



## Introduction to the Papers to Be Presented At the 2012 CTRF Conference

In a world with exhaustible and limited natural resources, growing population, increasing demand and increasing concentration of people in urban areas, a recurring concern in transportation is its sustainability. To obtain a better understanding of our position on these issues, the basic theme of this years Conference is *Sustainable Transportation: Economic, Social and Environmental Perspectives*.

### Organization of the Proceedings and an Overview of Individual Papers

The papers in these proceedings are organized under **fifteen** sessions: Sustainable Transport I; Passenger Transportation I; Supply Chain Management; Passenger Transportation II; Sustainable Transport II; Optimizing Infrastructure; Maritime and Port Issues I, Governance/Management I; Trucking Issues; Transportation Safety I; Maritime and Port Issues II; Railway Issues; Aviation and Airports; Operations Research; and Governance/Management II.

#### 1.1 Sustainable Transport I

*Validation of an Emissions-Dispersion Microsimulation Model using Sensor Data* – The global imprint as a result of transportation has become a matter of increasing concern. In this study, the emission of carbon monoxide (CO) from vehicles is simulated through the use of traffic microsimulation, emissions modelling, and Gaussian plume dispersion modelling. The resulting modelled pollutant concentrations of CO are compared with those measured at an emissions sensor location. The comparison shows that the model produces the same rate of increase in CO concentration over the course of the AM period as what is measured by the emissions sensor. However, other (as yet unknown) sources of ambient CO concentration are also a major contributor. This study provides some confidence in the applicability of this method of emissions simulation over small, urban areas.

*Microsimulating Emissions and Population Exposure In Downtown Toronto* – Reducing emissions in this era of global warming and changing weather patterns has become a matter of increased attention. This research builds an integrated tool that models traffic at the individual vehicle level in downtown Toronto, estimates individual link emissions, estimates how those emissions are dispersed through the atmosphere to neighbouring communities under given weather conditions; and finally estimates the exposed population at times of peak emissions. The authors find that this integrated model is a promising tool for assessing the impacts of new technologies and scenarios on network emissions. In this research, the benefits of converting gasoline and diesel medium duty trucks to Ultra Low Emission Vehicles (ULEV) are analyzed.

*Monitoring the Influence of Green Driver Training within the City of Calgary's Municipal Fleet* – How can one reduce CO<sub>2</sub> emissions? This study explores the opportunity available for the City of Calgary to improve the economic and environmental performance of the municipal fleet through the adoption of eco-driver training. The results of the study are positive, with a decrease in idling resulting in fuel cost decrease and an elimination of CO<sub>2</sub> emissions. Moreover, participant feedback found 81% of drivers would commit to implementing the eco-driver training techniques they had learned, with a further 72% making a commitment to reduce idling at work. Best practices from this research can be used as a model for other municipalities intent of reducing GHG emissions.

## **1.2 Passenger Transportation I**

*A Practical Model for Minimizing Waiting Time in a Transit Network* – How can we minimize the waiting time for a connection in a transit system which decreases a passenger's desire to use public transit and also increases ridership on our transit? This study attempts to provide an answer. It begins by considering both transfer and non-transfer waiting times, using two mixed integer non-linear programs to deal with the problem for any transit system. The first model uses departure time and headway of transit lines to minimize the system's waiting time. A second model applies an extra stop time in transfer stations to reduce waiting time of passengers missing their transfer with a small gap, in addition to the variables of the first model. Results of using both models show a significant decrease in waiting time of the transit system's passengers.

*Reducing Bus Dwell Time by Shifting the Location of Payment* - In many bus systems, inefficiencies are created as passengers can only board in a single-file queue at the front door. Can efficiencies be created by eliminating fare collection on buses? To address this issue, this paper examines several passenger boarding models and addresses whether the cost reductions to the operator would be sufficient to outweigh the lost revenue. It summarizes available research and provides a blueprint for a cost-benefit analysis. It suggests that travel time could be reduced together with a reduction in costs. It then examines how demand would change as a result of this decreased travel time and outlines ways that some of the efficiency gains can be captured without large-scale system redesign.

