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Management Insights

The Impact of Logistics Performance on Trade
Warren H. Hausman, Hau L. Lee, Uma Subramanian

There are many important factors that companies use in making global sourcing decisions in supply chains. One of these factors is logistics, measured in time and cost of moving goods from one country to another. An element often overlooked is the "logistics friction" that includes the time and cost involved in crossing borders. Making use of an extensive data base provided by the World Bank, Warren Hausman, Hau Lee, and Uma Subramanian conducted an econometric study to estimate the role of logistics friction as a determinant of bilateral trade. Their study showed that, indeed, friction in the form of average processing time, cost and the variability of processing time can significantly affect bilateral trade. Hence, in making global sourcing decisions, companies should take into account the cross-border logistics friction, in addition to the usual components of the total landed costs. The authors' model also provides quantitative measures of the impact on trade by improving the elements of logistics friction. The latter can be useful for policy makers as well as private enterprises to collaborate in investing in such improvements.

The Critical Role of Ocean Container Transport in Global Supply Chain Performance
Jan C. Fransoo and Chung-Yee Lee

Jan Fransoo and Chung-Yee Lee outline the structure and role of ocean container transport in global supply chains based on extensive field work and literature study. They provide specific reasons for the variability in lead times due to resource optimization by the various players. Furthermore, they argue that both contacting and pricing insights from the supply chain management field need to be adapted to the container transportation sector to reflect the specific characteristics of the sector. They conclude that the current dominant position of the ocean carriers is likely to be broken by either by a technology breakthrough or by overinvestment, leading to the offering of improved end-to-end supply chain services in the market.

Profit Seeking vs. Survival Seeking: An Analytical Study of Supplier's Behavior and Buyer's Subsidy Strategy
Mike Mingcheng Wei, Tao Yao, Bin Jiang, Scott T. Young

Conventional wisdom believes that the severe competition among suppliers always benefits the buyer. However, the surging price of Made-in-China shows that "stand-by" may not be the best practice for buyers. How to keep suppliers' competition at a certain level on the behalf of buyers' interest is still underresearched. Mike Mingcheng Wei, Tao Yao, Bin Jiang, and Scott T. Young tested how supplier's profit-seeking or survival-seeking behavior and buyer's subsidy influence supplier and buyer's final utilities. They found that the survival-seeking behavior with single-period consideration aggregates the competition and in fact drives more start-ups or small suppliers out of business when the competition becomes severe. Through such a survival-seeking strategy, suppliers intend to eliminate their competitors in markets and then become dominate suppliers who have more bargaining power to buyers. In other words, their consideration is over two periods. Therefore, the buyer should only focus on the first period in a two-period game. By considering subsidy to suppliers, the buyer may avoid the toy market's price surge but reflect the success of auto part industry in China.

Effect of QMS and TQM on Productivity Before and After: Empirical Evidence from the Indian Auto Component Industry
Ananth. V. Iyer, Haritha Saranga, Sridhar Seshadri

Ever since the Indian automobile industry was opended up to foreign automakers, it has been expanding and modernizing, with ISO certification (QMS) and Deming awards (TQM) as the approach used by auto component manufacturers to signal their quality capability. Ananth Iyer, Haritha Saranga, and Sridhar Seshadri study the impact on productivity improvement as a result of such changes. Intuitively, improvements in productivity come from operational learning or conceptual learning. Operational learning

is acquired through problem solving by use of tools such as statistical process control, Pareto analyses and Cause & Effect diagrams. Conceptual learning is built on cross-functional teams and creates a framework to identify root causes and enables technological shifts. Both of these learning processes result in productivity improvement, with certification enabling operational learning and total quality management enabling conceptual learning. Iyer, Saranga, and Seshadri estimate a 11% productivity impact of total quality management initiatives and a 3.6% impact of certification for Indian auto component firms. Their insights can be used to justify efforts to focus on operations management in emerging economies. More importantly, the productivity impact suggests that quality initiatives may be a key factor in firm competitiveness and thus deserves management attention.

