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Editorial Policy

The primary purpose of the JTM is to publish managerial and policy articles that are relevant to academics, policymakers, and practitioners in the transportation, logistics and supply chain fields. Acceptable articles could include conceptual, theoretical, legal, case, and applied research that contributes to better understanding and management of transportation and logistics. Saying that, our policy requires that articles be of interest to both academics and practitioners, and that they specifically address the managerial or policy implications of the subject matter. Articles that are strictly theoretical in nature, with no direct application to transportation and logistics activities, or to related policy matters, would be inappropriate for the *JTM*. Articles related to any and all types of organizations, and of local to global scope, will be considered for publication.

Acceptable topics for submission include, but are not limited to, broad logistics topics, logistics and transportation related legal issues, carrier management, shipper management of transportation functions, modal and intermodal transportation, international transportation issues, transportation safety, marketing of transportation services, transportation operations, domestic and international transportation policy, transportation economics, customer service, and the changing technology of transportation. Articles from related areas, such as third party logistics, purchasing and materials management, and supply chain management, are acceptable as long as they are related to transportation and logistics activities.

Submissions from practitioners, attorneys or policymakers, co-authoring with academicians, are particularly encouraged in order to increase the interaction between groups. Authors considering the submission of an article to the *JTM* are encouraged to contact the editor for help in determining relevance of the topic and material.

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Publishing Data

Manuscripts. Submit manuscripts to the editor by email attachment at taylorjohn@wayne.edu. Manuscripts should be no longer than 30 double-spaced pages and 7000 words. Guidelines for manuscript submission and publication can be found in the back of this issue.

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From the Editor…

Welcome to the Winter 2014 issue of the Journal of Transportation Management!

This issue of the *Journal* contains an article on Incoterms, an article on driver recruitment, an article developing a conceptual framework to better understand logistics alliances, and an article on railroad abandonment in Arkansas.

The first article explores the latest version of Incoterms and explains why and how they have been refined to better capture contemporary glob and domestic shipping practices and policies. The second article examines how trucking companies can develop effective advertising media and messages for reaching and recruiting qualified long distance truck drivers, with drivers most interested in competitive pay, paid vacation, a weekly payment schedule, and flexible home time. The third article develops and discusses a conceptual framework for better understanding how a firm decides what type of relationship to develop with a logistics service provider. The framework examines the role of logistics alliance orientation in forming the alliance structure. The fourth article studies the long term impact of rail abandonment on manufacturing firms in Arkansas. The article suggests that data in Arkansas do not reveal any meaningful adverse economic impact due to rail abandonment.

At the *Journal*, we are continuing to make a number of changes that will improve the visibility of JTM, and improve its position in the supply chain publishing world. These include registering and updating journal information with several publishing guides, placing the journal content with the EBSCO, Gale and JSTOR databases faculty have access to, and placing abstracts of all past journal articles on an open area of the DNA Journal web page. Full journal article PDF's continue to be available to subscribers on the web page at www.deltanualpha.org

I look forward to hearing from you our readers with questions, comments and article submissions. The submission guidelines are included at the end of this issue's articles and I encourage both academics and practitioners to consider submitting an article to the Journal. Also included in this issue is a subscription form and I hope you will subscribe personally, and/or encourage your libraries to subscribe.

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REFINING SHIPPERS' DYADIC COST, RISK, AND DELIVERY RESPONSIBILITIES: THE PRINCIPAL CHANGES TO INCOTERMS AND A TRANSACTION COST FOCUS FOR THE FUTURE

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ABSTRACT

We first explore the changes in the latest version of Incoterms and explain why and how they have been refined to better capture contemporary global and domestic shipping practices and policies. Next we graphically explain each of the eleven INCOTERMS 2010 and specify exact delivery points, those critical points at which cost and risk responsibilities shift from the Seller to the Buyer. We then provide a discussion to better explain the application of the terms from a practitioner's view and note that many shippers and freight forwarders still revert to long practiced shipping policies, leaving themselves vulnerable. We close by proposing future researchers build an expert system grounded primarily in Transaction Cost Economics with mechanisms from Game Theory in an attempt to better guide trading partners in using appropriate Incoterms.

INTRODUCTION INCOTERMS 2010

On January 1, 2011, the International Chambers of Commerce's ("ICC") INCOTERMS 2010 took effect. This was the seventh major revision of the Incoterms and the first revision since 2000. The Incoterms have been revised and updated to: a) take into account developments in international trade over the past decade (such as the vast increase in containerization and multi-modal transport) as the volume and complexity of global sales and trade have increased; b) to address security issues arising in recent times; and c) to provide for ongoing changes and evolutions in electronic communication and commerce. Furthermore, the revised Incoterms also take into account the growth of free trade areas. Incoterms, an acronym for International Commercial Terms, were first developed in 1936 by the Paris-based ICC as a set of international rules for the interpretation of trade terms (Barelier et al., 1995) and have been revised periodically to best reflect current international trade practices (Stapleton and Saulnier, 1999) and to encourage the alignment of policy with international transport law and changing international trade policy (Stapleton and Saulnier, 2000, 2002). Incoterms have undergone substantial changes in 1957, 1967, 1976, 1980, 1990, 2000, and most recently in 2010, taking effect in 2011 (Ramberg, 2011).

The Incoterms revision process is as follows: "Revision of the Incoterms rules is initially entrusted to a small global Drafting Group. The group is formed by experts from various nationalities chosen for their extraordinary

contribution to international commercial law and to the International Chamber of Commerce along the years. Revised drafts are then circulated broadly and internationally through ICC National Committees, with the resulting comments and suggestions channeled back to the Drafting Group. The final draft, once approved by the ICC Commission on Commercial Law and Practice, is submitted for adoption by the ICC Executive Board. The broad international consultation aims to ensure that official ICC products possess an authority as representing the true consensus viewpoint of the world business community." (ICC, 2013).

We have three criticisms of the review process. First, the process is unnecessarily secretive, especially the workings of the Drafting Group. The ICC claims that revised drafts "are circulated broadly." However, if they were truly circulated "broadly," they should be posted on the internet and all interested parties should be allowed to submit comments. Instead the draft rules are given code names (the drafts of the 2010 revisions, were called "Incoterms 3000" to disguise the possible release date). No copy of the draft rules was ever made available to the general public as far as we know. Instead the revised rules were revealed with great fanfare. We believe there is a possible reason for this lack of transparency. We cannot help but notice that once a revision to the rules is released, some members of the Drafting Group appear to travel a good deal. They host very expensive training seminars around the world where they "explain" the new rules, presumably more authoritatively because they alone have information about exactly what the changes do. Moreover the ICC holds global "master classes" (mostly taught by the aforementioned rules drafters) to teach users the significance of the changes and the ICC has released a publication in 2013 titled the *ICC Guide to Incoterms® 2010* which is available for purchase from the ICC bookstore for €65 per copy. Lastly, it is somewhat surprising that the ICC has registered the revised Incoterms as trademarks. The only apparent purpose for all these activities would seem to be the ICC's desire to profit from authorship of the rules. Moreover, the ICC's claims of intellectual property ownership would seem to be dubious considering that many of the terms have been in broad public use long before the ICC officially issued them.

Below is a list of both INCOTERMS 2000 and the new INCOTERMS 2010 labeled as Table 1. Note that Incoterms have been reduced from 13 terms to 11 under the latest revision.

INCOTERMS 2000 were presented by the ICC in four groups: E, F, C, and D, each group representing classes of terms that varied slightly within groups but significantly across groups in terms of delivery points, risk, and cost responsibilities, and the point at which those cost and risks shifted from the Seller to the Buyer. INCOTERMS 2010 are compressed and now presented in two groups. The new classification makes it easier for shippers to discern between Incoterms that are to be used only for ocean and inland waterways, and those that should be used for multi-modal contracts (i.e., intermodal transportation transactions). The new Incoterms, or Rules, are separated into two classes: 1) Rules for use in relation to any mode or modes of transport, which can be used where there is no maritime transport at all, or for transportation transactions in which maritime transport is used for only part of the carriage (i.e., intermodal maritime); and 2) Rules for ocean and inland waterway transport, where the point of dispatch and delivery are both ports. Thus, FAS, FOB, CFR, and CIF belong to the second class of Rules. In INCOTERMS 2000, there was a demarcation at the "ship's rail." That is, the ship's rail was the critical point – the point at which risk and obligation shifted from the Seller to the Buyer. In INCOTERMS 2010, the reference to the "ship's rail" has been deleted. With respect to FOB, CFR, and CIF, the critical point is now considered to take place with the goods being delivered when they are on board the vessel. This is also a useful adaptation for purposes of increasingly popular roll-on roll-off (RORO) carriers where the goods are directly

TABLE 1
INCOTERMS 2000 TO INCOTERMS 2010 CHANGES

INCOTERMS **2000**	INCOTERMS **2010**
EXW [Ex-Works]	EXW [Ex-Works at seller's named place of business]
FCA [Free Carrier]	FCA [Free Carrier at seller's named place of dispatch]
FAS [Free Alongside Ship]	FAS [Free Alongside Ship at seller's named port]
FOB [Free On Board]	FOB [Free On Board at seller's named port]
CFR [Cost and Freight]	CFR [Cost and Freight paid to buyer's named port]
CIF [Cost, Insurance, & Freight]	CIF [Cost, Insurance, Freight paid to buyer's named port]
CPT [Carriage Paid To]	CPT [Carriage Paid To buyer's named destination]
CIP [Carriage & Insurance Paid to]	CIP [Carriage, Insurance Paid to buyer's named destination]
DAF [Delivered At Frontier]	DAP [Delivered At buyer's named Place]
DES [Delivered Ex Ship]	DAT [Delivered At buyer's named Terminal]
DEQ [Delivered Ex Quay]	DDP [Delivered Duty Paid to buyer's named place of business]
DDU [Delivered Duty Unpaid]	
DDP [Delivered Duty Paid]	

transported onto the vessel by truck or other vehicle and technically never pass over the ship's rail but rather underneath it. (Malfliet 2011). Finally, the new Rules now apply to both domestic and international trade. Traditionally, Incoterms have only been used for international trade. However, recent developments in international trade, such as evolutions in the European Union and other trading blocs, negate or minimize the significance of border formalities. The new Rules recognize that they can now also be used for domestic sale contracts, and reference is now made in a number of Rules that export and import formalities will only need to be complied with when and where applicable. It is anticipated over the next decade that this change may encourage greater use of the Incoterms in the U.S. in place of the U.S. Uniform Commercial Code which, to avoid inconsistency and confusion, removed the older transportation terms (former sections 2-319 through 2-324) in 2004.

The Incoterm DAT (Delivered At Terminal) replaces DEQ (Delivered Ex Quay). DAT may be used irrespective of the mode of transport selected, and may also be used where more than one mode of transport is employed (e.g., intermodal transport). DAT means that the Seller delivers when the goods, having been unloaded from the arriving means of transport, are placed at the Buyer's disposal at a named terminal at a named port or place of destination. DAT requires the Seller to clear the goods for export where applicable, but the Seller has no obligation to clear the goods for import duty or carry out any import customs formalities. It was thought that DAT would be more useful than DEQ in the case of containers that might be unloaded and then loaded into a container stack at the terminal awaiting shipment. Under INCOTERMS 2000 (and before), there was previously no term clearly dealing with containers that were not at the Buyer's premises.

DAP (Delivered At Place) replaces DAF, DES, DEQ, and DDU. Now, the arriving vehicle under DAP could be a ship, and the named place of destination could be a port. Consequently, the ICC considered that DAP could safely be used instead of DES, and that it would make the Rules more user friendly if they abolished terms

that were fundamentally the same. A Seller under DAP bears all of the costs (other than the import clearance costs and unloading) and risks of bringing the goods to the named port of destination. See Appendix 1 at the end of the paper for a complete graphical display of each of the eleven INCOTERMS 2010.

UNDERSTANDING THE APPROPRIATE APPLICATION OF THE TERMS

The international dispatch of containerized freight involves a number of distinct physical stages in the delivery process: a) delivery of the goods to the first carrier or port facility in the Seller's country;[1] b) terminal or port handling for export; c) clearance of goods through Customs; d) main carriage of the goods to the destination country; e) terminal or port handling at import; f) clearance of goods for import into the Buyers' country; and g) final delivery to the Buyer's premises.

Additionally, there are a number of considerations the parties (e.g., Buyer and Seller, or "dyad") should discern: a) who pays for the various dispatch and delivery elements; b) who initially pays for what in a given process, obviously the Buyer always pays in the end either directly to the freight mover (e.g., carriers) themselves or when charged by the Seller on an export invoice; c) where exactly delivery takes place, remember traders always need to define very precisely delivery points, and; d) finally where the risks and cost responsibilities pass from the Seller to the Buyer, which normally takes place at the point of delivery, though not always. Both Buyers and Sellers need a clear understanding of what they are agreeing to. Importantly, the contract of sale should define these nuances and is a contract only between the Buyer and Seller; while the contract of carriage is between the carrier(s) and the Buyer and Seller or their designees. Moreover, the use of Incoterms alone does not constitute a contract of sale but should be incorporated into the contract of sale to be properly legally binding (Ntege, 2012). Both members of the Buyer-Seller dyad should take responsibility for only those functions they can exercise control over. Clarity in discerning these costs and risks is vital to avoid any confusion between the dyad partners that could result in: a) loss of control; b) loss of visibility; c) late or lost goods; d) unexpected additional costs; or e) the costs associated with legal action or litigation.

To aid in avoiding these costly misunderstandings international trading partners should strategically manage their responsibilities in global trade and international shipments by meaningfully employing the use of Incoterms, the latest version of which is Incoterms 2010. It is imperative that when Incoterms are used, the parties also specify which version they are using, given the recent revisions. Incoterms can also be used in domestic trade and have rapidly replaced the domestic codes governing interstate commerce in some areas, but not all.

Each of the 11 Incoterm rules is identified by a three-letter abbreviation. These abbreviations are in common use but are frequently misinterpreted (Stapleton and Saulnier, 1999). It is vital that all parties fully understand the implications of using each term in order to maximize one's trading strategy. These rules are an integral part of any international sales contract and they specifically deal with the "delivery" of goods. Problems can arise in international trade due to differences in such things as language, local and international law, and variance in transport systems. The correct use of Incoterms reduces these potential problems and gives clarity to the delivery process, minimizing possible areas of confusion and conflict. For managers, the 11 Incoterms are easy to remember if they are positioned along a spectrum in terms of levels of responsibility for the Seller and Buyer. At one end of the spectrum is EXW (EX-Works) and places responsibility for the delivery, cost and risk squarely with the Buyer. In EXW, the Seller's only obligation is to make the goods available at Seller's premises or other named Seller's place of business, factory, warehouse etc. The subsequent terms give

increasingly added responsibility to the Seller. At the other end of the spectrum therefore is DDP (Delivery Duty Paid), which requires the Seller to take full responsibility for all aspects of the delivery to the Buyer's premises.

A major change in the latest version of Incoterms is the separation of the place-to-place delivery terms, commonly known in the industry as "multimodal," from the delivery terms that are simply port-to-port ocean freight terms. There are seven terms to be used when delivery is from place-to-place (e.g., EXW EX-Works, FCA Free Carrier At, CPT Carriage Paid To, CIP Carriage and Insurance Paid to, DAT Delivered At Terminal, DAP Delivered At Place, and DDP Delivery Duty Paid). The remaining four terms are purely ocean freight terms and often involve bulk carriage (i.e., CFR Cost and Freight, CIF Cost, Insurance and Freight, FAS Free Alongside Ship, FOB Free on Board). In the definitions of FOB, CFR, and CIF, the phrase "ship's rail" - the point at which cost and risk shifted parties in the previous Incoterms, Incoterms 2000 - has been deleted and the reference now is to delivery of goods "on board." FAS and FOB do not apply to multimodal sea transport in containers (Rosenberg et. al., 2011).

