (CLM) might consider targeting high school students with this information in part because the results of the current study suggest that students who select their major prior to college are 1) noticeably less likely to consider majoring in logistics and 2) view logistics as less exciting than students who choose their major at other times.

Another intriguing result involves an apparent gender gap between male and female students, particularly with respect to academic issues. Most notably, females are less likely to consider majoring in logistics than are male students. As pointed out earlier in the paper, the logistics discipline has long been characterized by a gender gap between males and females and the results of the current study suggest that this gender gap may be present at a relatively young age. Again this has implications for universities and professional organizations. Groups such as CLM's Women in Logistics, which traditionally meets during the CLM Annual Conference, may want to develop methods to spotlight successful young female logistics professionals to students. Universities may want to increase their focus on attracting female candidates to pursue doctoral studies in logistics, with the idea that female logistics professors might enhance the discipline's attractiveness to female students.

The theme of this year's CLM Annual Conference is "The Rules are Changing . ." and there is little argument that the logistics discipline continues to change at a rapid pace. However, the findings from the current study appear to reinforce the fact that logistics continues to be relatively less familiar to college students compared to other business disciplines. This lack of familiarity may manifest itself in students being less willing to consider majoring in logistics. While the relative unfamiliarity and unwillingness to major in logistics have been persistent themes throughout the discipline's history, there may be opportunities to change these perceptions. In particular, the finding that the discipline does not appear to be viewed negatively by students with respect to career issues is encouraging. A key question for logistical constituencies such as universities and professional organizations is how much longer will the discipline be characterized by "the more things change, the more they stay the same?"

TEACHING METHODS IN LOGISTICS: A UNITED ARAB EMIRATES SCENARIO

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ABSTRACT

The focus to this paper on teaching methods was developed over a six-year period from September 1996 to January 2002 when the author was involved in piloting a specialized curriculum in International Trade, Transportation and Logistics under the mandate of Ministry of Higher Education through the Higher Colleges of Technology (HCT) in Dubai. HCT is an umbrella institution with 10 campuses spread across and catering to the educational requirements of the country: to fast track nationals, both men and women into the labour force. It would be relevant to mention here that the national population is only 15 % of the total of 3.2 million people in UAE as of 2002. The government had high priority to educate and train nationals to enter the industry – a process called as *emiritization* of the labour force. Its objective was to displace the expatriates who have been working at all levels in building the country. But the *emiritization* as process has been slowly implemented in the last ten years only. Having said that, the private sector was able to employ only 2% of the nationals who were reluctant to join these companies that demanded high discipline and work ethics. Besides the “pay package” was considerably less than what one might earn in the government departments that employed *emiratis* varying from 20 to 70% of the total work force. Dubai Men’s College (DMC), a unit of HCT, became the focal point of the specialized education in Trade and Transportation. It produced 63 national (men) graduates who were all employed in related areas of transportation and logistics – both public and private sector.

Among other things, the author had to localize the content of the curriculum that opened up opportunities for employment of nationals and also relate the expectations of the private industry to the graduates in this specialization. While the author learnt about logistics skills and competence in demand by the UAE industry, it was observed in three surveys conducted in 1999, 2000 and 2001 as part of the annual quality review of the educational program in DMC that there was a greater need for training in the specialization – not only for nationals but also for non-nationals at various levels of the organization. A TransLog Forum was created to invite experts to share their logistics expertise from the industry. This reflected the speed of economic development in the country with Dubai spearheading the strategy of trading non-oil products and services.

It is to be noted that most of the decisions that impact our specialized area of study is made by intuitive judgment of rulers of the country but verified by the actual experiences of companies caught in the web of evolving the hub in the region. The players in developing the hub included the Government, Industry or both. But the historical development of a modern city-state had its keen focus on regional trade. However, several sectors of the economy were driving the hub-and-spoke system of the trade policy. The hub was evolved and conceived either for all players regardless of the mode of transport or predominantly for only one mode say in air transport.

Accepting the model of the hub appropriate for the role of Dubai in trade in the Gulf Cooperation Council (GCC) region, the author will focus on factors that will continue to shape the future of the emirate and the country as whole. Creating the overall logistics picture is important and involves putting together myriad “mosaics” or bits of logistics data on the hub, to produce the overall image. This situational profile is vital for understanding the demands on teaching logistics in evolving institutions of learning. In fact the emirate of Sharjah has been laying the infrastructure for universities and colleges just to be the hub of higher learning.

Or countries with common borders like Saudi Arabia or Oman or independent island countries like Bahrain or Qatar see the situation of the hub in UAE? The author was inundated with enquiries for training in logistics and supply chain management, more so now when the six GCC will be unified under a customs unions and a single currency a little later.

“What would happen if? “ tests assumptions and considers various assumptions on hub development that will assist the logistics of companies in the region. Considering the interrelationships between variables and attempting to project their consequences. A balance between effectiveness and efficiency is essential to successful logistics operations within the hub by –

- Matching resources of the Emirate of Dubai or other emirates with needs of the industry
- Anticipating additional support requirements for the infrastructure needs of the community
- Integrating logistics with the trading strategies in Dubai and GCC region
- Using the resources in a most optimized manner
- Determining the priorities of logistics in a hub

The author will fall back on various experiences over last few years with the stakeholders of the logistics industry, government and the community at large that led to laying a blueprint for the educational and training programs on International Trade, Transportation and Logistics.