Inventory Management in China: An Empirical Study
Jun Shan, Kaijie Zhu

With the outsourcing of manufacturing activities from the western countries, China has gradually become the global manufacturing hub. In the presence of increased competition from inside and outside of China (such as other emerging markets), Chinese firms have the pressure to improve their corporate performance, including operational effectiveness. Jun Shan and Kaijie Zhu empirically analyze the inventory-relate data of 1286 publicly listed Chinese firms over a time period from year 2002 to 2009. Their analysis indicates that the inventories have significantly declined when compared to the sales and that the firm-level data is consistent with managerial implications from some classical inventory models. These results show that, probably due to the implementation of scientific management tools, the Chinese firms have substantially improved their inventory performance, which is contrary to some external perception of inferior management by the firms.

Offshoring Business Process Services and Governance Control Mechanisms: An Examination of Service Providers from India
Vaidyanathan Jayaraman, Sriram Narayanan, Yadong Luo, Jayashankar M. Swaminathan

As emerging markets increasingly rely on service businesses through offshore outsourcing, we examine the role of governance control mechanisms in improving performance among business process outsourcing (BPO) firms in India. Vaidyanathan Jayaraman, Sriram Narayanan, Yadong Luo, and Jayashankar M. Swaminathan examined the antecedents of governance control mechanisms and their effect on BPO firm performance. From a macro perspective, it is important to analyze the factors that determine the antecedents that influence.

BPO control mechanisms for two reasons: First, a BPO vendor's performance is key to the expansion. Second, in many emerging economies such as India, the BPO industry makes crucial contributions to the host economy through trade. At a micro level, a clear understanding of the BPO industry is important from the standpoint of the client as well as the service provider. From the client's perspective, offshoring of labor intensive services to a low-wage nation may raise its productivity by lowering its cost. From the service provider's perspective, it is important to note how the diverse antecedents may influence the governance control mechanisms.

This study also reinforces the notion of complementary effects between administrative governance control mechanisms and structural and relational mechanisms. When administrative control mechanisms are strong, the organization is better able to benefit from contractual and relational mechanisms due to greater alignment between the environmental aspects of the clients and the execution aspects within the firm. The authors' analysis also suggests that effective management of governance control mechanisms may indeed lead to increased performance. Furthermore, beyond finding evidence for the complementary effects, their work also examines context specific antecedents that drive the implementation of these mechanisms. Overall, their results suggest that managers need to pay careful attention to all three governance control mechanisms. Just developing a complete contract does not necessarily guarantee that an inter-organizational relationship exercise is going to be successful. In order to increase performance, internal operational execution is an important element as well.

Emerging Market Penetration, Inventory Supply and Financial Performance
Chaodong Han, Yan Dong, Martin Dresner

Conventional wisdom holds that manufacturing firms that encounter operational risk will generally hold higher levels of safety stock. Since emerging markets are often characterized by poor infrastructure and long and uncertain supply chains, it might be expected that increased operations in emerging markets would necessarily contribute to higher inventory levels and, indirectly, to lower profits. Using financial and operational data for 482 multinational manufacturing firms over the five-year period, 2003-2007, Chaodong Han, Yan Dong, and Martin Dresner exam-

ine the relationships between emerging market penetration, inventory supply, and financial performance. They find that emerging market penetration is associated with higher firm financial performance and, surprisingly, with reductions in inventory costs. However, the authors note that heterogeneous random effects at the industry level must be considered when applying the encouraging findings to specific industries, since these effects may influence the impact of emerging market penetration on inventory supply and financial performance. Emerging market penetration should not be a simple managerial choice, but part of a complex decision made after evaluating the direct and indirect effects of emerging market penetration in an industry-specific context.

Training, production, and channel separation in ITC's e-Choupal network
Ying-Ju Chen, J. George Shanthikumar, Zuo-Jun Max Shen

In recent years, I.T.C. Limited (formerly the Imperial Tobacco Company of India Limited) developed the "e-Choupals" to the rural areas of India. In this new business model, ITC reaches implicit agreements with some farmers (inside the network) that they can sell the products directly to ITC at the market price in the local market, but allow the farmers, both inside and outside the network, to access valuable information through the e-Choupals such as price updating, weather forecast, best practice, etc., free of charge. Ying-Ju Chen, George Shanthikumar, and Zuo-Jun Max Shen investigate ITC's incentive of offering such opportunities and analyze the farmers' strategic quantity decisions. They find that the implicit agreement behaves as a formal contract and that the e-Choupal network leads naturally to the complete separation of selling channels. They also establish that in a variety of scenarios, ITC finds it optimal to provide the best available training to the farmers outside the network.