A number of factors can influence the choice of Incoterms contracted for and used between the Seller and Buyer dyad. The most important is the willingness of both parties to perform and pay for only those elements and tasks involved in the shipment of goods from Seller to Buyer and that they have control over. Many international Seller-Buyer dyads default to a common term, some times for very good reasons and sometimes out of convention. Some of those factors include the following:

1. Supply Chain Visibility: Large Buyers (e.g., manufacturers) who are importing parts and running just-in-time inventories and production strategies need up-to-the-minute supply chain visibility. For example, at the Porsche manufacturing plant in Leipzig, the production plant designs their logistics delivery system to deliver JIT-style within fifteen minutes of production on the Panamera production line and in which all 400 container load deliveries are warehoused for a maximum of 24 hours before they are all used in production assembly (See Megafactories – Porsche (Production), National Geographic, http://www.youtube.com/watch?v=e3fX62GoO9c). Even if the loss of a shipment is covered by insurance, this does not compensate the Buyer for other potentially mammoth expenses, e.g., shutting down an assembly line for lack of components. Therefore, such Buyers would rather use their own favored shipper, monitor their own shipping and would be more inclined to use a term from the F group.

2. Company or industry policy: It may be company policy for supply chain managers to stick to a common term for all of their transactions to avoid the use of different terms and likely confusion that may arise in their contracts with different customers. While this is still common practice for many firms, it is not advisable if a firm is attempting to maximize their supply chain performance, unless all or most of their transactions involve the movement of goods from a common area of the globe and other potential variances are minimal, such as value, risk, and other volatilities (e.g., exchange rates, piracy, etc.). Or it could be industry-wide practice that all international sales of a particular good are commonly conducted using a particular transportation term, and therefore, Buyers and Sellers should use that term to maximize opportunities to increase business.

3. Bargaining position and power: The trading position and unequal dyadic power between Buyers and Sellers may force the use of particular Incoterms. An exporter in a competitive market may offer to take on more risk and cost in an effort to gain a competitive advantage. Since ocean deregulation over the past decade and a half eliminated the requirement to publish rates and other key elements of contracts of carriage, it is far more difficult for a competitor to figure out the

essential terms of contracts, including the Incoterm governing the transaction and charges. Thus if a shipper is willing to take on more risk and cost by using an Incoterm representing greater responsibilities for delivery, this astute shipper can potentially gain a greater share of business from its dyadic partner without showing its intentions.

4. Ease of comparing prices from Buyers and Sellers around the world: It is easier for a Buyer to solicit and compare bids from Sellers around the world by specifying a trade term such as CIF. Accordingly, the Buyer would not have to calculate the various freight and insurance charges that would be incurred in getting the goods to its country. Similarly, a Seller would prefer a trade term such as FOB so it could see what prices its goods would fetch from different Buyers around the world once delivered to the Seller's primary export port.

5. Freight purchasing power: The freight purchasing power of the parties involved may influence the Incoterm or mix of Incoterms used. For instance, a firm that transports a lot of containers annually, such as Nike, will exercise channel power in its transactions with its dyadic partners. Ocean shipping reform eliminated the "me too rate" for "similarly situated shippers," thus leading to less transparency of transport contracts and strategies (Stapleton and Ghosh, 1999). Alternatively, Buyer or Seller may have access to cheap transportation through a subsidized national shipping line. Therefore, Sellers with freight purchasing power would prefer a trade term from the C or D groups and such Buyers would prefer one from the E or F groups.

6. Convenience: If a Buyer or Seller would like to do as little work as possible to conclude their end of the transaction, such a Seller would prefer a trade term from the E group and such a Buyer would prefer one from the D group. However, laziness is not conducive to increased business and such Buyers and Sellers could easily use freight forwarders to offer additional transportation terms without much effort.

7. Need for quality inspections: Buyers can usually arrange for goods to be inspected for quality by third-party inspection agents anywhere in the world, thereby not influencing their selection of a trade term. However, any highly specialized items, e.g., factory machinery, often cannot be adequately inspected and tested until delivered to the Buyer. Therefore, such Buyers may be more inclined to use a trade term from the D group.

8. Ease of selling goods in transit: Certain goods, particularly bulk commodities, are often bought speculatively by commodities traders who resell the goods in transit. They need to use a trade term that allows them to pass title to the goods through delivery of transportation documents such as a trade term from the C group.

Other considerations influencing the practice of Incoterm usage may include: a) legal restrictions in the country of import; b) transport infrastructure of the countries involved, as delivery to a destination port may be the best strategy when importing into countries whose transport infrastructures are suspect; c) the desired mode of transport; d) cargo, the type of cargo shipped may influence the Incoterms strategy - for example, loose cargo may be loaded directly on to a ship, in which case one of the four ocean freight terms would be best; e) value of goods, for instance, very low value items may not need Incoterms as very low value goods may be covered by other applicable liability insurance so there may be no need to use any Incoterms that require extra cargo insurance to protect the parties.

INCOTERMS Logic

Next, let us look at Incoterms in a way managers often find easiest to remember and to understand. Some requirements are common to every term. For instance, the Seller always packs the goods at their location and provides

the invoice. The Buyer is always expected to pay for the goods and usually arranges and pays for pre-shipment inspection where necessary. Some requirements are common to most of the terms, e.g., Buyer always pays for unloading (except DAT and DDP) and Buyer always pays the import tariffs (except for DDP). The best way to remember and manage Incoterms is to group them by what distinguishes one from another, the specific delivery point. The delivery point defines where and when risk and cost obligation passes from the Seller to the Buyer. The thing to remember is that as you move away from E to F to C to D the delivery and risk point moves away from the Seller towards the Buyer. The term with the least responsibility for the Seller, and thus the most responsibility for the Buyer, is the E Term EXW (EX-Works), in which the Seller's sole responsibility is to make the goods available at their named place of business or manufacture. Delivery takes place at the Seller's premises. The goods must be packed and marked for export by the Seller and the Buyer is responsible for loading the goods. The Buyer is then responsible for all costs and risks from that point onwards.

F Terms represent those terms where delivery takes place at the Buyer's carrier. The FCA term's delivery point is where the Seller loads the goods onto the transport the Buyer has designated. The Seller does not have to unload the cargo. FCA is typically a better option than FOB because it encompasses both ocean shipping and multi-modal transport.

C terms represent where delivery is at the port or place in the Seller's country. However, the Seller must also organize shipment of the goods, so that the cost critical point is not the same as the risk critical point, it is at a destination point in the Buyer's country. Do not confuse the delivery point with the agreed on destination. Under all C terms delivery takes place at the port of exportation in the Seller's home country, but the Seller contracts and/or pays for the delivery to the Buyer's home country or designated place at the risk of the Buyer. Thus the critical points for cost and risk are not the same. The multimodal C terms are CPT and CIP. In both cases delivery is at a place in the country of export. However, the Seller is responsible for carriage to place of destination at the Buyer's risk. The difference between CPT and CIP is that under CIP the Seller also arranges cargo insurance on behalf of the Buyer. The C terms used for ocean freight are CFR and CIF. Under CFR the Seller's risks and responsibilities end when the goods are loaded onto a vessel at the port of exportation, that is delivery takes place at the port of export. With CIF the Seller also organizes minimum coverage cargo insurance that is 110% of the contract price of the goods from a reputable insurance company for the benefit of the Buyer and provides the Buyer with a copy of the policy.

D terms are all multimodal terms and require the Seller to be responsible for all costs and risks associated with the delivery of freight to the Buyer's country. Delivery is at an agreed point in the Buyer's country. DAT and DAP are the new terms introduced in Incoterms 2010. DAT means that the Seller arranges the goods to be delivered to a destination terminal, such as an airport, seaport, warehouse or container yard. The Seller is also responsible for offloading the cargo at that named point whereas under DAP, the Buyer pays for unloading. However, under both DAT and DAP the Buyer is also responsible for the import tariffs whereas under DDP, the Seller is responsible for customs clearance and tariffs and delivery of the goods all the way to the Buyer's place of business.

Misguided Use of Incoterms

Anecdotal evidence suggests, and empirical evidence supports the notion that shippers do not maximize their international shipping policies and continue to use less-than-optimal Incoterm strategies, often without the knowledge that such sloppy practices may leave them vulnerable. Despite the repeated revisions of Incoterms to attempt to conform to modern commercial practice, traders can be creatures of habit and often repeatedly misuse Incoterms in a way that

opens them up to unnecessary risk. Even a casual perusal of international trade websites such as Alibaba.com reveal thousands of merchants who clearly do not understand the proper use of Incoterms. Common such misuse includes:

1. The inappropriate use of FOB or other ocean freight Incoterms for multi-modal transport: As the ICC has repeatedly pleaded, FCA is the appropriate F term for multi-modal transport. The erroneous use of FOB exposes Sellers to a "risk gap." Under FOB, the risk point is when the goods have been loaded aboard an ocean carrier. Accordingly, if a container is dispatched from Seller's place of business, the risk does not pass until it is loaded aboard the ship. However, many Sellers wrongfully believe that since the container is now in the hands of the carrier, the risk has already transferred to the Buyer. It has not. And accidents do happen - trucks crash, port warehouses catch fire, cranes topple during loading, goods are stolen from containers on piers etc. In all such circumstances, if FOB is the designated Incoterm, these mishaps are at the risk of the Seller who is usually blithely unaware of this. Any use of FOB by an inland producer of manufactured goods is rather suspect because such goods travel in containers and FCA is the more appropriate choice.

2. The use of any Incoterm not followed by an appropriate geographic place name: For example, it is somewhat bizarre that most widespread use of FOB on Alibaba.com is "naked," i.e., not followed by the name of a port. This is only somewhat acceptable if the Seller is clearly actually located in or near a port. But an inland seller further away usually has a choice of several possible ports with different shipping charges, and in such cases, the name of the applicable port should be specified for clarity and to prevent surprises where Buyer and Seller's contemplated choice of ports do not match.

3. Even more amazingly, some traders have not even adapted to INCOTERMS 2000, let alone 2010. For example the Incoterm revisions in 2000 did away with the use of C&F and replaced it with CFR. Nevertheless, even today one sees Sellers and Buyers using C&F even though it is now almost a decade and a half out-of-date. Sure, since C&F and CFR are functionally equivalent, there may be no damage done other than the embarrassment of being so behind the times, but it makes one despair that any changes to the Incoterms can ever be uniformly and properly adopted by the international trading community. The same applies to the erroneous use of the U.S. UCC's version of FOB that was done away with almost a decade ago.

4. The mistaken belief that use of an Incoterm creates a legal contract of sale which it does not: Incoterms become legally applicable when incorporated in a proper contract of sale, use of an Incoterm alone does not create a contract of sale in and of itself.

5. Buyer's ignorance regarding the difference between the delivery and risk points when CFR is used: As discussed earlier, if CFR is used, the Seller's price includes the cost of transportation to the destination port. However, the risk of loss passes when the goods are loaded aboard the ocean carrier. Accordingly, unless the items shipped are worthless, the Buyer should purchase cargo insurance to protect itself. Buyers often think that since the freight is paid until the destination port, the risk transfers there which it does not.

7. U.S. Buyers' and Sellers' ignorance regarding the major loopholes in The Carriage of Goods by Sea Act of 1936 ("COGSA"): The liability of ocean carriers is governed by a mishmash of global agreements that have been signed by some countries and not others. For example, under COGSA (the U.S. name for the Hague Rules), ocean carriers are generally only liable for the unseaworthiness of a ship. They are not liable for weather-related losses or errors in navigation and management of the ship. Well these happen to be the major causes of marine losses. And even *if* the loss is caused by the

unseaworthiness of the vessel, ocean carriers whose contracts for carriage are governed by COGSA, are only liable for $500 per "package." Therefore, every cautious U.S.-based trader who selects an Incoterm that places the ocean transportation risk on themselves, *must* obtain proper cargo insurance. Yet many are under the erroneous impression that all marine losses are the responsibility of the carrier which they most certainly are not. And shippers who carelessly fill out bills of lading that note the cargo is "six containers of laptop computers" will be unpleasantly surprised when they receive a check for $3000 when their cargo worth millions is lost at sea even under the extremely rare circumstances that the loss can be blamed on the carrier under COGSA. The recent revisions under INCOTERMS 2010 must be understood in conjunction with the proposed changes contemplated by the Rotterdam Rules that have yet to be ratified by the required twenty nations. If the Rotterdam Rules come into effect in the future, shippers may be protected from some of these coverage gaps, but as of now, they are not.

DIRECTIONS FOR FUTURE RESEARCH: THEORY AND MECHANISM BUILDING

Increasingly, more shippers and freight forwarders in Asia are shifting from FOB to FCA. Shippers are increasingly using the free carrier (FCA) Incoterm in their freight contract rather than the free on board (FOB) designation (Johnson 2013). Using FCA essentially means the Buyer of goods takes possession once they leave the factory door. In an FOB transaction, on the other hand, the Buyer assumes possession only when the goods are loaded at the port of departure. The tradeoff is more risk and costs in an FCA shipment, but also a greater degree of control for the Buyer. Johnson (2013) notes that control is key. First, Buyers can select their transport providers and gain greater visibility in the country of origin and into the logistics and compliance processes. Second, though spending increases when shifting to FCA from FOB, the Buyer has greater control of costs. That is, it eliminates the tendency of the Seller to act opportunistically by marking up such costs as trucking, container, port, documentation, and gate fees. Lastly, FCA allows a Buyer to have greater visibility into its shipments coming out of Asia. Under FOB, if a problem occurs on the inland leg of the origin side of the transaction, the Buyer may not know about it until it is too late to mitigate the risks and costs of such uncertainties. Interestingly, what is true in Asia does not seem to hold in other global markets. That is, a vast majority of shippers and freight forwarders still use FOB, though it leaves the Buyer vulnerable. Additionally, as reported in *American Shipper* (November 2010), though the ICC's intent was to simplify Incoterms and make their use more uniform both domestically and internationally, FOB has vastly different legal interpretations when one looks to the UCC for FOB intent domestically (though no longer even legally applicable) and to Incoterms 2010 for meaning internationally. While many shippers and freight forwarders revert to customary Incoterm usage (e.g., FOB) out of convention, rather than aligning their shipping terms with contemporary practice, Malfiet (2011) notes that the term EXW does not align with contemporary business practice. That is, EXW is rarely used in international trade. It is extremely difficult for a Buyer to see the advantages and agree to assuming the costs and risks all the way from the Seller's factory door, through the exporting country's infrastructure to the export port, across the High Seas, and all of the formalities on the import side of the transport journey. Nonetheless, many shippers doing business in Asia have begun to see the advantages of moving away from FOB as a default Incoterm toward strategically using FCA (Johnson, 2013).

The problem? Many shippers ignore this reality. What is missing? Why does the ICC periodically change Incoterms to "keep up with contemporary international trade policies and practice," and yet trading dyads across the globe ignore the Incoterm Rules in favor of a reactive, less than optimal, inefficient shipping policy? Perchance one possible step in the right direction is the construction of a decision support model -

Expert System - that can be constructed to guide Sellers and Buyers toward a more mutually beneficial, balanced shipping policy in moving freight across the globe. Such a system should be grounded in well-established theory and mechanisms that can capture the phenomena of interest appropriately with insights from the tenets of Transaction Cost Economics and mechanisms from game theory. A brief discussion on this possibility follows.

We should base our decision-support models in theory (Hunt, 1991). Perhaps supply chain researchers can look to the confluence of a neoclassical school of thought - Transaction Cost Economics and Game Theory in an effort to build an expert system to better guide dyadic trading partners in the transportation sector of their contracts. The quest is how to maximize the dyadic partners' transportation policies without manifesting the hazards inherent in contract law and in international trade, while maintaining alignment of shipping policies with transport and transaction practices and policies. In other words, an Expert System may allow a particular Buyer-Seller dyad to better determine an appropriate Incoterm over the reliance of misguided, conventional usage. Perhaps we may gain insights into the appropriate contractual obligations in international transportation transactions at the confluence of both Game Theory and Transaction Cost Theory. Kreps (1999) notes that Transaction Cost Economics ("TCE") shares a great deal of common ground with Game Theory in that both subscribe to the notion that parties to a contract are assumed to have a firm understanding of the strategic situation within which their transactions are located and position themselves accordingly. Game Theory suggests trading partners have incentives to cheat (Hennart, 1991) and that those incentives create high instability (Parkhe, 1993). Game Theory mechanisms hold in international transport transactions if there is a nonzero probability of continuing a game (i.e., a dyadic relationship in trade terminology). That is, even though transactions may occur on a spot, non-routine basis, there is an assumption that a cooperative relationship may disintegrate if there is a determinate end point (Schepker et al., 2013, Telsor, 1980) to the trading relationship.