*Improving Taxi Regulation through Performance Measurement* - The taxi industry is regulated in many municipalities around the world. Such regulation has often been criticized as unnecessary. But little research has been conducted on how to regulate more effectively. To provide an answer to this challenge if regulation is necessary the British Columbia government and the Vancouver taxi industry have cooperated to meet this challenge through the issuance of peak operating permits. The permits themselves are temporary and part of a regulatory process that seeks to link the increase in licenses to objectively measured taxi service performance and productivity. This paper describes the research that produced the taxi performance metrics and analyzes the feasibility of embedding such a process into the regulatory process. The goal is to improve regulatory effectiveness by enabling it to be performance driven.

## **1.3 Supply Chain Management**

*Strategic Use of RFID in Enhancing Supply Chain Management (SCM): A Study of Manufacturing and Retail Firms* - During the last decade, Radio Frequency Identification (RFID) technology has become one of the popular and fastest growing technologies in the world. It is a tool for enhancing the effectiveness of SCM in a variety of industries ranging from manufacturing to the retail sectors. This paper provides an in-depth study of the effectiveness of RFID in SCM industries (manufacturing and retailing). It discusses the RFID technology, its uses in different areas of SCM, the benefits, the shortcomings and how strategic use of RFID can enhance SCM in manufacturing and retail industries based on some successful uses of RFID in businesses such as Wal-Mart, Dell and Toyota.

*Logistics-intensive clusters and regional economic development: a review of the current evidence* - Transportation, distribution and logistics (TDL) industries, generally clustered around intermodal facilities, are frequently featured in regional economic development plans in North America. Are there reasons for this? The authors maintain that expansion in the TDL sector is often seen as a way to create new employment and take advantage of the growth in container movement arising from global trade. This paper reviews the available information on the feasibility and potential regional economic benefits of logistics-intensive clusters. It begins with a discussion of the economic geography of freight transportation hubs. This is followed by an overview of the many regional development plans in the US and Canada that currently target TDL as a potential growth sector. The paper concludes by defining areas where more research is needed.

## **1.4 Passenger Transportation II**

*Peter Rizov - Economic Impact Assessments and Benefits Cases of Public Transit Projects: The Need for Standardization, Transparency, and Follow-Up* - While much progress has been made in terms of conducting rigorous and meaningful economic impacts analyses and benefit case assessments of municipal infrastructure project, such efforts remain divergent and inconsistent across jurisdictions, both in approach and findings. Further, such assessments are rarely revisited to gauge their accuracy. To partially address this problem, this paper compares and contrasts key elements of a selection of recent public transit

infrastructure projects, chiefly light rail projects, in North America and Europe. These are then used to draw out key commonalities as well as novel insights from amongst the projects in order to build a list of key best practices for such analyses and cases. Lastly, these findings are incorporated into a discussion on a practical approach to making such reports more accurate, understandable, usable and believable.

*Modelling of Personal Rapid Transit (PRT) System for Indian Scenario* - Most Mass Transit systems move people in groups over scheduled routes. This has inherent inefficiencies and there is a need to eliminate these inefficiencies and wastes through unconventional and innovative public transportation systems. Can this be achieved? The authors show that one such system is the Personal Rapid Transit (PRT). It is a form of public transport that uses small, driverless, automated electric 'podcars' with capacity of 4-6 persons, running on guideways to provide a taxi-like service to individuals or small groups of travellers. The first commercial application of such a system has been at Heathrow Airport. This paper focuses on the modelling and economic analysis of a PRT system at the proposed Navi Mumbai airport in India. Modelling has been done using simulation softwares, ATS CityMobil and Hermes Simulator.