A string of online surveys from 1999 to 2001 were made from time to time to fine-tune the curriculum related to the plan of the emirate to evolve into a trading and learning hub. The experiences of every teacher involved in facilitating learning of nationals relied more on skills aspect of the program. Events were designed to test the progressive learning of students in actual real world with visits to ports and navigating along in the containership on east-west trade routes. At the end of the program, the students enjoyed the process of being aware to the potential demands of their skills in a dynamic industry. There was now a special need for higher learning in logistics and supply chain management that will be addressed by industry groups in UAE such as Supply Chain Logistics Group of Middle East (SCLG-ME), National Council For Freight and Logistics (NCFL) and Dubai Quality Group.

“TRIANGULATION” IN LOGISTICS RESEARCH: AN EXAMPLE

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ABSTRACT

The purpose of the paper is to discuss the design and different research methods involved in the author's research relating to multimodal transport transit corridors in South East Asia. First, a framework for research methodology for transport and logistics studies is presented, with a particular emphasis on case study research strategy. “Triangulation” is then proposed and utilised as a research technique. The paper concludes with the different methodologies used in the author's research.

The primary motivation for the research to be undertaken was that there was a need to examine the effect of integrated multimodal transport transit corridors operating in the region, and their impact on regional trade competitiveness. The main construct behind the research was that of “multimodal transport competitiveness”. One of the main hypotheses that was derived from the construct was that multimodal transport effectiveness and competitiveness was dependent on the selection of optimal modes of transport for the movement of goods from door-to-door as well as from the quality of the infrastructure in place. Measures were then implemented to develop questions that needed to be answered relating to the selection of modes of transport and multimodal transport corridors. Lao PDR as the sole land-locked country in the region was selected as the case study.

Triangulation of research methods lends greater empirical support to the theory in question where both qualitative and quantitative methods are used appropriatelyⁱ. In this case study, the author used two types of triangulation techniques:

The first one is “data” triangulation as the author collected data from users of the transport network; transport and logistics service providers, and policy makers. This data triangulation has been done in Cambodia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand and Vietnam (see Table 1).

Table 1: Data sources utilised for the research

Country	No. of policy makers	No. of transport & logistics providers	No. of shippers & consignees	Others
Cambodia	27	21	0	4(a)
Lao PDR	14	12	21	7(a)
Malaysia	17	16	1	14(b)
Myanmar	5	29	0	6(b)
Thailand	23	15	0	17(b)
Singapore	0	1	0	1(c)
Vietnam	7	34	0	3(d)

Source: The Author

(a) Include Customs Officers & Insurance companies.

(b) Include professional organisations, customs, banks and university staff.

(c) Singapore Logistics Association.

(d) Include journalist, Ministry of Security and university staff.

Since Lao PDR was the main focus of the research, the emphasis on Lao shippers and consignees was a prerequisite for the successful completion of the study. Shippers and consignees in the neighbouring countries were not considered part of the research. Nevertheless, the role of

policies makers and transport/logistics service providers in neighbouring countries are of critical importance for the efficiency of the transit corridors to and from Lao PDR.

The second triangulation technique that has been used in this study is “between” method triangulation. The author combined different research methods in order to try to obtain a “fuller” picture of the study. The research therefore focused on the determinants of modal choice in freight transport in Lao PDR through a questionnaire-based survey as well as the modelling of the various multimodal transport corridors in the region. The methods of data collection and interpretation used in this case study were:

1. Questionnaire (structured interviews);
2. Unstructured interviews;
3. Transport modelling.

In the research, more than 200 respondents were interviewed between 1998 to early 2000. Some respondents were interviewed individually and some were interviewed in focus groups of 4 or 5 persons depending of their availability. A confidence index was used to appraise ‘risk analysis’ in this study, which is derived from the field of political science, especially political instability methodology. Qualitative predictive research in political instability focuses upon intuition, judgement and Delphi forecastingⁱⁱ. Intuitive qualitative forecasting is central to a systematic analysis. All the persons interviewed for this study were knowledgeable about international trade transactions, transport operations, documentary procedures, and rules and regulations in their respective countries or region. The respondents ‘intuitively’ assign a rating for each transport mode, intermodal transfer charge and other nodal activities. This intuition is based on the respondents immersion in the history, culture, politics, experience in trading practices, transport operations, administrative procedures of their own country and up to a certain extent of their own regionⁱⁱⁱ.

Triangulation is not a new research strategy or technique as many researchers in transport and logistics are already using multi-method research strategies. The novelty in this paper is that it is the first time that triangulation is explicitly discussed and justified as a research strategy for transport and logistics research.

ⁱ Gubba EG & Lincoln YS (1994) “Competing paradigms in qualitative research”, *Handbook of Qualitative Research* (Denzin NK & Lincoln YS (Eds.), Sage Publications, Beverly Hills, 1994: 105-117.)

ⁱⁱ Andriole SJ & Hopple GW (1983) “An overview of political instability research methodologies: basic & applied recommendations for the corporate analyst”, *Global risk assessment: issues, concept and applications* (Rogers J (Ed.), Global Risk Assessment Inc., Riverside, California, 1983:75-97)

ⁱⁱⁱ Bruce D “Integrating political risk methodologies at a California bank, *Global risk assessment: issues, concept and applications*, (Rogers J (Ed.), Global Risk Assessment Inc., Riverside, California, 1983: 131-139)