Transaction Cost Economics, developed primarily by economist Oliver Williamson (1975, 1979, 1981, 1985), focuses on firm-level decision-making determining how various functions are more efficiently performed. Williamson's (1975, 1979, 1981, 1985) formulation suggests that five tenets are crucial in yielding clear causal relationships between transactional characteristics and governance arrangements. Those tenets include: a) asset specificity; b) uncertainty; c) frequency of transactions; d) opportunism, and; e) bounded rationality. Asset specificity refers to the trading partners' assets. Are they general assets? Or do they have greater value specifically in the dyadic context in the relationship between the Buyer and Seller? Uncertainty refers to the internal and external vagueness or ambiguity that surrounds the trading partners' transactions. Are the social and political climates in one or both regions volatile? Is demand and or supply highly variable? Frequency of transactions explains governance relationships and structures as well. Do the Buyer and Seller dyad frequently conduct exchanges? How frequently do they transport? Is the transport frequency constant or is it less predictable? Opportunism refers to the likelihood that one of the members of the trading relationship will act opportunistically where and when possible to gain an advantage, or an unfair position in contracting. Finally, bounded rationality recognizes that human transactors are rational but only boundedly so. Over the years, in expounding TCE theory, Williamson (1979, 1981, 1985, 1989, 1990, 1991, 1998, 2002a, 2002b, 2005a, 2005b) draws on the training in operations research, organizational theory, and economics he received at the Carnegie Institute of Technology (now Carnegie-Mellon University), in what he refers to as the Carnegie Triple (Williamson, 2007, p. 1).

The quest should also somehow seek to balance the interests and contract strategies of the trading

dyad, including the all important transport transactions so that the trading partners achieve what Game Theory refers to as "mutuality," an affinity for trading partners to treat one another with empathy and not to act opportunistically with a short-term focus. Oftentimes, parties to international trade contracts take measures to eliminate opportunistic behavior, hazards, and hold-up issues (Williamson 1975, 1985), yet fail to take the same precautions measures when contracting for the transport journey of that trading contract. Buchanan (2001) argues that the science of contract should be given greater prominence in trading partners' interests. Buchanan notes that the mutuality of advantage from voluntary exchange is the most important fundamental undertaking in economics (2001, p. 29). Thus, logical mutuality should extend beyond the contract of sale and into the terms of delivery to include mutually agreed-upon and clean divisions of risks and costs in the delivery of goods between the Buyer and Seller. And any decision-support model should also seek to capture this notion.

The basic unit of analysis in economic organization is the transaction (Commons, 1932, Coase, 1937, Williamson, 1985). The key to organizing transactions is economizing, that is to make activities efficient and not wasteful. TCE is predominantly concerned with economizing on transaction costs (Coase 1937, 1960, 1984). TCE may also be an appropriate starting point in building a shipping (i.e., Incoterm) Expert System to guide international trading dyads in that TCE subscribes to pluralism (Williamson, 2007). That is to say, TCE theorists and mechanism-building researchers encourage the exploration of TCE tenets (e.g., asset specificity, uncertainty, opportunism, frequency, hazards, hold-up, etc.) in describing and explaining phenomena in many "directions." (Simon, 1992). TCE has been an interesting project from the outset (in that law, organization theory, operations, and economics theories and mechanisms are selectively combined (Williamson 1985, 2007)), and has long embraced applying its tenets to explain phenomena irrespective of discipline. Williamson (2008) calls for the application of TCE to the study of supply chain management as TCE subscribes to pragmatic methodology. In particular, we find four of Williamson's (1975, 1979, 1981, 1985) canons applicable to our research suggestions vis-à-vis Buyer-Seller Incoterm shipping strategies: 1) TCE examines economic organization through the lens of contract; the make-or-buy decision is the paradigm transaction; and any issue that arises as or can be reformulated as a contracting problem can be studied to advantage in TCE terms. The Incoterm is the lens in which we suggest the transaction be scrutinized; 2) TCE views governance as the means by which to infuse order, thereby to mitigate conflict and realize mutual gains. TCE also describes governance structures - mainly markets, hybrids and hierarchies - as discrete structural alternatives that possess distinctive strengths and weaknesses in autonomous and coordinated adaptation respects. What purpose does SCM (what is SCM?) ascribe to governance? How are alternative modes of governance described? Via the spectrum of responsibilities, cost and risks evidenced in the Incoterms; 3)(The operationalization of TCE is accomplished by naming the key attributes with respect to which transactions differ, describing governance structures similarly and invoking the discriminating alignment hypothesis - according to which transactions, which differ in their attributes, are aligned with governance structures, which differ in their costs and competences, in a transaction cost economizing way. Each Incoterm subscribes varying levels of risk and cost for the shippers, and; 4) TCE gives prominence to empirical testing of predictions with microanalytic data. The scope of Incoterm transactions, given the spectrum of risk and cost, fits this inquiry.

CONCLUSION

We first explored the changes in the latest version of Incoterms and explained why and how they have been refined to better capture

contemporary global and domestic shipping practices and policies. We noted some concerns with the rationale and the secretiveness of the ICC's revision process. Next we graphically explained each of the eleven INCOTERMS 2010 and specified exact delivery points, those critical points at which costs and risks responsibilities shift from the Seller to the Buyer. We then discussed and explained the application of the terms from a practitioner's view and noted that many shippers and freight forwarders still revert to long practiced shipping policies, leaving themselves vulnerable. We closed by proposing future researchers build an expert system grounded primarily in Transaction Cost Economics with mechanisms from Game Theory in an attempt to better guide trading partners in the appropriate use of Incoterms and noted how this will close many misunderstood gaps in coverage and liability vulnerabilities.

We recommend future research attempts to tackle the rationale behind the notion that, even as the ICC attempts to keep pace with contemporary business practice via periodic updates to Incoterms, many practitioners revert to terms that leave shippers vulnerable. We believe the confluence of TCE and Game Theory is a good starting point and might add value in explaining the phenomena by directing trading partners in a way that leaves them more informed and less vulnerable. It is imperative that future researchers work hand-in-hand with shippers (or freight forwarders) in building such an expert system to ensure common understanding of terminology and nomenclature (Campbell, 1955) and trading practices.

(Footnotes)

[1] It is important to note that it is a common practice for the carrier to send an empty container to Seller's place of business where the container is loaded with the goods, nd then the carrier picks up the container. Accordingly this "delivery" often takes place at Seller's place of business or where the Seller has manufactured the goods.

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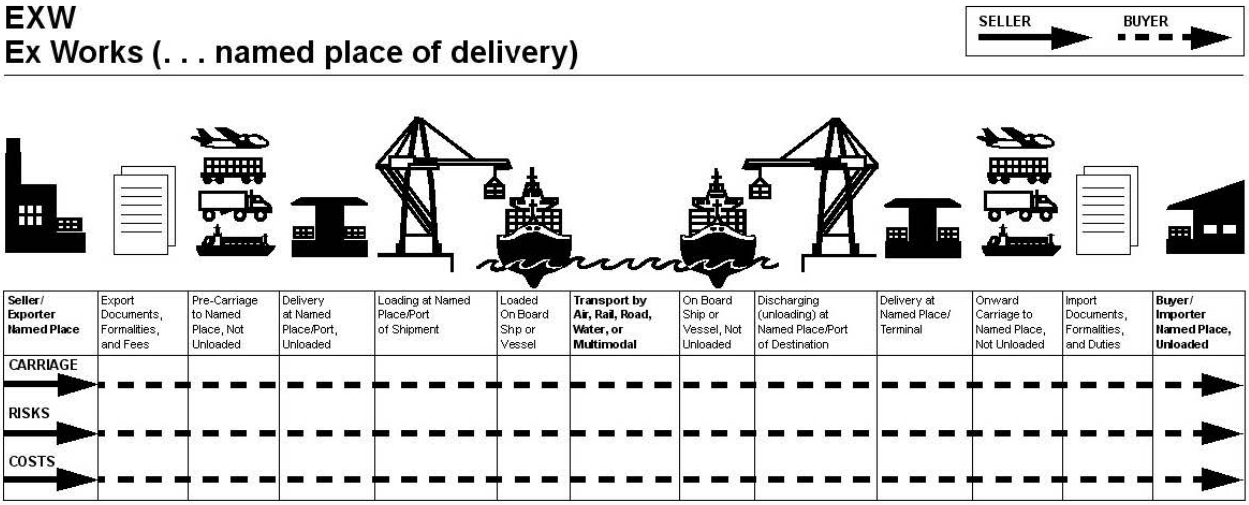
APPENDIX 1

INCOTERMS 2010

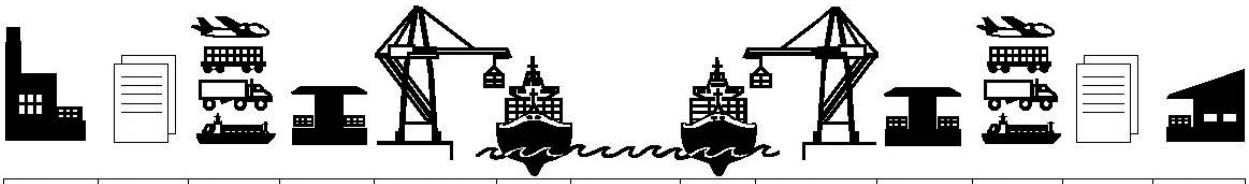
EXW
Ex Works (. . . named place of delivery)



Modes of Transport Covered: All modes of transport including multimodal.

In EXW, the Seller/exporter/manufacturer merely makes the goods available to the Buyer at the Seller's "named place of delivery," which is commonly, but not necessarily, the Seller's place of business. With EXW, the Seller has no responsibility to load the goods onto a truck or other transport vehicle or to clear the goods for export. This trade term places the greatest responsibility on the Buyer and minimum obligations on the Seller. The parties to the transaction, however, may stipulate that the Seller be responsible for loading the goods onto a transport vehicle at the risk and cost of the Buyer. Such a stipulation is a variant and must be made within the contract of sale. The EXW term is generally not recommended for international trade transactions, as loading the goods at the Seller's named place and handling export formalities usually places too much of a burden upon the Buyer. If the Buyer cannot handle loading the goods or export formalities, the EXW term should not be used. In such a case, FCA is recommended. The EXW term is often used when making an initial quotation for the sale of goods. It represents the cost of the goods without any other costs included. The EXW term is commonly used in courier shipments when the courier picks up the shipment from client's premises and loads courier's own truck. Payment terms for EXW transactions are generally cash in advance and open account.

FCA
Free Carrier (. . . named place of delivery)

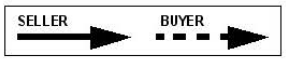


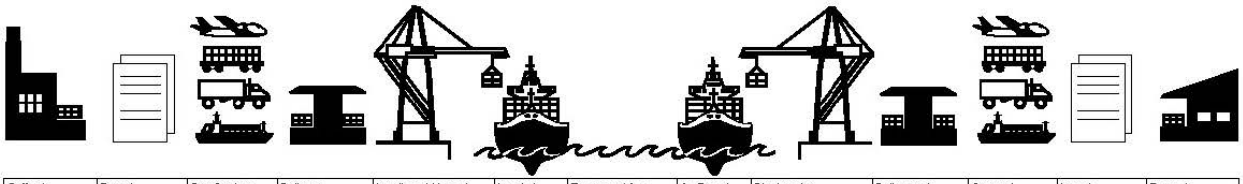
Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Air, Rail, Road, Water, or Multimodal**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

Modes of Transport Covered: All modes of transport including multimodal.

In Free Carrier, the Seller/exporter/manufacturer clears the goods for export and delivers them to the carrier specified by the Buyer at the "named place of delivery." If the named place of delivery is the Seller's place of business, the Seller is responsible for loading the goods onto the transport vehicle. If the named place is any other location, such as the loading dock of the carrier, the Seller is not responsible for unloading. When using the FCA term, it is advisable to clearly specify in the contracts of sale and carriage the precise point of delivery. "Carrier" has a special meaning. Technically, a carrier is a firm that itself transports goods or passengers for hire, rather than simply arranging for such transport. Examples are a shipping line, airline, trucking firm, or railway. In the FCA term, however, the carrier can be any person who by contract "undertakes to perform or procure" such services by any of the above methods of transport including multimodal. Therefore, a person, such as a freight forwarder, can act as a "carrier." With the FCA term, the Buyer nominates the "carrier," and the Seller need only accept the nomination for the term to work. The FCA term may be used for any mode of transport including multimodal. With FCA, the named place of delivery is domestic to the Buyer. The FCA term is often used when making an initial quotation for the sale of goods.

FAS
Free Alongside Ship (. . . named port of shipment)





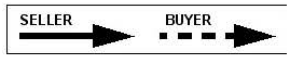
Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Sea or Inland Waterway Only**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

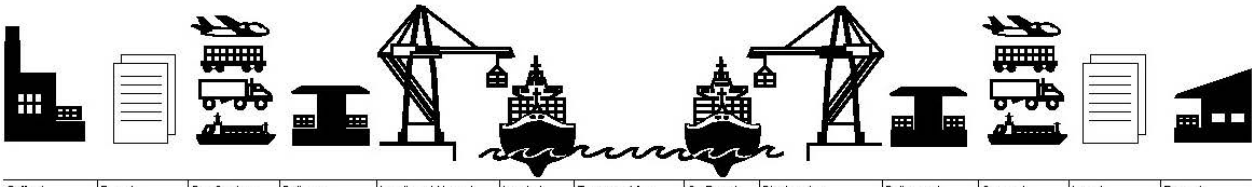
Modes of Transport Covered: Used only for ocean or inland waterway transport.

In Free Alongside Ship, the Seller/exporter/manufacturer clears the goods for export and places them alongside the ship (on a dock or barge) at the "named port of shipment." When using the FAS term, it is advisable to clearly specify in the contract of sale, and in contracts of carriage, not only the named port of shipment, but also the precise loading point at or within the named port of shipment. This is particularly the case when the named port of shipment is large and options abound for delivery points. With FAS, the Seller has the option to deliver the goods alongside the ship, or to "procure goods already so delivered." This is a reference to so-called "string sales" where a single shipment might be resold multiple times during transport, as is common in the commodity trade. The FAS term is commonly used in the sale of bulk commodity cargo such as oil, grains, and ore. If the

shipment is containerized or to be containerized, common practice is to deliver the shipment to the carrier at a terminal and not alongside a ship. In such situations, the FCA term is recommended. The named place in FAS is a port, and therefore the term is used only for ocean or inland waterway transport. With FAS, the named port of shipment is domestic to the Seller. Usual payment terms for FAS transactions are cash in advance and open account, but letters of credit are also used.

FOB
Free On Board (. . . named port of shipment)





Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Sea or Inland Waterway Only**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

Modes of Transport Covered: Used only for ocean or inland waterway transport.

In Free On Board, the Seller/exporter/manufacturer clears the goods for export and delivers them on board the named vessel at the "named port of shipment." This is a change from Incoterms 2000, where the Seller was responsible only to deliver the goods "past the ship's rail." With FOB, the Seller has the option to deliver the goods on board the vessel, or to "procure goods already so delivered." This is a reference to so-called "string sales," where a single shipment might be resold multiple times during transport, as is common in the commodity trade. The named place in FOB is a port and therefore the term is used only for ocean or inland waterway transport. With FOB, the named port of shipment is domestic to the Seller. If the shipment is containerized or to be containerized, common practice is to deliver the shipment to the carrier at a terminal and not on board a ship. In such situations, the FCA term is recommended. The FOB term is commonly used in the sale of bulk commodity cargo such as oil, grains, and ore. The key document in FOB transactions is the "On Board Bill of Lading." The named place in FOB is a port, and therefore the term is used only for ocean or inland waterway transport. Sellers and Buyers often misuse the FOB term. FOB does not mean loading goods onto a truck or train at the Seller's place of business. FOB is used only in reference to delivering the goods on board a ship in ocean or inland waterway transport. The FCA term, on the other hand, is applicable to all modes of transport.