*School Bus Transportation in Canada* – School bus transportation is a small segment of road transportation. In this paper, the authors provide an overview of school bus transportation and examine a few issues that have arisen in the provision of school bus transportation in Canada. They examine the school bus industry, the structure, its services, its operation by province, the firms in the industry and concentration. Thereafter, the study briefly indicates the types of regulations in this industry which ultimately affects entry into it. It also briefly describes a few studies on school bus transportation services, a suggested market structure approach together with likely practices that could affect it - coordination and bid-rigging. Finally, it comments on the impact of school bus transport programs on public transportation systems.

### **1.5 Sustainable Transport II**

*Methods for Reducing Carbon Output in the Trucking Industry* - By identifying methods that improve fuel economy, trucking companies that do this can also realize significant financial savings. This paper explores technological implementations and management practices to help trucking companies in this initiative to reduce their environmental footprint. The paper discusses hybrid engine technology advances, which may require significant capital for phasing hybrid trucks into fleets, as well as other applications with lower up front capital cost. These include modified truck aerodynamics, auxiliary power units (APUs) to reduce fuel usage during rest periods, and on-board monitoring systems to help drivers maintain speeds that optimize fuel consumption and reduce engine wear. Support from top management is necessary for programs together with use of government sponsored programs.

*Impact of Real-world Powertrain Configurations and Commute Patterns on Plug-in Hybrid Electric Vehicle Performance* - Plug-in Hybrid Electric Vehicles (PHEVs), which partially utilize grid electricity for propulsion and thus consume fewer fossil fuels, are seen as possible solutions to issues such as climate change, energy independence and rising fuel prices. To assess potential demand for PHEVs, a series of tank-to-wheel analyses were conducted to determine how powertrain configurations and driving cycles affect PHEV performance and potential adoption. The results of the analyses indicate that so long as the distance between charges is kept reasonably low, PHEVs can profoundly reduce fuel consumption for the average consumer. Cost-benefit analyses have determined that PHEVs are more expensive than comparable conventional vehicles. For PHEVs to attract more consumers, either the price premium needs to decrease or the cost of fuel needs to increase relative to electricity.

### **1.6 Optimizing Infrastructure**

*Modeling the Resiliency of Surface Freight Transportation Systems: A Simulation Approach with Application to Ontario* - Identifying critical infrastructure within a transportation network is of great importance to make sure the network is fairly resilient. The latter refers to how well the network can function in the aftermath of an unexpected event, and how quickly it can be restored. In this paper, the authors propose a hierarchical approach for evaluating the resiliency of the Ontario road network. The concept of redundancy, which is the ability to shift traffic to alternative routes during a disruption, is utilized to assess resiliency. The findings suggest that the Southern Ontario road network has at least one level of an acceptable built in redundancy and Northern regions are especially vulnerable to network disruptions. Toronto has only one level of redundancy. Road capacity and congestion has a major impact on travel time and thus the resiliency of the road network.

*Road Pricing and Investment* – Optimal road pricing and investment have been matters of interest in highway transportation for sometime. The author examines the nexus between road pricing and capacity investments. It begins with a brief review of optimal tolling and capacity decisions for a single road link under "first-best" conditions when the rest of the transportation system and economy are free of distortions. It then explores various complications. For example, what happens when some links of the road network cannot be tolled, or when public financing constraints create a motive to use tolls for revenue generation in addition to demand management? Finally, the paper looks at toll and capacity decisions by private toll road operators and examines how well they perform in terms of economic efficiency.

### **1.7 Maritime and Port Issues I**

*Port Risk Classification* - Responsible management of Canada's environmental resources and growing maritime trade, especially in offshore oil and gas production and transportation. This requires the establishment of a national risk management strategy regarding places of refuge for ships in need of assistance. Ports have to be classified. Classifying ports on the basis of risk categories will facilitate and enhance the decision-making process when a request for refuge is received from a ship. The financial resources needed to upgrade the risk category of a port can also be estimated with reasonable accuracy, using the risk assessment procedure designed and implemented to classify the ports in this study. The novel risk assessment procedure demonstrated in this paper has been applied to twenty-one ports on the east coast to classify them according to four risk categories. It can be extended to include all ports of Canada or elsewhere in the world.