Vehicle Replacement in the International Committee of the Red Cross
Alfonso J. Pedraza-Martinez, Luk N. Van Wassenhove

Using data collected at the International Committee of the Red Cross (ICRC) headquarters and national level, Alfonso Pedraza-Martinez and Luk Van Wassenhove empirically test the vehicle replacement policy used by the ICRC. The ICRC headquarters suggest their national offices (delegations) replacing vehicles every 5 years or 150 thousand kilometers, whichever comes first. Vehicle manufacturers recommend this policy to commercial companies operating fleets in normal conditions. The authors show that the current replacement policy is not optimal for the ICRC from a cost perspective. Due to lower cost of capital as well as greater maintenance costs that the ones faced by commercial companies, the ICRC would benefit by replacing every 100 thousand kilometers. Potential savings are above 8% of the operating cost. The authors show that policy implementation requires incentive coordination in a decentralized fleet management system.

Supply chains and global health: An imperative for bringing operations management scholarship into action
Santiago Kraiselburd, Prashant Yadav

Many people in developing countries do not have access to life saving medicines, vaccines, diagnostics and other health technologies. Cost, financial constraints and lack of awareness are major obstacles that prevent better access. But they are not the only barriers to access. In many instances, the biggest barrier to access is the lack of a well-functioning supply chain for delivering the medicines, vaccines and health products to the populations who need them. Santiago Kraiselburd and Prashant Yadav argue that the ineffectiveness of the global health supply chain can be attributed to: misaligned objectives, poor supply chain design, and myopic operational metrics. The authors highlight that there are many operational problems in this field that deserve more careful attention of the OM researcher.

Stakeholder Perspectives on E-Waste Take-Back Legislation
Atalay Atasu, Öznur Özdemir, Luk N. Van Wassenhove

Motivated by the increasing number of e-waste take-back laws (such as the WEEE Directive of the European Commission) in practice, Atalay Atasu, Öznur Özdemir, and Luk Van Wassenhove analyze and compare the economic welfare implications of certain e-waste take-back policy implementations. The authors focus on a critical dimension of the policy implementation choice. Who should bear the operational responsibility: the manufacturers or a state-operated system? They show that although on the surface manufacturer preferences would seemingly be for a manufacturer operated system, manufacturers can actually benefit from a state-operated system. This is because a state operated system (whereby manufacturers are required to pay a unit take-back fee to a state operated system per product sold) does not necessarily overcharge manufacturers for product take-back as compared to a manufacturer operated system (whereby manufacturers directly incur associ-

ated take-back costs). On the contrary, a state-operated system can actually undercharge manufacturers (relative to the actual take-back costs incurred) and prefer to incur take-back costs directly with the purpose of not reducing the welfare generated by production. The authors' analysis also shows that manufacturer and environmental NGO preferences can be aligned and for a manufacturer-operated system, particularly when a state-operated system finds an incentive to overcharge manufacturers and expend minimal effort for product take-back.

Supplier-Buyer Negotiation Games: Equilibrium Conditions and Supply Chain Efficiency
Victor Martínez-de-Albéniz, David Simchi-Levi

When a supplier and a buyer negotiate over multiple rounds, the supplier's current pricing decision influences future the buyer's purchase quantity, and vice-versa. Victor Martínez-de-Albéniz and David Simchi-Levi study how these two players should rationally take these decisions over a finite number of periods, in a scenario where the buyer faces a demand at the end of the negotiation. They show that this sequential decision process is well behaved under some conditions on the demand distribution. They find that, provided that there are neither holding costs nor variations on the production cost, supplier and buyer profits increase with the number of rounds, and can jointly obtain the highest possible profits, those of a coordinated supply chain. This is not so when costs vary over time or holding costs are present, because then, extending the negotiation becomes too costly and no player is interested in transacting with the other in the early rounds.