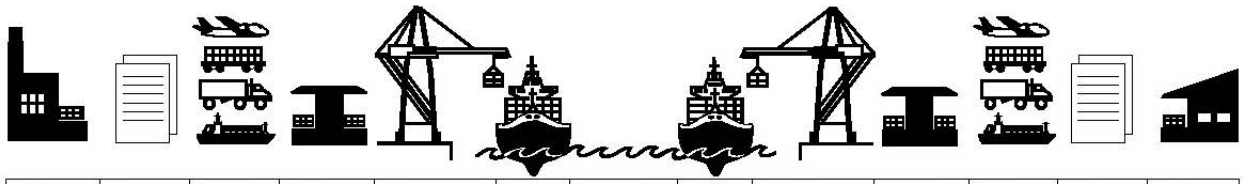
CFR
Cost and Freight (. . . named port of destination)

Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Sea or Inland Waterway Only**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

Modes of Transport Covered: Can apply to all modes of transport including multimodal but should be used for ocean or inland water transport only.

In Cost and Freight, the Seller/exporter/manufacturer clears the goods for export and delivers them on board the ship at the port of shipment (not destination). This is where risk passes from Seller to Buyer. The Seller, however, is responsible for contracting for and paying the costs associated with transport of the goods to the "named port of destination." This is where costs transfer from Seller to Buyer It is important to note that the transfer of risk from Seller to Buyer occurs at a different point than the transfer of costs. When using the CFR term, it is advisable to clearly specify in the contract of sale, and in contracts of carriage, not only the named port of destination, but also the precise point at or within the named port of destination. With CFR, the Seller has the option to deliver the goods on board the vessel, or to "procure goods already so delivered." This is a reference to so-called "string sales" where a single shipment might be resold multiple times during transport, as is common in the commodity trade. The named destination in CFR is a port, and therefore the term is used only for ocean or inland waterway transport. If the shipment is containerized or to be containerized, common practice is to deliver the shipment to the carrier at a terminal and not on board a ship. In such situations, the CPT term is recommended. With CFR, the named port of destination is domestic to the Buyer. The CFR term is commonly used the sale of a) bulk commodity cargo such as oil, grains, and ore, b) oversize and overweight cargo that will not fit into an ocean container, and c) cargo that exceeds the weight limitations of ocean containers.

CIF
Cost, Insurance, and Freight (. . . named port of destination)

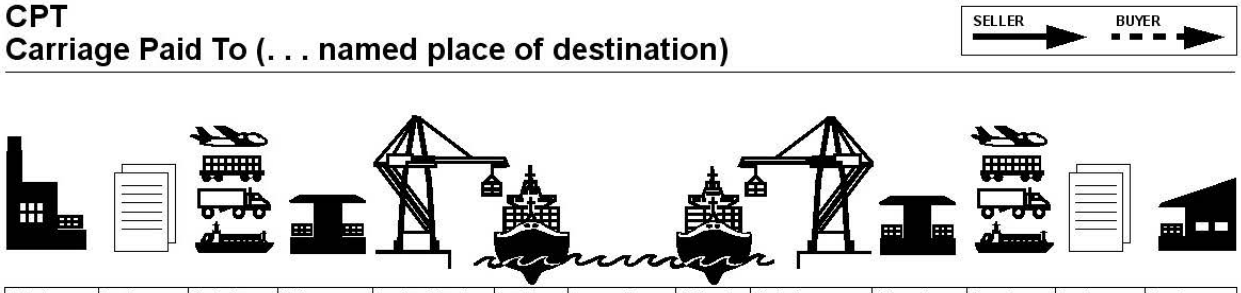


Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Sea or Inland Waterway Only**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

Modes of Transport Covered: Can apply to all modes of transport including multimodal but should be used for ocean or inland waterway transport only.

In Cost, Insurance, and Freight, the Seller/exporter/manufacturer clears the goods for export and delivers them on board the ship at the port of shipment (not destination). This is where risk passes from Seller to Buyer. The Seller, however, is responsible for contracting for and paying the costs associated with transport of the goods **and minimum cover insurance** to the "named port of destination." This is where costs transfer from Seller to Buyer. It is important to note that the transfer of risk from Seller to Buyer occurs at a different point than the transfer of costs. When using the CIF term, it is advisable to clearly specify in the contract of sale and in contracts of carriage, not only the named port of destination, but also the precise point at or within the named port of destination. With CIF, the Seller has the option to deliver the goods on board the vessel, or to "procure goods already so delivered." This is a reference to so-called "string sales" where a single shipment might be resold multiple times during transport, as is common in the commodity trade. The named destination in CIF is a port, and therefore the term is used only for ocean or inland waterway transport. If the shipment is containerized or to be containerized, common practice is to deliver the shipment to the carrier at a terminal and not on board a ship. In such situations, the CIP term is recommended. With CIF, the named port of destination is domestic to the Buyer. The CIF term is commonly used in the sale of a) bulk commodity cargo such as oil, grains, and ore, b) oversize and overweight cargo that will not fit into an ocean container, and c) cargo that exceeds the weight limitations of ocean containers.

CPT
Carriage Paid To (. . . named place of destination)

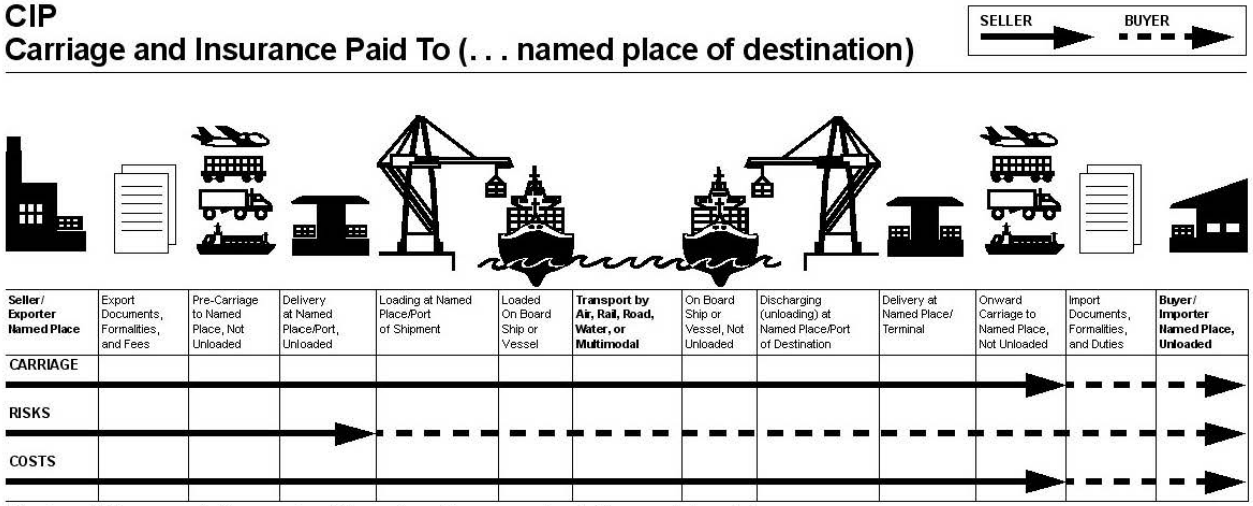


Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Air, Rail, Road, Water, or Multimodal**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

Modes of Transport Covered: All modes of transport including multimodal.

In Carriage Paid To, the Seller/exporter/manufacturer clears the goods for export and is responsible for delivering the goods to the carrier at an agreed-upon place of shipment (not the destination). This is where risk passes from Seller to Buyer. The Seller, however, is responsible for contracting for and paying the costs associated with transport of the goods to the "named place of destination." This is where costs transfer from Seller to Buyer. It is important to note that the transfer of risk from Seller to Buyer occurs at a different point than the transfer of costs. When using the CPT term, it is advisable to clearly specify in the contract of sale and in contracts of carriage, not only the named place of destination, but also the precise point at or within the named place of destination. The CPT term may be used for any mode of transport including multimodal. In CPT, the named place of destination is domestic to the Buyer. The CPT term is often used in sales where the shipment is by air freight, containerized ocean freight, courier shipments of small parcels, and in "ro-ro" (roll-on, roll-off) shipments of motor vehicles. If more than one carrier is used for carriage to the named place of destination, such as in multimodal shipments, the risk passes when the goods have been delivered to the first carrier.

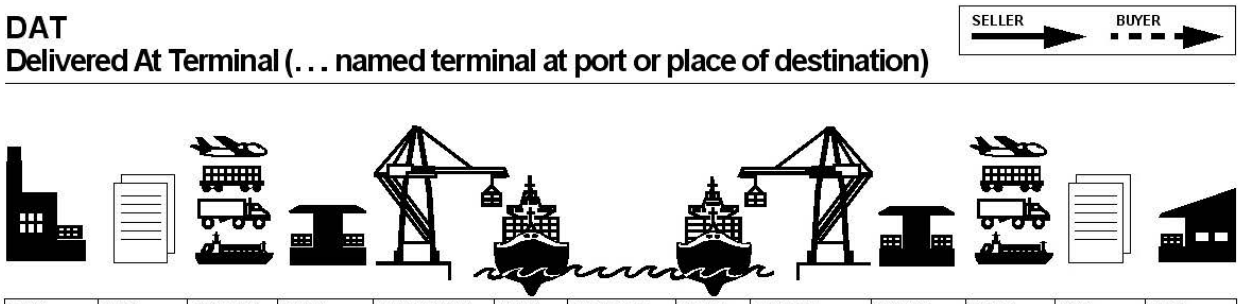
CIP
Carriage and Insurance Paid To (. . . named place of destination)



Modes of Transport Covered: All modes of transport including multimodal.

In Carriage and Insurance Paid To, the Seller/exporter/ manufacturer clears the goods for export and is responsible for delivering the goods to the carrier at an agreed-upon place of shipment (not the destination). This is where risk passes from Seller to Buyer. The Seller, however, is responsible for contracting for and paying the costs associated with transport of the goods **and minimum cover insurance** to the "named place of destination." This is where costs transfer from Seller to Buyer. It is important to note that the transfer of risk from Seller to Buyer occurs at a different point than the transfer of costs. When using the CIP term, it is advisable to clearly specify in the contract of sale and in contracts of carriage, not only the named place of destination, but also the precise point at or within the named place of destination. The CIP term may be used for any mode of transport including multimodal. In CIP, the named place of destination is domestic to the Buyer. The CIP term is often used in sales where the shipment is by air freight, containerized ocean freight, courier shipments of small parcels, and in "ro-ro" (roll-on, roll-off) shipments of goods on motor vehicles or motor vehicles themselves. If more than one carrier is used for carriage to the named place of destination, such as in multimodal shipments, the risk passes when the goods have been delivered to the first carrier.

DAT
Delivered At Terminal (. . . named terminal at port or place of destination)

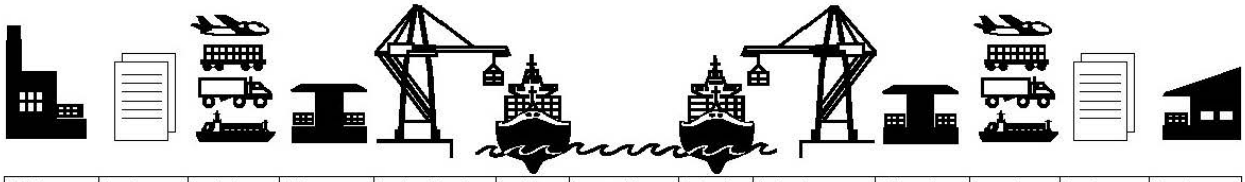


Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Air, Rail, Road, Water, or Multimodal**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

Modes of Transport Covered: All modes of transport including multimodal.

In Delivered At Terminal, the Seller/exporter/manufacturer clears the goods for export and is responsible for their delivery to the "named terminal at port or place of destination." In DAT, the Seller makes the goods available to the Buyer unloaded from the arriving means of transport. The terminal can be of any sort: a sea, road, air, or rail terminal; a warehouse, a quay, or container yard; and covered or uncovered. When using the DAT term, it is advisable to clearly specify in the contract of sale and in contracts of carriage, not only the terminal by name, but also the precise point at or within the terminal at the named port or place of destination. In DAT, the named terminal at port or place of destination is domestic to the Buyer. The DAT term may be used for any mode of transport including multimodal. All forms of payment are used in DAT transactions. The DAT term is ideal for multimodal transport. DAT is the only term under which the Seller is responsible for unloading.

DAP
Delivered At Place (. . . named place of destination)

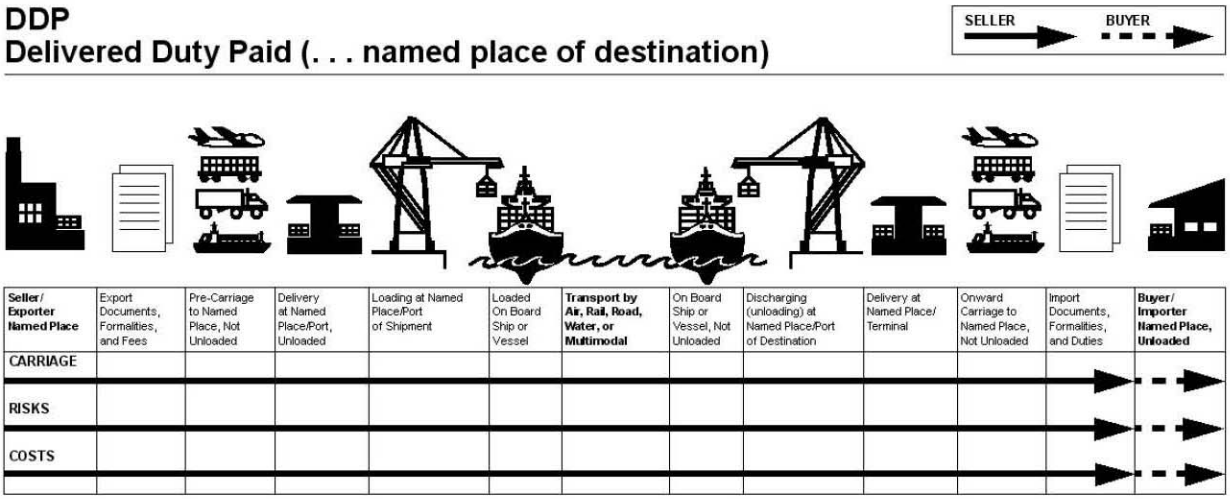


Seller/ Exporter Named Place	Export Documents, Formalities, and Fees	Pre-Carriage to Named Place, Not Unloaded	Delivery at Named Place/Port, Unloaded	Loading at Named Place/Port of Shipment	Loaded On Board Ship or Vessel	**Transport by Air, Rail, Road, Water, or Multimodal**	On Board Ship or Vessel, Not Unloaded	Discharging (unloading) at Named Place/Port of Destination	Delivery at Named Place/ Terminal	Onward Carriage to Named Place, Not Unloaded	Import Documents, Formalities, and Duties	**Buyer/ Importer Named Place, Unloaded**
CARRIAGE												
RISKS												
COSTS												

Modes of Transport Covered: All modes of transport including multimodal.

In Delivered At Place, the Seller/exporter/manufacturer clears the goods for export and is responsible for their delivery to the "named place of destination." In DAP, the Seller makes the goods available to the Buyer on the arriving means of transport at the named place of destination, not unloaded. When using the DAP term, it is advisable to clearly specify in the contract of sale and in contracts of carriage, not only the named place of destination, but also the precise point at or within the named place of destination. In DAP, the named place of destination is domestic to the Buyer and is often the Buyer's place of business. In DAP, the Seller is not responsible for import customs formalities, duties, fees, or taxes. The DAP term may be used for any mode of transport including multimodal. All forms of payment are used in DAP transactions. The DAP term is ideal for multimodal transport. All forms of payment are used in DAP transactions.

DDP
Delivered Duty Paid (. . . named place of destination)



Modes of Transport Covered: All modes of transport including multimodal.