*Social Operating License for Ports* - The growing global economy has generated increased cargo throughput in Canadian ports. In many cases, this cargo growth may have little relevance to the local or even regional community – as it is often destined for inland markets in central Canada and the US. The net result may be "global change - local pain" with the local community suffering from negative externalities. Ports must therefore build their "reputational capital" to ensure crisis situations do not grow out of reasonable proportion. Having a "social license" from the local community is increasingly being seen in the corporate world as one of three essential "licenses to operate" – economic, legal and social. The same is true in the ports community. This paper examines the concept of social license and its application in Canadian ports and other world ports.

*Introduction to the Legal and Policy Framework for Arctic Marine Transportation in Canadian Waters* - The author reviews legal considerations for the development of Marine Transportation Policy in the Canadian Arctic, specifically the Northwest Passage. The focus is on describing the steps to opening the Northwest Passage to regular oceanic travel in Summer and Fall. Topics covered are: Transport Canada Marine Regulations; current state of the Canadian Coast Guard in the Arctic; Department of Fisheries and Oceans Regulations; Nunavut and Inuvialuit Final Agreements and related land use planning and environmental assessment procedures; ownership of lands and waters in the Arctic; key environmental hazards; and experience from the Port of Churchill

### **1.8 Governance/Management I**

*The U.S. Harbor Maintenance Tax: The Great Whipping Buoy* - Taxes can create competitive disadvantage. This has come to the forefront recently not only in air transportation but also in water transportation. A very recent example is the latter. If ocean cargo enters a Canadian port in the first leg, the US Harbor Maintenance Tax (HMT) is avoided all together. However, it is applicable to all (48) non-contiguous US States and territories. This activity has the ports of Los Angeles, Long Beach, Oakland, Portland, Seattle and Tacoma concerned about their comparative disadvantage. And their targets of concern are the ports of Vancouver and Prince Rupert. This paper examines the structure of the HMT and its implications. It offers some conclusions as world trade picks up in the post-recession environment. It then discusses U.S. short-sea shipping, U.S.-Canada Great Lakes shipping and the extent to which the HMT is a convenient straw man for U.S. shippers and carriers over and above other, larger sources of comparative disadvantages.

*The Decline of Shipping Conferences - Legislative Reforms in Canada, USA, EEC and Australia* – Granting privileges and exemptions to some groups of people and industries have always attracted attention. Once such industry is shipping liner conferences. Shipping conferences that once dominated ocean liner transport were exempt from the antitrust laws of most countries from the late 1880s. A century later,

shipping conferences witnesses a mounting criticism against the exemption. But little was accomplished until 2008 other than reducing the scope of the exemption so as to enhance competition. This paper begins by examining the background to shipping conference legislation in Canada, USA, EEC and Australia. It then briefly examines the rationale for shipping conferences and the trends. Finally, we examine the recent legislative developments in Canada, USA, EEC and Australia and other developments as well.

*Review of Federal Transportation Statistics” for the Royal Commission on Transportation (MacPherson Commission)”—a 50 year Assessment* - In July 1962, as part of the MacPherson Commission, formally known as the Royal Commission on Transportation, there was a review of the Federal transportation statistics collected and published. Since then what has happened? This paper attempts to examine the Royal Commission’s assessment of Federal transportation statistics in Canada and to evaluate what has improved, what has gotten worse, and what has not changed fifty years later.