The Impact of Information Sharing on Supply Chain Performance under Asymmetric Information
Karl Inderfurth, Abdolkarim Sadrieh, Guido Voigt

Efficient coordination of supply chains is often plagued by asymmetric information, strategic reporting, and mistrust. In a typical setup, buyers may strategically misrepresent their order size related costs to induce smaller delivery lot sizes by suppliers, who would prefer large scale delivery. Knowing that the actual cost position is difficult to verify, the suppliers' best choice is to completely ignore the buyers' assertions and implement a specific contract type that maximizes their expected profits. Karl Inderfurth, Abdolkarim Sadrieh, and Guido Voigt conducted a controlled laboratory experiment in which the supply-chain parties are provided with a decision support system that allows conditioning the contract terms on the shared information. The results highlight that cooperative supply chains with truth-telling buyers and trusting suppliers outperform uncooperative supply chains in which the shared information is mistrusted and the extent of strategic misreporting is guessed. A flexible contract design that allows rewarding/punishing seemingly cooperative/uncooperative behavior amplifies the benefits of information sharing in cooperative supply chains, but does not impact the propensity for cooperation. The authors, therefore, conclude that managers should try to establish truth-telling and trust while using flexible contracting frameworks. However, if trust cannot be established, then managers are better off completely ignoring shared information while basing the contract offers on market statistics instead.

Managing downstream competition via capacity allocation
Fangruo Chen, Jianbin Li, Hanqin Zhang

Firms often face capacity shortages. In such situations, the options are either to increase capacity by identifying additional supply sources or to modify demand by some form of rationing. Fangruo Chen, Jianbin Li, and Hanqin Zhang study the impact of capacity rationing on retail competition. Specifically, they consider a supply chain model with a single supplier selling a single product to multiple retailers who in turn sell it to consumers. The retailers are engaged in a Cournot competition, i.e., the retailers all charge a common price to the consumers with the price determined by the total quantity the retailers bring to the market. This retail-level competition is played out by the retailers who may face supply shortages. The supplier chooses a mechanism to allocate her capacity to the retailers in the event of a shortage and hence influences the retail-level competition. The authors find that some allocation mechanisms used by the supplier have the effect of dampening the retail-level competition, leading to higher profits for both the supplier and the supply chain. Such mechanisms have the lexicographic property, i.e., the priority for stock allocation is independent of the orders placed by the retailers and can be determined in a variety of ways ranging from a lottery draw to creating a priority list based on the strategic relationships the supplier has with the retailers.

Supply Diversification with Responsive Pricing
Tao Li, Suresh P. Sethi, Jun Zhang

Tao Li, Suresh P. Sethi, and Jun Zhang study sourcing and pricing decisions of a firm with correlated unreliable suppliers and a price-dependent demand. They show that with two suppliers, the firm should always order from the low-cost supplier. Whether the firm

should order from the high-cost supplier depends on the purchase costs from the two suppliers and the reliability of the low-cost supplier. More importantly, the firm's diversification decision does not depend on the correlation between the two suppliers' capacities. However, its total order quantity decreases as the suppliers' capacity becomes more correlated. With more than two suppliers, the firm should always order from the lowest-cost supplier as in the two-supplier case. However, the firm should not rank the other suppliers based purely on their costs in its sourcing decisions.

Market Good Flexibility in Capacity Auctions
Nicholas G. Hall, Zhixin Liu

The work of Nicholas Hall and Zhixin Liu provides several insights to practicing managers who sell or lease their manufacturing capacity. It is known that the efficient allocation of capacity among competing purchasing agents is most important for time sensitive products. The authors demonstrate, first, that ascending auctions typically allocate capacity among the agents in a way that achieves a high system value. Second, the choice of both market good and bidding format in such auctions makes a significant difference to the value received by both the seller and the bidders. Third, it is valuable for the capacity owner to maintain control over the production schedule during the bidding process. This can be implemented in various ways within the auction. Fourth, when an efficient auction mechanism is used, the values received by the capacity owner and the system are typically insensitive to the reserve values used by the capacity owner. This property is helpful when reserve values are difficult for the capacity owner to estimate. Finally, it is important to use an auction design in which the bidders can express their evaluation of production capacity in detail.