In Delivered Duty Paid, the Seller/exporter/manufacturer clears the goods for export and is responsible for their delivery to the "named place of destination." In DDP, the Seller also clears the goods for import in the country of destination and pays for all import customs formalities, duties, fees, VAT (value added tax), and other taxes. In DDP, the Seller makes the goods available to the Buyer at the named place of destination unloaded. When using the DDP term, it is advisable to clearly specify in the contract of sale and in contracts of carriage, not only the named place of destination, but also the precise point at or within the named place of destination. In DDP, the named place of destination is domestic to the Buyer and is often the Buyer's place of business. The DDP term may be used for any mode of transport including multimodal. The DDP term is ideal for multimodal transport. All forms of payment are used in DDP transactions. The DDP term places the greatest responsibility on the Seller and the least responsibility on the Buyer.

Crafted and condensed from: http://www.worldtraderef.com/wtr_nl/WTR_site/incoterms_2010.asp

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KEY ADVERTISING COMPONENTS AND MEDIA CHANNELS FOR RECRUITING LONG HAUL DRIVERS

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Tracy Anna Cosenza
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ABSTRACT

This research examines how trucking companies can develop effective advertising media and messages for reaching and recruiting qualified long distance long distance truck drivers. Long distance truck driver candidates seem most interested in competitive pay, paid vacation, a weekly payment schedule (along with direct deposit), assigned equipment, 24/7 dispatch, a large volume of hub group freight, and flexible home time. To reach this audience and its needs, we suggest advertisements emphasizing these benefits be placed on the Internet and social media sites, as well as in selected professional magazines frequented by truck drivers searching for jobs.

INTRODUCTION

While truck drivers are called to the open road, in the current economic climate there is a significant shortage of qualified truck drivers that respond to this important call. While several possible reasons exist for this low response, one potential explanation is the lack of focused advertising strategies for recruiting truck drivers. Beyond making intuitive sense, research has demonstrated that good message generation to a targeted audience eliminates wasted advertising resources (Iyer, Soberman, and Villas-Boas, 2005).

The estimated cost for a trucking company to hire and train one new driver is about $7,000 (White, 2013). Although there is a lack of research indicating the relationship between effective recruiting and strong retention rates in the industry, it seems self-evident that if a company can recruit effectively, the probability of retention would be higher. This logic follows the recruitment-training-reduced turnover paradigm that emphasizes a match between benefits offered and expectations in recruitment (Bray, 2007).

As the US economy slowly recovers from the economic recession that began in 2007-2008, product demand is shifting upward, increasing the need to move materials and finished goods through the various modes of transportation. Although demand for truck drivers has always exceeded supply, this gap seems more pronounced as companies seek to hire truck drivers to support the current economic upturn. According to the American Trucking Association, in 2012, truckload activity was up one percent from the previous year. That same year saw an increase of more than 20 percent in truckload intermodal loads and an increase of more than 4.3 percent in less than truckload tonnage (American Trucking Associations, 2012). Davis Heller, director of safety and policy for the Truckload Carriers Association, cites U.S Bureau of Labor Statistics that indicate 200,000 truck driver job openings nationwide, with an increase of 330,000 forecast by 2020 (Smith, 2012). Yet hiring qualified drivers with a proven safety record has become a major challenge over the years. In addition, the 2010 Comprehensive Safety Analysis (CSA) system

launched by the Federal Motor Carrier Safety Administration (FMCSA) has the potential to create new obstacles in the hiring process (Smart Trucking Jobs.com, 2010), resulting in additional recruiting challenges for transportation and logistics firms. Indeed, TruckGauge indicates the truck driver shortage is most likely a result of tighter regulations, including hours of service rules, issues that must be addressed during the coming times of increasing demand (TruckGauge, 2012).

While advertising is often used to recruit truck drivers, there has been no systematic effort to ascertain the important components of advertising to recruit potential truck drivers. Nor has there been an effort to identify the most important media channels. Hence, the overarching objective of this research is to identify key message components and key media sources for use in truck driver recruitment advertising.

A SHORTAGE OF TRUCK DRIVERS

Although transportation can include any combination of trucks, trains, planes or ships, trucks (or motor carriers) are generally included for at least one leg of the trip because of their flexibility (Bureau of Labor Statistics, 2011). Even though many time-sensitive goods are transported via air, the shipment is frequently picked up and/or delivered by trucks at the origin and/or the destination (Bureau of Labor Statistics, 2011). Because demand for motor carrier transportation fell about 24% during the recession, many companies reduced their workforce (Davidson, 2010) and many of the laid off older drivers subsequently retired. In 2010, however, demand was up 10% (Davidson, 2010). As efforts were launched to increase the workforce by hiring younger drivers, the challenges of finding workers who are willing to spend considerable time away from their family for a starting salary of about $38,000 (Davidson, 2010) became clear.

Because of these increased challenges, along with the demand and competition for experienced drivers with safe records, some major transportation companies began offering higher wages, signing bonuses, and preferred assignments to recruit the best drivers (Bureau of Labor Statistics 2011). Some companies offer $5000 bonuses for team drivers and emphasize recruiting military veterans who have G.I. Bill funding to acquire certification in trucking schools (Smith, 2012). Such incentives are not new to the industry. In the late 1990s, driver wages increased an average of 10 percent among the top 100 carriers (Moore, 1999). Even then, other recruiting incentives included signing bonuses, profit sharing, flexible schedules, driver recognition, and advanced career opportunities (Min and Lambert, 2002). However, no research has evaluated the effectiveness of the advertising activities supporting these recruiting efforts to increase the driver workforce (Min and Lambert, 2002).

The lack of qualified drivers can result in significant consequences. A shortage of truck drivers may result in a delay of everything from raw materials to final products. Shortages also translate into increased freight costs (Davidson, 2010), underutilized equipment, lost sales opportunities, increased training costs, decreased customer service and negative profit margins (Min and Lambert, 2002). Because of the critical implications arising from labor shortages, Min and Lambert (2002) argue that the truck driver shortage is a critical management and economic issue, as opposed to a simple labor problem. Moreover, recruitment of the best employees is a critical and key task facing human resource professionals (Sisodia and Chowdhary, 2012). Thus, the current and future predictions of driver shortages necessitate that trucking companies rethink their recruitment policies. They must spend more on recruitment advertising and additional recruitment staff to fill these positions; they must also reevaluate how they advertise to recruit drivers.

REQUIREMENTS FOR TRUCK DRIVERS

There are several requirements that potential long haul (over the road) truck drivers must meet

to fill the expanding number of vacancies. These requirements generally include a commercial driver's license (CDL) (http://www.fmcsa.dot.gov, 2011), truck driver certification (school), controlled substance testing/certification, a good safety record, and an understanding of the US Department of Transportation (USDT) rules (such as hours of service) (USDOT, 2011-2013). There are also increasingly stricter standards for obtaining and keeping a CDL (Bureau of Labor Statistics, 2011). Although there are currently no educational requirements to obtain a CDL or become a driver, technology has become such an integral part of the trucking/transportation industry that drivers need at least a basic set of computer skills. For example, computers have significantly increased productivity by analyses of work routines (Bureau of Labor Statistics, 2011). Further, information on routes and assignments are frequently communicated via computers to the drivers; hence, drivers must be able to access and use this information.

Truck drivers also need a proven driving safety record, and must now comply with the 2010 Compliance Safety Act (CSA). The CSA is a system of the Federal Motor Carrier Safety Administration (FMCSA) that (1) directly monitors the safety and performance of individual drivers; (2) addresses problem drivers based on their records across multiple employers; and (3) holds both motor carriers and drivers responsible for safety and performance (smart-trucking-jobs.com 2010). Consequently, safety records follow the driver from carrier to carrier. Enforcement of these goals demands a focus on "driver enforcement for serious rule violations, such as driving while disqualified, driving without a valid commercial driver's license, making a false entry on a medical certificate, and committing numerous hours of service violations" (smart-trucking-jobs.com, 2010, para. 11). The CSA is designed primarily to "develop more effective and efficient methods for FMCSA, together with industry and state partners, to achieve its mission of reducing commercial motor vehicle crashes, fatalities and injuries" (www.csa2010.com, 2013, para. 2), and the new system is the first to give individual drivers a safety rating. Under this system, both drivers and carriers are assessed points for their safety performance; at a certain level, the driver or carrier will be in violation of CSA 2010 and enforcement actions will be taken (smart-trucking-jobs.com, 2010). Not only do trucking executives believe that CSA 2010 will make it more difficult to hire qualified drivers (Fernel 2012), but there is also a concern that CSA 2010 will cause some truck drivers to lose their jobs.

The working conditions of truck drivers are sometimes difficult, and the salary is relatively low. In 2010, workers in the trucking industry averaged about 41.5 hours per week (Bureau of Labor Statistics, 2011) and earned an annual starting salary of about $38,000. Drivers must often travel in variable weather conditions and unless they are part of a driving team, spend considerable time alone, experiencing boredom and fatigue. To deliver their cargo in a timely manner, drivers frequently travel at night, on holidays, and on weekends in an effort to avoid traffic delays (Bureau of Labor Statistics, 2011). Despite regulations that limit the number of driving hours and require minimum times between hauls, one study found that almost 30% of drivers work more than 10 days in a row (Investigations/Risk Management, 2005). This same study also reported that 75% of drivers believe that fatigue affects their driving safety and that at least one driving error occurred in the previous month because of this fatigue (Investigations/Risk Management 2005). Finally, these demanding schedules require that truck drivers spend considerable time away from their family.

ADVERTISING TO RECRUIT DRIVERS

While new technologies such as Tenstreet (http://www.tenstreet.com), MTS driver recruitment (www.mtsdm.com), recruit gear (www.recruitgear.com), and social media sites (http://www.talkingtruckers.com) are now available to help optimize and streamline the

application and hiring of qualified drivers (Kolman, 2009; Refrigerated Transporter, 2008), these technologies only simplify the application and hiring processes; they do not help in the recruitment advertising itself. In general, there are two primary functions of recruitment advertising for truck drivers: (1) to catch the driver's eye and (2) to provide a reason for the driver to actually call (Refrigerated Transporter, 2005). Yet another important function is to prequalify the applicants through the modification of advertising campaigns that typically generate an overabundance of "unqualified" calls (Refrigerated Transporter, 2005). While emphasizing corporate benefits is a good strategy overall (Refrigerated Transporter, 2005), it is critical to develop a focused advertising strategy to ensure that the most qualified drivers respond to the advertising and are subsequently hired (Dobie, Rakowski, and Southern, 1998; Hare, 2011).

Developing appropriate and effective advertising strategies for recruitment is challenging (Lemay and Taylor, 1988). Currently, suggestions exist on what to do and what not to do in such advertising, but this information is limited and fails to provide adequate direction for carriers in the recruiting process (Lemay and Taylor, 1988). Min and Lambert (2002) also noted a lack of strategic advertising for targeted labor pools. At the same time, with the growing demand for truck drivers, carriers are now allocating larger budgets for advertising open positions (Heller, 2010). Hence, a primary objective of this research was to obtain insight into what to include in recruitment advertisements to hire an expanding group of drivers.

In addition, this research sought to better understand the specific media types that companies use to promote their job openings and assess if potential applicants are actually using these media. Min and Lambert (2002) found that word of mouth referrals were the most popular communication medium used by companies to recruit new drivers, while newspapers were the second most popular choice. The authors also reported that other advertising media (e.g., radio, television, and truck stop bulletin boards) were rarely used, but the utilization of such media was highly correlated with the perception that the media used was effective.

Interestingly, Lemay and Taylor (1988) found that drivers recruited though traditional newspaper help wanted ads performed worse and had higher absentee rates than those recruited through other means. They also found that magazine/trade journal recruitment advertising generated employees with lower absentee rates and higher quality than all other means. However, the authors further noted that magazine/trade journal advertising was used by a significant number of transportation companies, making it difficult for recruiting companies to cut through the advertising clutter and stand out. However, in today's market, the Internet has become a critical resource for companies recruiting drivers and drivers seeking employment, something not seen in the 1980s. Hence, the Internet has become an important media source for consideration.

In sum, it is critical to develop effective advertisements that will result in qualified drivers. And with the rapid evolution in online media, it is important to assess if and how the new media are being used in truck driver recruitment. As such, this research sought to investigate truck driver and manager perceptions of advertising message and media to answer the following research questions: 1) what are the perceived differences in the importance of recruitment message components between truck drivers and managers? 2) what are the perceived differences in the use of media sources between truck drivers and managers? and 3) what can transportation companies do to develop advertising messages to reach potential candidates?

METHODOLOGY

To accomplish our research goals, we developed and conducted simultaneous online surveys of

drivers of participating trucking companies and corporate employees (managers and staff involved in the recruiting process). We made significant efforts to involve a variety of transportation companies, both large and small. Several transportation companies contributed to the study by providing expert advice in the early stages of the research, as well as feedback on survey development. In addition, several companies provided drivers and staff members to participate in the online survey. A total of 138 drivers and 38 managers completed the survey. Because the companies sent the link directly to their drivers and staff, we are unable to report a response rate. (Because of the very small number of owner operator drivers in the sample, and their similarity to the company drivers, we combined them for analysis purposes.) Although the final sample size was smaller than anticipated, we believe that the results of this exploratory research are nevertheless valuable, because it is not unusual in transportation research for studies to demonstrate low response rates, yet be able to derive managerially useful findings (e.g., Dobie, et al., 1998; Harrison and Pierce, 2009).

Fifty percent of the drivers responding reported more than five years of driving experience; about 70 percent had worked for at least three companies. Nearly all of the drivers are solo (not teamed) company drivers and 80 percent of them spend at least five hours each week online. They are from throughout the US (representing 28 states), male (95%), married (70%), between 21-50 years old (50%), and ethnically diverse. Ninety-two percent completed high school. The responding corporate employees are located in three states; 67.7% are recruiters, with the rest holding positions from terminal manager to vice president. About 32.3% of the responding managers reported driver turnover rates from 51%-75%, with 6.5% reporting a turnover rate as low as 0-25%, and 16.1% reporting a rate as high as 76-100%. More than 74% stated their company offered sign on bonuses.

Questionnaire Development

Because one of our goals was to assess differences in perceptions between drivers and managers, the survey questions were developed to allow for a direct comparison between the two groups. First, to better understand perceptions of what was important to include in a truck driver recruitment advertisement, we developed a list of 17 items. These items were identified based on input from participating transportation companies, as well as a search of existing recruitment advertisements. We also utilized input from participating companies and industry recruiting materials to develop a list of transportation company policies that might play an important role in seeking/hiring for a truck driver position. A total of 18 items were compiled and included in this portion of the questionnaire. Finally, the same sources were utilized to develop a list of media sources (e.g., newspapers, the Internet, Best Driver Jobs magazine, Craigslist.com) used in recruitment advertising.

Because transportation companies identified certain benefits as potentially important factors in recruitment advertisements, we also investigated the perceived importance of four categories of company benefits and compared the responses between managers and drivers. In addition, based on consultation with the participating companies, we also evaluated and compared these perceived attitudes toward both the companies and managers.

Analysis and Results

To investigate the importance of recruitment message components, driver and manager respondents rated 17 items on perceived importance (1 = not important to 7 = extremely important). Table 1 presents the mean results ranked most to least important by truck drivers, and also contains the corresponding importance score of the managers for each item. T-tests were used to statistically assess the differences in perceived importance between drivers and managers. As indicated in Table 1, it is very important to drivers that recruitment

advertisements include information about policies such as competitive pay, paid vacation, a weekly payment schedule, assigned equipment, and flexible home time. Manager responses for these items are similar to driver responses with the exception of paid vacation. Although managers indicated that paid vacation is moderately important (m = 5.52), drivers rated this element as significantly more important (m = 6.46, t = 3.3, p = .001). The divergence in driver and manager responses with respect to paid vacation indicates that transportation companies should reexamine their policies concerning paid vacation, as well as the importance of including this benefit in recruiting advertisements.

Other items in Table 1 show considerably more variation in importance between drivers and managers. Direct deposit, 24/7 dispatch, and large volume of hub group freight are significantly more important to drivers than to managers. This indicates the necessity for management to communicate to potential recruits that their company offers driver-company communication, and minimal invasive home life essentials.