## **2.9 Trucking Issues**

*Measurement of Trucking Sector Productivity and Safety* - Using data gathered anonymously by remote sensing between 2005 and 2009 in British Columbia, the authors examined the length and duration of continuous travel segments undertaken by drivers of large Class 8 highway trucks. Frequency distributions were also developed for time periods when vehicles were not moving. Daily total travelling hours and distance profiles were evaluated for the data which was geo sorted into trucking activities located primarily within urban / suburban environments compared to highway trips outside of these zones. These evaluations are significant for verifying anecdotal information concerning motor carrier productivity standards, assessing the implications of some of the hours of service regulations upon the industry, and investigating trends in driver behavior over the five year sample period.

*Balancing Freight Transport Cost and Driver’s Quality of Work Life: the Role of Early Delivery Requirements Notices* - A long-standing challenge in the long-haul trucking sector is to balance the need for cost-efficient operations with the need to avoid drivers spending excessive time away from home. This paper posits and demonstrates that better balances between these potentially competing needs are attainable when shippers provide sufficiently early notice of their delivery requirements. Specifically, this study shows that, for a given targeted level of time at home, earlier notices from shippers will, invariably, reduce the carrier’s freight delivery operations. It also discusses the significance of the observed cost reductions and their managerial implications.

*The future of surface freight transportation in Canada: A scenario development approach* – Should comparison of surface freight transportation go just beyond pricing? The purpose of this paper is to expand the comparison of rail versus truck freight transportation into broader considerations of economic, social and environmental sustainability. In light of rising, volatile fuel prices and concerns about harmful emissions, both modes have been moving forward aggressively with a variety of initiatives toward greener transportation. In the future; trade flows, fuel costs, labour availability and public policy shifts will blend to determine the evolving role of railways and trucking companies in moving Canada’s freight. The piece uses a *scenario development* approach to paint several plausible pictures of future surface freight movement in Canada. The author describes implications for public policy makers users and transportation providers with an agenda of ideas for future research.

## **2.10 Transportation Safety I**

*Weather-Related Crash Risks in Prince George, British Columbia* - Collisions remain a serious problem but are there reasons for it and how can we deal with it? The authors indicate that one important risk factor is inclement weather. Weather reduces pavement friction, impairs driver visibility and makes vehicle handling more difficult, which creates hazardous conditions for motorists and increases the risk of vehicle collisions. Studies show that the rates of road collisions are higher during precipitation events, though the degree of increase varies from study to study due to variations in weather and driving conditions as well as differences in methods. The goal of this study is to gain an understanding of the links between weather and travel risk in Prince George, British Columbia. Preliminary results indicate an increase of 35% in vehicle collisions during winter weather conditions with precipitation >0.4mm.

*Child and parent perspectives on how safety influences the journey to school* – Safety is the most important objective in transportation. To address this issue in the case of children’s transportation, this study

examines how safety influence's a child's mode of travel to school and how these concerns vary by mode and within the household. Semi-structured interviews were independently completed. Schools were stratified by built environment and income levels to explore neighbourhood differences. Thematic analysis of the interview transcripts was conducted and independently examined for each population and neighbourhood strata. Personal safety concerns emerged for parents and children. Children were also concerned about dogs and bullies which were not addressed by the parents. The findings reiterate the importance of safety, but concerns are not uniform and vary by mode, population and where you live.

*A Study of Hit-And-Run Crashes on Rural Highways – Why do some drivers flee after a hit-and-run crash?* The aim of this study is to identify the factors associated with a driver's decision to run after an accident. Our logistic regression analysis on data in Alberta showed that time of day, number and types of vehicles involved, pedestrian involvement and other variables were significant factors associated with hit-and-run behaviour in a crash. Based on the analysis, some possible behavioural modification techniques are suggested to mitigate hit-and-run cases in crashes.