TABLE 1
(RANKED BY DRIVER PERCEPTION OF IMPORTANCE)
IMPORTANCE OF AD PERCEPTIONS

	Means			
Item	**Drivers**	**Managers**	***t*-value**	***p*-value**
Competitive pay	6.52	6.63	-0.592	0.585
Paid vacation	6.46	5.52	3.300	0.001
Weekly pay	6.43	6.22	0.810	0.419
Assigned equipment - no slip seating	6.31	5.85	1.450	0.148
Flexible home time	6.22	6.37	-0.586	0.559
Direct deposit available	6.00	4.89	3.300	0.001
24/7 Dispatch	5.75	5.15	1.730	0.093
75% Drop and hook	5.68	5.85	-0.537	0.592
Up to $5000 sign-on bonus	5.34	5.63	-0.706	0.481
Large volume of hub group freight*	5.01	4.15	2.220	0.028
Home daily	4.57	5.15	-1.320	0.191
Paid fuel surcharge, loaded and empty	4.40	5.52	-2.110	0.037
No Haz Mat	3.73	3.81	-0.195	0.845
Save up to 30% with tire discount program	3.53	4.37	-2.100	0.041
Savings up to $4000 with fuel discount program	3.51	5.00	-2.978	0.003
Owner operators can trade in their old truck	2.38	3.74	-3.450	0.001
Lease to purchase program	2.28	3.74	-3.970	0.000

* Hub Group Freight - Provides consolidated transportation services of freight over long distances, thus optimizing the drivers (company) ability to satisfy customers. For example, a customer's freight is loaded into a container or trailer and transported by rail from one Hub Group distribution center to another, then taken to its destination by a local trucking company. This impacts the amount of time drivers spend on the road.

Media sources used for recruiting/job searching by managers/drivers are presented in Table 2. Here, some interesting differences are observed. While the Internet, driving school recruitment, truck convention recruitment, newspaper advertising and word of mouth are all heavily used by managers (more than 50% of the manager respondents indicated using these sources), the only sources used by more than 50% of the drivers responding were the Internet and word of mouth. The Internet was the most frequently used source by drivers and the second most frequently used source by managers, while word of mouth was the most frequently used source by managers and the second most frequently used source by drivers. These results indicate a potential mismatch in the media types used by managers seeking to recruit truck drivers and truck drivers seeking employment.

As shown in Table 3, specific Internet sites used by drivers for seeking a job and managers seeking drivers differ considerably. While 50% of managers use cdljobs.com, only 7.2% of drivers do. And while nearly three-fourths of the managers use Craigslist.com, less than one-fifth of the drivers used it to look for a job. Other key differences are also noted. For example, Facebook.com was used by 36.7% of the managers but by only 5.1% of the drivers; likewise, Jiggyjobs.com was used by 36.7% of the managers but by only 3.6% of the drivers. Bestdriverjobs.com and Careerbuilder.com were each used by 17.4% of the drivers, and Monster.com was used by 14.5% of the drivers and 23.3% of the managers.

Respondents who indicated they used the Internet for searching/recruiting were also asked to rank their top three websites for searching/recruiting; results are presented in Table 4. (Please note that several of the manager results in Table 4 must be viewed with caution because of the very small sample sizes.) An analysis of this ranking data reveals that Bestdriverjobs.com was ranked #1 at least 9.7% of the time by both drivers and managers. Craigslist.org was ranked highly by managers (54.8%, n=17, ranked as #1), but not as often by drivers (6.5%, n=9 ranked as #1; 9.4%, n=13 ranked as #2). Careerbuilder.com was ranked highly by drivers (#1 by 5.8%, n=8; #2 by 8%, n=11), but was not viewed in the same way by managers (none ranked as #1; 6.5%, n=2, ranked as #2). Monster.com was ranked as #1 & #2 by 5.1% (n=7) of drivers, but was not viewed as highly by managers (0 ranked as #1 or #2; 6.5%, n=2

TABLE 2
FREQUENCY OF USE: SOURCES

Media Type	Drivers	Managers
Advertisements in Professional Publications/Magazines	37.0%	30.0%
Advertisements on Truck Stop Bulletin Boards	14.5%	30.0%
Employment Agency	11.6%	16.7%
Internet	57.2%	90.0%
Newspaper Advertisement	34.1%	63.3%
Radio Advertisements	13.8%	46.7%
Recruiting from Driving Schools	9.4%	83.3%
Recruiting from Trucking Conventions	6.5%	66.7%
Television Advertisements	4.3%	13.3%
Word of Mouth Referral	52.9%	96.7%
Other	7.2%	16.7%

TABLE 3
FREQUENCY OF USE: ONLINE SITES

Website	Drivers	Managers
Bestdriverjobs.com	17.4%	43.3%
BigRigLease.com	0.0%	26.7%
Bigtruckdrivingjobs.com	8.0%	23.3%
Bigrigjobs.com	5.8%	26.7%
Cdljobs.com	7.2%	50.0%
Careersingear.com	2.2%	10.0%
ClassADrivers.com	12.3%	40.0%
Craigslist.org	19.6%	73.3%
Driverrecruiting.com	3.6%	6.7%
EveryOwnerOperatorJob.com	2.9%	6.7%
Everytruckjob.com	5.1%	13.3%
Hiringtruckdrivers.com	4.3%	3.3%
Indeed.com	5.8%	23.3%
Jiggyjobs.com	3.6%	36.7%
Jobsfortruckers.com	6.5%	13.3%
JobsInTrucks.com	4.3%	26.7%
Layover.com	5.1%	26.7%
LinkedIn.com	1.4%	13.3%
NationalTruckDrivingJobs.com	7.2%	10.0%
Truckflix.com	2.2%	10.0%
Careerbuilder.com	17.4%	33.3%
Indeed.com	4.3%	16.7%
Monster.com	14.5%	23.3%
Simplyhired.com	1.4%	3.3%
Facebook.com	5.1%	36.7%
Twitter	0.7%	13.3%
Other	8.7%	0.0%

ranked as #3). Finally, Facebook was mentioned more frequently by managers than by drivers. Specifically, Facebook was ranked #2 by 16.1% (n=5) of managers; and #3 by 12.9% (n=4) of managers, but was ranked as #1 by only 0.7% (n=1) of drivers and #2 and #3 by 2.9%, (n=4) of drivers. The results shown in Tables 3 and 4 demonstrate that managers recruiting drivers are using Internet sites that are, in some cases, frequented very seldom by drivers seeking employment. In addition, there is a mismatch between sites that recruiting managers rank as the most frequently used for recruiting purposes and the sites that drivers seeking employment rank as the most frequently used. Clearly, these results provide the potential for increasing the

effectiveness of the media used to target potential driver recruits.

As indicated in Table 5, the magazine used most frequently for seeking employment was Trucker's News with 19.6% of the drivers using it in their job search. It was also one of the three most used by managers. Best Driver Jobs, Hiring Truck Drivers and Truckers News were each used by 10% of the managers. Eighty percent of the managers and 37% of the drivers also used other magazines that were not mentioned in the list of magazines presented to respondents.

More specific ranking analysis of respondents that indicated they used magazines for searching/recruiting (Table 6) revealed that while Best Driver Jobs was ranked as #1 by 7.2% (n=10) of drivers, no managers ranked this magazine as #1. Truckers News was ranked #3 by 8% (n=11) of drivers, while 9.7% (n=3) of managers ranked it as #1. Overdrive was ranked #1 by 6.5% (n=9) of drivers; #2 by 4.3% (n=6) of drivers; and #3 by 3.6% (n=5) of drivers. However, only one manager ranked Overdrive as a top three magazine and that ranking was #2.) Owner Operator/Company Driver was ranked #1 by 5.1% (n=7) of drivers; #2 by 7.2% (n=10); and #3 by 3.6% (n=5) of drivers. But managers were not as enthusiastic about Owner Operator/ Company Driver, because again, only one manager ranked it among the top three. It is

TABLE 4
TOP 3 WEBSITES USED IN SEEKING/HIRING FOR A POSITION (RANKED 1-3)

		Drivers	**N**	**Managers**	**n**
Bestdriverjobs.com	#1	11.6%	16	9.7%	3
	#2	2.9%	4	6.5%	2
	#3	5.8%	8	3.2%	1
Craigslist.org	#1	6.5%	9	54.8%	17
	#2	9.4%	13	3.2%	1
	#3	2.2%	3	9.7%	3
Careerbuilder.com	#1	5.8%	8	0%	0
	#2	8%	11	6.5%	2
	#3	3.6%	5	0%	0
Monster.com	#1	5.1%	7	0%	0
	#2	5.1%	7	0%	0
	#3	4.3%	6	6.5%	2
Indeed.com	#1	3.6%	5	0%	0
	#2	.7%	1	9.7%	3
	#3	3.6%	5	3.2%	1
Cdljobs.com	#1	23.1%	3	22.2%	2
	#2	23.1%	3	44.4%	4
	#3	53.8%	7	33.3%	3
Facebook	#1	.7%	1	0%	0
	#2	2.9%	4	16.1%	5
	#3	2.9%	4	12.9%	4

TABLE 5
FREQUENCY OF USE: MAGAZINES

Magazine	Drivers	Managers
Best Driver Jobs	13.8%	10.0%
Big Rig Owner	3.6%	3.3%
Changing Lanes	5.8%	0.0%
Hiring Truck Drivers	5.8%	10.0%
Owner Operator/Company Driver	12.3%	3.3%
ProTrucker	6.5%	6.7%
RPM	4.3%	3.3%
Trucking 2011	1.4%	0.0%
Truckers Connection	10.9%	0.0%
Truck Job Seekers	5.1%	3.3%
The Trucker	12.3%	3.3%
Truckers News	19.6%	10.0%
Overdrive	10.1%	3.3%
Other	37.0%	80.0%

possible that the lack of use of this magazine is the perception that company drivers may not typically use this publication in job seeking. Although the results for magazine media in Tables 5 and 6 must be viewed with caution, there does emerge a similar pattern of mismatch of media sources demonstrated by the online media sources in Tables 3 and 4. Best Driver Jobs and Overdrive magazines were ranked more highly by drivers than managers for job searching/recruiting. Conversely, Truckers News was ranked more highly by managers.

SUGGESTED MEDIA/MESSAGE DRIVER RECRUITMENT

Based on our results, but with caution due to sample size, we offer a general strategy for reaching and recruiting qualified long distance trucking candidates. Specifically, we believe that managers should emphasize a particular set of key elements in their advertising strategy. These fall into four broad categories; pay benefits (competitive pay, weekly payment schedule, and competitive paid vacation); lifestyle benefits (flex home time, hub freight); driver – company communication (24/7 dispatch; and vanity (the best and continually assigned equipment). These critical elements should be communicated via paid advertising (mostly on trucking Internet sites that meet company recruitment targets) as well as social media. However, the finding that managers believe social media is more important than drivers do may be more of an acculturation issue. There are, in fact, very few social communities of drivers currently found on the web. An initiative by a company to forge a social media presence by cross advertising social media platform availability could give that company a recruitment advantage, particularly with word of mouth, a source that is used considerably by both managers and drivers.

DISCUSSION

Although the sample size, particularly of the manager respondents, was small, our results do offer some preliminary insight to guide transportation companies in recruiting the truck drivers critically needed for our recovering

TABLE 6
TOP 3 WEBSITES USED IN SEEKING/HIRING FOR A POSITION
(RANKED 1-3)

		Drivers	n	Managers	n
Best Driver Jobs	#1	7.2%	10	0%	0
	#2	4.3%	6	6.5%	2
	#3	4.3%	6	0%	0
Overdrive	#1	6.5%	9	0%	0
	#2	4.3%	6	3.2%	1
	#3	3.6%	5	0%	0
Trucker's News	#1	5.8%	8	9.7%	3
	#2	5.8%	8	0%	0
	#3	8%	11	0%	0
Owner Operator/Company Driver	#1	5.1%	7	0%	0
	#2	7.2%	10	0%	0
	#3	3.6%	5	3.2%	1
The Trucker	#1	5.1%	7	0%	0
	#2	4.3%	6	0%	0
	#3	2.9%	4	3.2%	1
ProTrucker	#1	2.2%	3	0%	0
	#2	2.2%	3	6.5%	2
	#3	2.2%	3	0%	0
Truck Job Seekers	#1	0.7%	1	0%	0
	#2	4.3%	6	0%	0
	#3	.7%	1	6.5%	2

economy. Responses from drivers and managers regarding company policies that are important to include in recruitment advertising were similar for policies such as flexible home time, competitive pay and a weekly pay schedule. However, responses for other items such as paid vacation, direct deposit, 24/7 dispatch and large volume of hub group freight were more divergent, with drivers placing significantly more importance on these policies. These differences in driver and corporate responses indicate that transportation companies should reexamine these policies, as well as the importance of including them in recruiting advertisements.

While it is possible that the drivers' lack of interest in fuel surcharges, fuel and tire discount savings programs, trade-in opportunities, and lease to purchase programs is because most driver respondents were company drivers, the corporate employees who responded were employed by the same companies as the drivers. Hence, it cannot be assumed that the corporate staff members were actually recruiting for owner operators which would explain the perceived differences between the two groups. In short, because of the small sample size, these differences cannot be fully explained.

Our results also suggest that transportation companies should reevaluate their media strategies to ensure they are aware of and are utilizing media used by drivers. When considering specific Internet sites, there is some divergence between manager and driver responses. For example, cdljobs.com, BigRigLease.com, Jiggyjobs.com, Facebook, and Craigslist were all ranked as useful recruiting sites by managers, but not as enthusiastically viewed by drivers seeking employment. Again, these results indicate a potential mismatch in the media sources used by managers seeking to recruit truck drivers and truck drivers seeking employment. Similarly, there were some differences in magazine media sources used by managers and drivers.

While there are clearly limitations to our study, it is important to also note its strengths. The online surveys used were compiled with extensive input from industry practitioners and existing recruiting materials. Further, our study is unique in that it sought to compare the perceptions of managers and drivers to uncover disparities regarding which elements to include in recruitment advertisements. Finally, we sought to initiate an understanding of the importance of online media sources in truck driver recruiting. Hence, our results provide valuable insights for transportation companies to consider when developing advertisements that attempt to address the current shortage of truck drivers.

Overall, this type of research demands continual insights into recruiting using a range of media and different messages. Larger samples of both company and owner operator long distance drivers could help delineate differences in their perceptions and efficacy of advertising benefits needed to recruit these drivers. In addition, it would be interesting to determine the different advertising perceptions of managers who primarily recruit owner operators versus regular company drivers. Nevertheless, to our knowledge, our findings are the first to identify truck driver and corporate perceptions of advertising message and media strategies, and therefore, offer critical insight into recruitment strategies for reaching a an ever expanding needed group of truck drivers.

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THE ROLE OF LOGISTICS ALLIANCE ORIENTATION ON FORMING THE ALLIANCE STRUCTURE: A CONCEPTUAL FRAMEWORK

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ABSTRACT

Little is known about how a firm decides what type of relationship to develop with a LSP and how the type of arrangement affects the service quality performance. This article proposes a conceptual framework to better understand how shippers decide what type of relationship to develop with a logistics service provider (LSP) within the strategy- structure-performance theoretical framework. A systematic literature review is used to develop a conceptual framework that considers the association between the firm's strategic perspective on outsourcing and the resulting effect on the alliance structure. The concept of a logistics alliance orientation (LAO) is introduced to examine how the level of the LAO affects the alliance structure. Lastly, the link between the logistics alliance structure (LAS) and service quality performance is explored.

INTRODUCTION

The outsourcing of activities to companies known as logistics service providers (LSPs) has progressively become a powerful alternative to the traditional integrated firm that has a full range of logistics activities as part of the company structure. Many definitions and interpretations of the concept of third party logistics providers can be found in the literature. Coyle et al. (2003, p.425) broadly define LSPs as external organizations "that perform all or part of a company's logistics function." There can be many reasons why a firm decides to outsource activities or even entire functions to LSPs. In some cases it may be driven by a growing need for cost reductions and/or efficiencies, the desire to specialize and enhance select internal core competencies, the need to leverage resources, the necessity of gaining or enhancing existing capabilities, or the need to reduce uncertainty in the firm's environment (Holcomb and Hitt, 2007; Oliver, 1990). Whatever the motive for choosing outsourcing, it has become an increasingly common way for firms to conduct business (Knemeyer and Murphy, 2004). Moreover, outsourcing has become a critical element of the organizational strategy for many firms often creating competitive advantage for both parties (Tate, 1996).