## **2.11 Maritime and Port Issues II**

*Forecasts of Canadian Bulk Exports: A Case Study of Cereal Grains and Fertilizer Movement through British Columbia Ports* - Forecasts of commodity movement provide useful information which can be used in decision making process in investment planning. The study analyses the movement of two major groups of commodities, i.e. cereal grains and fertilizer materials through the Canadian rail system and provides export forecasts through British Columbia ports. Using various scenarios and employing econometric and other quantitative procedures, forecasts of exports of these two bulk commodities are developed. The lessons learned can be useful in improving analytical procedures in future and can be applied to other gateways and commodities.

*Running Rights and the Public Interest* - Canadian rail carriers operate monopolies over parts of their railway networks, conferring significant market power. Shippers have limited statutory remedies to countervail the exercise of this market power. But what can shippers do? The most useful remedy has been final offer arbitration, which has proven effective in limited circumstances. One remedy that might be employed to address the captivity of some shippers is *running rights*. However, there has never been a successful contested running rights application in Canada. A significant reason is the way in which "public interest" has been defined under the *Canada Transportation Act* and interpreted by the Canadian Transportation Agency. This paper will compare public interest considerations in Canada and other jurisdictions to assist in determining how public interest might be better defined in relation to Canada's national transportation policy.

## **2.12 Railway Issues**

*Dispute Resolution Options in Canadian Railway Freight Transportation* – How can we deal with disputes in rail freight transportation? This paper discusses both the commercial and statutory options for addressing rail freight service disputes. It highlights the previous attempt to negotiate a mutually acceptable commercial dispute resolution (CDR) process and the issues that have made agreement difficult to reach. Following this, it discuss the existing statutory recourses, including an analysis of disputes adjudicated by the Agency. Many shippers know very little about the existing statutory recourses. Correcting this is important both for its own sake and because effective use of any new CDR process requires shippers and other potential users to understand the statutory recourses available and to see the CDR process in the context of all the available options.

*High Speed Rail in Australia - Has Its Time Arrived?* – High Speed Rail vs. other forms of transportation is attracting a good deal of attention today. The paper outlines High Speed Rail or HSR studies in Australia. Broad estimates are given from the potential reduction of aviation fuel and greenhouse gas emissions that could result from the introduction of HSR in Australia. Based on European estimates, the potential reduction of external costs resulting from diversion from planes to HSR in Eastern Australia could be \$540m per annum by 2020. In addition, HSR by 2020 could allow for some 300 slots to be released at Sydney Airport which operates under constraints. The paper includes some observations of the recent debate in Britain whether to proceed with further HSR. It also notes the option of major upgrades to the existing Australian East Coast interstate mainline track.

*Apportioning Potential Liability for the Rail Transportation of Hazardous Commodities* – Who is liable in the transportation of hazardous commodities? Should it be both the shipper and the transporting company? Class I railways have gone to increasing lengths in recent years to insulate themselves from potential liability arising out of the rail transportation of Toxic Inhalation Hazard (TIH) materials. It is relatively clear that railways and shippers are free to use contracts to apportion liability as between them; however, the extent to which railways can legitimately limit such liability via tariff remains somewhat unsettled. In the US, the Union Pacific Railroad has recently initiated a proceeding before the Surface Transportation Board (STB), to initiate a declaratory order proceeding to resolve the uncertainty surrounding the issue. This proceeding raises important implications for Canadian TIH rail shippers.

### **2.13 Aviation and Airports**

*Trends in Canadian airline passenger fares: A statistical review* - It has been 25 years since the 1987 *National Transportation Act* ushered in a new framework to regulate the Canadian passenger airline industry. The basic premise underlying this new framework was that a greater reliance on competition and market forces would result in lower unit costs, more competitive prices, and a wider range of services to the public. In the ensuing 25 years since the 1987 legislation, the airline industry has experienced the entry of lower cost carriers in many markets, a consolidation among incumbent carriers, a segmentation of fare categories and a reliance on hub-and-spoke networking. The study applies econometric methods to determine the factors, including market structure, that influence passenger air fares.

*Transport Airships: Not Just Another Aircraft* - Regulations for operating large airships remain non-prescribed. As the number of airships increase regulations will be needed or will regulations applicable to vertical lift aircraft be applicable? This paper argues that transport airships are a distinct mode of transport that requires operating rules that fits their risk profile and economics. The discussion begins with a review of modal differences and regulatory approaches. Suggestions are proffered for pilot training and crewing, inspection cycles and competition policy.

### **3.14 Operations Research**

*Initial-Equilibrium-State Dependence of Day-to-Day Dynamics under Bounded Rationality* - Day-to-day dynamics of network flow evolution are to model how the network flow pattern evolves after some network disruption or facility change takes place. Recently travelers' bounded rationality (BR) in route choice have been incorporated into day-to-day dynamic models. In this paper, several properties of BR day-to-day dynamics are examined. In particular it is demonstrated that a BR day-to-day dynamic always has the initial-equilibrium-state dependence property. That is, simply given an initial disequilibrium state, a BR day-to-day dynamic cannot be used to predict future flow evolutions. The boundedly rational user equilibrium state (i.e., BRUE state) that precedes the disequilibrium state must also be given. Implications of this property are discussed and a new model is proposed to address related issues.

*Networks in Transportation - Theory* - Networks have always been important in transportation and telecommunication and often define the key to success. They have become more important for all businesses today, especially because of the Internet. The Internet has also changed how existing networks (e.g. transportation) behave. This provides the motivation for this paper – networks in transportation. It reviews the mathematics or use of mathematics in transportation networks. It then examines the theory of network evolution and growth, and the economic theory in market with networks. Finally, whether networks in transportation create barriers to entry is briefly examined.

*Comparison of different phasing delay enforced to vehicles* - Nowadays, efficiency of signal in urban traffic management system is not ignorable. Phasing delay has a lot of benefits, however it also contains defects the most important of them is delay to vehicles. There are many methods to decrease delay at intersections, one of them is applying various phasing. In this study, delay from two-phase, three-phase and four-phase to vehicles calculated by *SIDRA Intersection 5.1* software program with *HCM2000 delay method* are provided. Finally, the results of the analysis are evaluated by *SPSS19* software program and indicated.

### **3.15 Governance/Management II**

*The Canadian logistics service industry: Measurement issues and opportunities* - Logistics management

has grown from relative obscurity to become the lifeblood of modern business. A deregulated framework for transportation carriers provided shippers with the opportunity to contract out many ancillary activities to more specialized providers. In turn, transportation carriers have adapted by expanding their service offerings, bolstered by new communication and information technologies. The supply chain now represents the channel along which businesses compete in a global economy. Following a review of the factors underlying the emergence of logistics providers, this study develops a profile of the Canadian logistics service industry.

*Water Transportation Before and After Deregulation - Current Issues Facing the Industry* - Water is an important subsector of transportation that plays an important role in our trade with other nations. This is more so today than a few years ago with an increase of trade with China and Asia. To bring us up to-date what is happening the authors provide an overview of the structure of water transportation followed by a brief description of marine freight transportation. Then the regulations before and after deregulation are described. It thereafter focuses on the major issues in marine freight transportation today. Finally, the initiatives undertaken to deal with these issues and the future directions are suggested.

*Service quality evaluation in home delivery industry: An empirical study in Taiwan* - Home delivery industry (HDI) is a service offering delivery of products to customers without leaving home. The aim of this research is to focus on the rapid growth of HDI. It applies Quality Function Deployment (QFD) to systematically find out the service operation in terms of quality and technical aspects. The authors explore the shipper's needs and analyze them by examining the literature and research. Based on the determination of five variables of importance and by using QFD, shipper's needs on Service Quality are transformed into technical requirements. The results reveal that 6 items of service quality (education of employees, construction of overall transportation network, cultivation of related caliber, application of advanced IT, and differentiation of service) need to be urgently improved.