Outsourcing to a LSP leads to an array of inter-firm cooperative arrangements. Based on a detailed case study of eighteen individual relationships, Lambert et al. (1996) found the existence of a continuum of relationships in supply chain partnerships, ranging from arm's length to joint ventures (strategic alliances) and vertical integration. A similar continuum exists in the relationships between firms and LSPs (Gardner et al., 1994). After more than two decades of experience in outsourcing activities to LSPs, very little is known about how a firm decides what type of relationship to develop with a LSP. Lambert et al. (1999) conclude that few organizations appear to use a systematic process for determining what type of relationship they should form with their LSPs. An objective of this paper is to conceptualize, in the context of the firm's strategy, how a firm decides what type

of relationship to develop with a LSP. In order to explain why a firm decides on a specific type of relationship a formal management philosophy, Logistics Alliance Orientation (LAO), is introduced. The strategic management literature provides a theoretical basis for facilitating the understanding of the LAO in the decision making process through the strategy-structure-performance (SSP) framework (Galbraith and Nathanson, 1978; Miles and Snow, 1984). It is posited that the LAO is a mediator between the firm's strategy and the resulting LSP relationship structure. Understanding how the level of LAO (high or low) affects the development of the logistics alliance structure (LAS) is the second objective of this paper.

Relationships with LSPs develop as the result of extensive social, economic, service and technical ties over time (Mentzer et al., 2000). Ellram and Cooper (1990) note that successful relationships have a long-term orientation with common goals, mutual commitment and trust. This notion was confirmed by Marasco (2007) who found that successful and lasting relational exchanges are those in which partners go beyond short-term transactional benefits. Outsourcing relationships are characterized by a sharing of information and spirit of cooperation as both parties seek to manage risk and uncertainty through their joint efforts (Bowersox et al., 1999). Successful relationships have been shown to provide a variety of benefits for the firm that forms a partnership/alliance with a LSP including: reduced logistics cost, improved access to and application of technology, better management of safety and liability issues with truck transportation, end customer satisfaction, reduced capital investment in facilities, equipment, and manpower, increased flexibility and productivity, improved employee morale, increased access to wider markets and new competencies (Bowersox, 1990; Ellram and Cooper, 1990; Lieb et al., 1993; Daugherty and Stank, 1996; Larson and Gammelgaard, 2001). The exchange of benefits is two way; LSPs in successful relationships also gain through a long-term source of business volume, service innovation and growth opportunities (Bowersox, 1990; Halldorsson and Skjott-Larsen, 2004).

The implementation of the relationship between the firm and the LSP results in the development of a system or procedures for management and control of the outsourced activities or functions. These mechanisms, both formal and informal, are the structural dimensions of the inter-organizational linkages. Formal mechanisms, usually a written agreement or contract, specify the required degree of cooperation, approach to the LSP's remuneration, conformance and inter-organizational integration of the structure. Informal mechanisms, such as bonding and trust, involve the social context of the relationship and recognize the mutual interest in performance outcomes. Through a systematic review of the strategic alliance literature, the concept of a logistics alliance structure (LAS) is developed to examine the principal mechanisms for managing the inter-organizational relationship.

The SSP theoretical framework suggests that firms who properly align strategy with structure should perform better than competitors who lack the same degree of strategic fit (Child 1972; Miles and Snow 1984; Galbraith and Kazanjian, 1986; Hoskinsson 1987; Lubatkin and Rogers, 1989; Habib and Victor 1991; Wolf and Egelhoff, 2002). Indeed, research has shown that successful relationships can enhance the firm's ability to create value in a variety of ways (Bowersox, 1990; Ellram and Cooper, 1990; Daugherty and Pittman, 1995; Daugherty and Stank, 1996; Frankel et al., 1996). Having established the concept of the LAO through a systematic literature review on strategic alliances and the elements that contribute to the success of such arrangements, this paper examines the association between that construct, the logistics alliance structure (LAS) and service quality performance. It is the premise of this research that the LAS when properly aligned with the firm's strategy will have a positive impact on performance.

To summarize, this paper addresses the following research questions:

1. How does existing literature characterize the elements of successful strategic alliances?
2. How does the level of the LAO (high versus low) affect the type of relationship that the firm develops with a LSP?
3. How does the level of LAO (high versus low) influence the structure of the logistics alliance?
4. How does the logistics alliance structure (LAS) impact service quality performance?

LOGISTICS ALLIANCE ORIENTATION

Previous research on strategic alliances suggests that they are a critical part of a firm's competitive positioning. Varadarajan and Cunningham (1995) noted that large firms use strategic alliances to leverage the depth of their resources while small companies rely on them to compensate for a lack of resources. It also appears that large firms use LSP's because of the labor and managerial cost advantages the LSP can offer as compared to the higher compensation levels paid by the respective firms. Day (1995) states that the gap in the strategic alliance research is a better understanding of the many forms that an alliance can take, the motives for forming the alliance, and the theoretical explanations for their design and functioning. In fact, a review of the literature on the use of LSPs reveals that it focuses on the decision to outsource and the selection criteria for vendors. Few models exist to determine the appropriate type of outsourcing arrangement that leads to a "win-win" outcome (Lambert et al., 1999; Whipple and Frankel, 2000). The research findings indicate that few organizations appear to use a systematic process for determining what type of relationship they should form with LSPs, and this can result in a failure to correctly align expectations.

The development of logistics relationships has brought mixed results. While some firms report distinct advantages as a result of their relationships with LSPs (Harrigan, 1986; Lieb et al., 1993; Whipple and Frankel, 2000), other firms report negative outcomes as a result of outsourcing logistics activities (Brouthers et al., 1995; Ackerman, 1996; Smith and Barclay, 1997; Spekman et al., 1998; Lambert et al., 1999). The research shows that some of the negative outcomes can be attributed to a variety of reasons including: shifting strategic requirements, lack of clear decision-making responsibility, conflicts in objectives, culture and styles of making decisions, and lack of long-term commitment. These, and other factors, result in performance issues that often culminate in a failed partnership. The question of interest is how some firms establish and/or organize processes in such a way that there is a higher probability of success due to the type of arrangement that is created. Research suggests that this phenomenon is grounded in the competence-based approach (CBA) that is derived from the resource-based perspective (RBP) (Halldorsson and Skjott-Larsen, 2004). CBA firms understand that competitiveness is associated with building core competencies at a lower cost and faster pace than competitors (Prahalad and Hamel, 1990). Accomplishing this is difficult due to the fact that as a firm adapts to changing external conditions a capability may diminish. Furthermore, a capability may be replaced by a different one or even a better one (Collis, 1994). RBP considers the identification, development and use of strategic assets to create core competencies. CBA recognizes that the capability to adapt, integrate and reconfigure internal and external organizational skills, resources, and functional competencies to match the requirements of a changing environment are critical to achieving competitive advantage. According to Halldorsson and Skjott-Larsen (2004) dynamic capabilities are organizational and strategic routines through which a firm reconfigures resources as conditions change.

While the literature proposes different models for the implementation and development of logistics outsourcing arrangements (Sink and Langley, 1997; Bagchi and Virum, 1996; Andersson and Norrman, 2002; Marshall et al.,

2004; De Boer et al., 2006; Mello et al., 2008), there is a lack of research on how a firm determines the type of relationship to build with its logistics services providers. In addition, very little is known about how the firm's strategic viewpoint impacts the type of arrangement that is pursued.

Previous research has examined the concept of an orientation in relation to partnering (Mentzer et al., 2000) and supply chain management (Mentzer et al., 2001). The partnering orientation recognizes that there are shared values and beliefs that assist the partner firms in understanding the functional objectives of the relationship, and it provides the behavioral norms. A partnering orientation can range from strategic to operational. Supply chain orientation (SCO) also has both strategic and operational elements; it is defined as "the recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in a supply chain" (Mentzer et al., 2001, p. 11). As a management philosophy, SCO recognizes the implications of managing downstream and upstream flows. More importantly, it is asserted that companies implementing supply chain management must have a SCO to achieve the desired outcomes.

This research proposes that like strategic partnering and supply chain management, an appropriate management philosophy (or orientation) is an essential component in understanding how a firm determines the type of relationship to develop with its LSP. Therefore, in an attempt to address this gap a new construct, Logistics Alliance Orientation (LAO), is introduced. To properly define the concept, a systematic review of the literature is an important step in assessing the relevant intellectual domain (Kahn et al., 2001; Tranfield et al., 2003; Rousseau et al., 2008). This review encompasses three distinct phases including: 1) comprehensive accumulation, 2) transparent analysis, and 3) reflective interpretation of the empirical research that is germane to the phenomena of interest. Phase 1 began by gathering studies from the supply chain management literature (Bowersox and Closs, 1996; Cooper et al., 1997; Mentzer et al. 2001), alliance literature (Mohr and Spekman, 1994; Ring and Van de Ven, 1994; Das and Teng, 1998; Dyer and Singh, 1998; Whipple and Frankel, 2000; Mentzer et al., 2000; Park and Ungson, 2001; Gulati et al., 2005; Schreiner et al.,2009), and strategy literature (Child, 1972; Galbraith and Nathanson, 1978; Miles and Snow, 1984; Hoskinsson, 1987; Wolf and Egelhoff, 2002).

Strategic alliances are on-going, often long-term, inter-firm cooperative relationships aimed at creating value for customers and achieving objectives of the partners (Das and Teng, 1998; Mentzer et al., 2000). As a critical part of competitive positioning, an alliance can help a firm to gain access to markets, realize economies of scale, accelerate market entry, and enhance capabilities (Varadarajan and Cunningham, 1995). In fact, Dyer and Singh (1998) found that the advantages of an individual firm are often linked to the advantages of the network of relationships in which the firm is embedded. It is important, therefore, to gain a better understanding of the elements of successful strategic alliances. A systematic review of the literature indicates that several key components contribute to successful arrangements including trust, cooperation, and communication (Table 1). In addition to these main factors, the research shows that efficiency and equity are also important. A primary reason for forming a strategic alliance is to achieve lower operating costs and/or to gain resources and capabilities that supplement the current ones of the firm. Commitment also emerged as a central element in successful strategic alliances; the level of which can be measured by top management vision and support. Last, but not least, the literature specifically addresses the need to have clear goals and means for conflict resolution in order to manage the relationship.
In conducting the third phase of the systematic literature review – reflective interpretation – a less obvious characteristic surfaced. That is, the

TABLE 1
ELEMENTS OF SUCCESSFUL STRATEGIC ALLIANCES

Elements	Author
Trust; bonding	Mohr and Spekman, 1994; Ring and Van de Ven, 1994; Mentzer et al., 2000; Whipple and Frankel, 2000; Park and Ungson, 2001; Schreiner et al., 2009
Commitment- investment in relation specific assets; top management vision and support	Mohr and Spekman, 1994; Ring and Van de Ven, 1994; Tate, 1996; Dyer and Singh, 1998; Mentzer et al., 2000; Whipple and Frankel, 2000
Cooperation	Tate, 1996; Das and Teng, 1998; Mentzer et al., 2001
Clear goals / conflict resolution	Mohr and Spekman, 1994; Tate, 1996; Whipple and Frankel, 2000; Mentzer et al., 2001
Efficiency and equity; lower transaction costs; combination of complementary, but scarce resources or capabilities	Hoskinsson, 1987; Ring and Van de Ven, 1994; Dyer and Singh, 1998; Mentzer et al., 2000; Gulati et al., 2005
Interdependence; ability to meet performance expectations	Mohr and Spekman, 1994; Mentzer et al., 200; Whipple and Frankel, 2000
Organizational culture; governance structure	Tate, 1996; Mentzer et al., 2000; Whipple and Frankel, 2000; Gulati et al., 2005
Communication behavior – information sharing and participation; substantial knowledge exchange	Mohr and Spekman, 1994; Tate, 1996; Dyer and Singh, 1998; Mentzer et al., 2001; Park and Ungson, 2001; Schreiner et al., 2009
Coordination; adaptive capacity for differentiation and integration	Miles and Snow, 1984; Mohr and Spekman, 1994; Ring and Van de Ven, 1994; Cooper et al., 1997; Das and Teng, 1998; Mentzer et al., 2001; Park and Ungson, 2001; Gulati et al., 2005; Schreiner et al., 2009

ability to maintain a successful alliance in today's increasingly complex global supply chains will be largely driven by the partners continued ability to create value in the relationship. It is the present and future state of the alliance – goal achievement and goal exceedance – that elevates it to a strategic orientation level in order to understand the operating environment with reference to time, place, and people. For purposes of this research, which focuses on logistics alliances, we have defined **Logistics Alliance Orientation** as:

> A formal management philosophy that determines the nature of the firm's relationship with an individual logistics service provider for purposes of achieving superior service performance and/or maximizing value through the alliance structure over time and place.

LOGISTICS ALLIANCE ORIENTATION AND THE LOGISTICS ALLIANCE STRUCTURE

The LAO will impact how the firm incorporates and leverages the logistics service provider's (LSP) resources and capabilities into its existing portfolio. The Strategy-Structure-Performance (SSP) theory can be used to examine how the LAO influences the resulting logistics alliance structure (LAS). The basic premise of SSP is that a firm's strategy, created in consideration of external environmental factors, drives the development of organizational structure and processes (Galbraith and Nathanson, 1978; Miles and Snow, 1978). As mentioned previously, a central element of the SSP paradigm is the need for congruency between a firm's strategy and structure. According to SSP

the alignment of strategy and structure is considered a requirement for organizational performance (Miles and Snow, 1984). Therefore, firms who desire such a fit must create an alliance structure to match their strategy. Previous research on strategic and operational partnering suggests that partnering orientation plays a critical role in implementation which involves organizational issues as well as asset specificity (Mentzer et al., 2000). It is the supposition of this research that like the partnering orientation, the LAO affects the implementation of outsourcing arrangements and the resulting logistics alliance structure. The model presented in Figure 1 utilizes the SSP framework to conceptualize the relationship between the firm's strategy, the LAO and the LAS.

The LAO influences the firm's strategic approach to logistics outsourcing and determines the nature and type of relationship between the firm and its LSP. A firm that recognizes the strategic and tactical implications of choosing a particular type of relationship is characterized as having a high level of LAO. Conversely, a firm that does not incorporate both perspectives in the formation of a relationship with its LSP will be described as having a low level of LAO. The relationship between the LAO and the LAS is presented in the following research propositions:

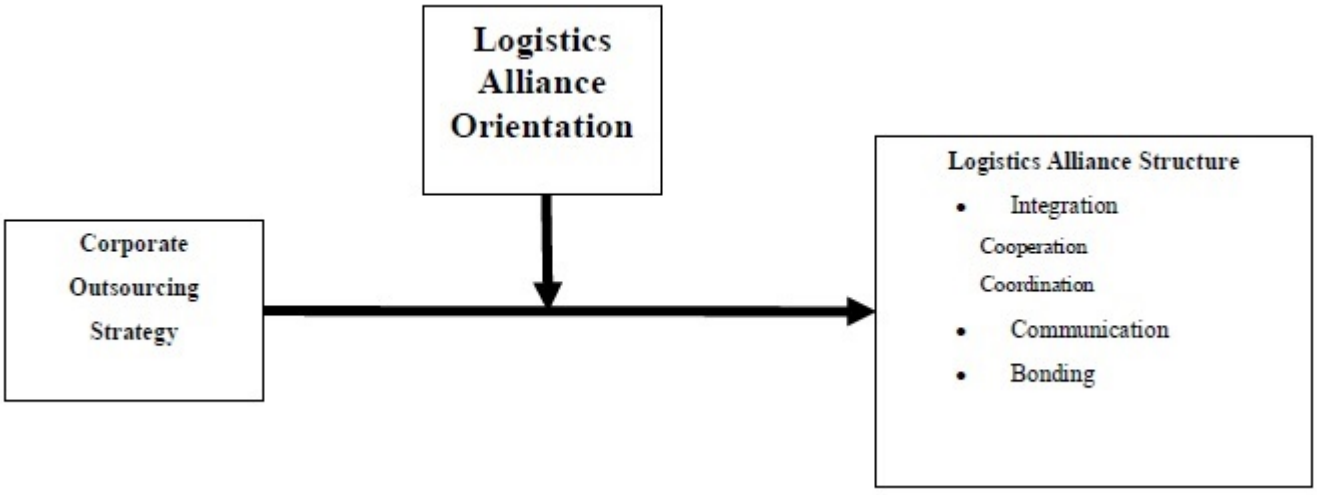
RP1a: A firm who possesses a high LAO will be more inclined to develop a strategic alliance/partnership with its primary LSP.

RP1b: A firm who possesses a low LAO will be more inclined to develop an arm's length/transactional relationship with its primary LSP.

STRUCTURAL ELEMENTS OF THE LOGISTICS ALLIANCE

Alliances, and specifically strategic alliances, have become one of the most significant organizational forms over the past couple of decades (Defee, 2006; Kale et al., 2002). Landeros and Monczka (1989) note that closer inter-organizational linkages have the potential to significantly contribute to the firm's strategic success (Landeros and Monczka, 1989). Both formal and informal mechanisms are used to create inter-organizational linkages that define the alliance structure. Frankel et al. (1996) found that firms do not believe that formal written agreements or contracts are needed to achieve an effective alliance relationship. In fact, the use of formal contracts as the structural mechanism for the relationship arrangement ranked last in a list of success factors for alliances.

FIGURE 1
RELATIONSHIP OF LOGISTICS ALLIANCE ORIENTATION TO THE LOGISTICS STRUCTURE



A systematic review of the alliance and LSP literature indicates that there are three main process characteristics for managing a successful alliance: *integration, communication, and bonding* (Mohr and Spekman, 1994; Ring and Van de Ven, 1994; Das and Teng, 1998; Dyer and Singh, 1998; Park and Ungson, 2001; Gulati et al. 2005; Schreiner, et al., 2009). Each of these is discussed in the following sections.

Integration

Lawrence and Lorsch (1967 a, pp.11) define integration as the "quality of the state of collaboration that exists among departments that are required to achieve unity of effort by the demands of the environment." Integration is a multi-dimensional concept in that it encompasses cooperation (alignment of interest) and coordination (alignment of actions) (Camerer and Knez, 1996; Foss, 2001). Cooperation and coordination are often used interchangeably despite scholars' efforts to emphasize the differences between the two. Cooperation entails the alignment of interest between participating parties. This is often difficult, because individuals/firms are often driven by the achievement of private benefits at the expense of collective benefits. The problem of cooperation can be resolved by aligning interests through formal mechanisms such as monitoring, sanctions (Williamson, 1985), common ownership of assets (Grossman and Hart, 1986), contracting (Williamson, 1975), and the potential of future interactions (Heide and Miner, 1992). Informal mechanisms can be used as well to align interest, such as identification and embeddedness (Granovetter, 1985; Gulati, 1995).

Coordination entails the alignment of actions between participating parties. However, coordination is often difficult because of lack of shared and accurate knowledge about the decision rules that others are likely to use and how one's own actions are interdependent with those of others (Geanakopolos, 1992; Malmgren, 1961). Experimental economics literature on the "weakest link" games illustrate coordination failures as a result of lack of knowledge of how others will act. The games reveal that uncertainty about other's rationality can be a key constraint on successful coordination on an efficient equilibrium (Gulati and Khanna, 1994). Coordination problems can still arise even when cooperation is achieved (aligned interests). Incentives, sanctions, monitoring, rewards, and punishments can help to achieve cooperation but are not sufficient to achieve coordination (Gulati and Singh, 1998). This is due to the fact that cooperation problems are rooted in motivation, while coordination problems are due to cognitive limitations of the parties. Limitations deny the parties comprehensive knowledge of how others will behave in situations of interdependence, and how they will act interdependent with others. Consequently, both the resolution of cooperation and coordination are needed for the achievement of integration (Lawrence and Lorsch, 1967a, 1967b).

As noted earlier, the relationship between a firm and a LSP can range from arm's length (transactional) to strategic alliance. Alliances are more likely than transactional relationships to generate cooperation between partners due to the "shadow of the future" (Axelrod, 1984). If the partners anticipate doing business in the future they are more likely to cooperate. The partners see the potential benefits from future interactions as outweighing the immediate pay-offs of non-cooperative behavior and therefore are more likely to choose to cooperate (Baker et al., 2002).

The association between type of relationship and level of integration is presented as RP2:

> RP2: A firm with a high LAO will develop a strategic alliance with its primary LSP characterized by a high degree of inter-organizational *cooperation*.
>
> RP3: A firm with a high LAO will develop a strategic alliance with its primary LSP that exhibits a higher degree of inter-organizational *coordination*.

Communication

Communication has been termed "the formal as well as informal sharing of meaningful and timely information between firms" (Anderson and Narus, 1990, pp. 44). It is the element that holds an alliance together. Within an alliance communication can create a shared interpretation of goals and can also facilitate the creation of trust and a closer working relationship among actors (Ring and Van de Ven, 1994). Formal communication refers to communication resulting from specified authority relationships and formal mechanisms for the coordination of work (Johnson et al., 1994). It includes agreed upon routines and schedules for presenting and reviewing data, operating status and analysis of current and past performance. Examples of such routines are daily/weekly reports, automated reports, and weekly/monthly meetings between alliance members. Technology integration can play a key role in achieving formal communication. In contrast, informal communication is a response to the social needs that underlie organizational communication and facilitates communication outside the formal communication channels. Examples would be scheduled social events such as dinner or perhaps a sporting event.

Communication is considered an important element in logistics alliances (Sink and Langley, 1997; Moore and Cunningham, 1999). This idea was extended by Bowersox et al. (1990, pp. 225) who found that complete and open exchange of operating and strategic information is "the glue that holds logistics alliances together." Additional research indicates that information and communication technology influences outsourcing performance and creates differentiation between LSPs (Knemeyer and Murphy, 2004; Evangelista and Sweeney, 2006).

It has been demonstrated that communication can foster trust by assisting in resolving disputes and aligning perceptions and expectations (Moorman et al., 1993). Conversely, the alliance literature indicates that inappropriate communication makes it difficult to assess the uncertainties and value creation opportunities associated with a particular alliance (Ring and Van de Ven, 1994). What is preferred is open and honest communication that leads alliance partners to a better understanding of the obligations and engagement rules in the alliance. It can facilitate quicker adaptation when circumstances change (Schreiner et al., 2009) and enlarge the potential for greater joint action between the partners (Das and Teng, 1998). Lambert et al. (1996) show that the more breadth and depth that exists in communication patterns, the stronger the partnership is likely to be. While some research suggests that there are limits to the benefits of increasing communication, we generally believe that the increasing levels of appropriate communication will improve partnerships (Yan and Dooley, 2013; Yan and Dooley, 2014). Thus, RP4 follows:

> RP4: A firm with a high LAO will develop a strategic alliance with its primary LSP that is characterized by a higher level of communication between its members.

Bonding

Strong bonds within an alliance can lead to informal transfer of customer-related knowledge and the acceptance of risks and uncertainties associated with a higher degree of joint action. They can enhance the efficiency of the alliance by reducing the costs associated with safeguarding against opportunistic behavior (Schreiner et al., 2009). Scholars argue that close personal relationships and bonds among individuals are responsible for establishing norms of trust and reciprocity in economic exchange (Granovetter, 1973; Gulati, 1995). Interpersonal bonds have also been shown to facilitate conflict resolution and foster continuity (Folta, 1998). Schreiner et al. (2009) asserts that the absence of social bonds can lead to unstable relationships or even alliance dissolution. An extensive review of the LSP literature by Marasco (2007) shows that the stability and overall performance of alliances is likely to be strongly influenced by the multiplicity of

economic, technical, and social bonds that develop between the parties. In addition, the research confirms the need for organizations to learn about and invest in bonding processes in order to create an effective logistics alliance structure.

Extensive and repeated contact between the concerned parties, combined with elements of affect and interpersonal liking leads to personal bonds (Granovetter, 1973, pp. 1361). Bonds can be formed through a process of social integration wherein individuals become psychologically linked to each other in the pursuit of common goals (Harrison et al. 1998, pp.96). Building social bonds can take a lot of resources, and it is a time consuming process because social bonds evolve only gradually through repeated satisfying interactions and must be nurtured (Ring and Van de Ven, 1994; Madhok, 1995). The bonding process entails efforts that go beyond the contractual requirements with alliance partners. However, buyers may resist such efforts with policies that are often aimed at prohibiting or discouraging social contacts, purchasing of meals and entertainment by suppliers, etc. The research suggests that these policies are shortsighted. The role of bonding in the logistics alliance structure can be stated as follows:

> RP5: A firm with a high LAO will develop a strategic alliance with its primary LSP that is characterized by higher degree of bonding between its members.

SERVICE QUALITY PERFORMANCE

The outcome of a logistics alliance is service. Lewis and Booms (1983) define the quality of that outcome as a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis. According to the SSP theoretical framework, performance results from the fit of structure to the chosen strategy of the firm. The alliance literature shows that alliance performance can be assessed in ways such as longevity, profitability, growth, cost position (Geringer and Hebert, 1991) stability, and survival (Yan and Zeng, 1999). Performance can also be measured through organizational effectiveness through an overall assessment of the firm's satisfaction with the alliance performance (Lin and Germain, 1998) as well as determining how well the alliance has fulfilled its strategic goals (Parkhe, 1993). While there is no agreed upon definition of alliance performance in the literature (Yan and Zeng, 1999), goal accomplishment underlies most interpretations (Lin and Germain, 1998).

Parasuraman et al. (1985) proposed a conceptual model of service quality. The widely referenced service quality measurement called SERVQUAL was designed to assess customer expectations and perceptions of service quality in service and retail organizations. The measure of the service quality is determined by subtracting the subjects' service expectations from their perceptions of the actual service with respect to specific items. The final score is determined by averaging across the differences.

Of the five broad dimensions of service quality, subsequent studies found reliability to be the most important to customers, and tangibles (the appearance of physical facilities, equipment, personnel, and communications materials) the least important (Zeithaml et al., 1990; Parasuraman et al., 1991). Many researchers have since replicated the methodology and suggested various deficiencies and inconsistencies (Cronin and Taylor, 1992; Brown et al., 1993). The inconsistencies suggest that the dimensions of service quality may vary from one industry to the next, or that a more generic conceptual scheme has to be identified.

Using SERVQUAL as a starting point, Stank et al. (1999) proposed a simpler, more generic conceptualization of service performance: relational and operational. These authors view operational elements as "the activities performed by service providers that contribute to consistent

quality, productivity, and efficiency" (pp. 430). The relational elements are considered to focus on "activities that enhance the service firm's closeness to customers, so that firms can understand customer needs and expectations and develop processes to fulfill them" (pp. 430). Operational performance has two components, reliability (which captured the dependability and accuracy of a service) and price/cost. The relational performance is seen as encompassing responsiveness, assurance and empathy. This conceptualization of service performance is supported by Collier's (1991) two distinct dimension conceptualization: an internal or operations-oriented dimension of service quality performance and an external or marketing-oriented performance. In their study exploring the impact of logistics service performance on market share Stank et al. (2003) conceptualized cost as a unique, third dimension of logistics service performance, distinct from the operational and relational components of service.

For purposes of this research, the Stank et al. (1999) conceptualization of service performance has been adopted. Therefore, logistics service performance is considered to consist of operational performance (reliability and cost) and relational performance (responsiveness, assurance and empathy). Research proposition (RP) 6 describes the relationship between the logistics alliance structure and service quality performance.

RP5a: A firm that aligns its logistics alliance structure with its outsourcing strategy will develop a logistics alliance characterized by a higher level of operational performance.

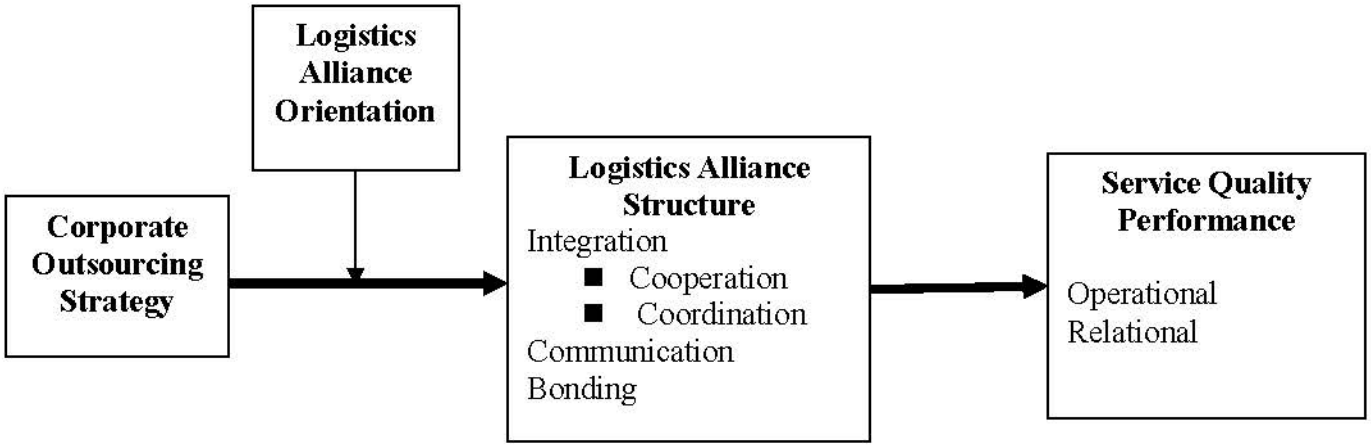
RP5b: A firm that aligns its logistics alliance structure with its outsourcing strategy will develop a logistics alliance characterized by a higher level of relational performance.

The conceptual framework presented in Figure 2 extends the previous model to include the relationship of the alliance structure with service quality performance. The framework results from a synthesis of the literature in three areas – strategic and logistics alliances, and logistics alliance structure.

CONCLUSIONS

Firms have been outsourcing logistics activities for more than two decades. The results of this practice are mixed. While some firms report distinct advantages as a result of their

FIGURE 2
CONCEPTUAL FRAMEWORK OF THE LOGISTICS ALLIANCE ORIENTATION AND STRUCTURE TO PERFORMANCE



relationship with a LSP, others report negative outcomes. The findings of the systematic literature review suggest that some of the main factors contributing to the relationship failure are lack of strategic direction for the partnership and a lack of shared goals. To date, much of the research has focused on the decision to outsource and models and decision frameworks for the development and implementation of outsourcing arrangements. Little is known about how a firm decides what type of relationship to develop with its LSP and how the resulting alliance structure impacts service quality performance.

The conceptual model presented in this paper contributes to the body of knowledge in a number of ways by addressing the above mentioned gaps in the existing literature. Through the systematic literature review, a new construct - the logistics alliance orientation (LAO) – was developed and introduced to examine how this management philosophy influences the process through which firms develop logistics outsourcing arrangements with a LSP. Finally, the conceptual framework extends the current research on logistics outsourcing by exploring the linkages between the outsourcing strategy, the logistics alliance structure, and service quality performance.

The research offers several implications for managers as well. First, the model provides insight into how an outsourcing strategy can influence the type of arrangement developed with a LSP. Moreover, understanding the role of the logistics alliance orientation in this process will assist managers in creating an alliance structure that is properly aligned with the firm's outsourcing strategy. Second, managers are encouraged to examine their logistics alliance structure to ensure that inter-organizational mechanisms of the structure support the strategic objectives. Research indicates that firms who correctly align strategy with structure should perform better than competitors who lack the same degree of strategic fit. Last but not least, a review of the research also suggests that firms adept at identifying, implementing and managing strategic alliances will have the advantage of choosing the "best" candidates for a relationship due to the fact that they will be known as good to partner with.

The conceptual model presented in this paper is an attempt at developing new theory in logistics outsourcing. The next phase of research is to test the proposed model empirically. First, qualitative interviews can be employed to establish validity of the model put forth. After operationalizing selected constructs, specific measures should be developed, and the hypothesized relationships should be tested. Although previous research has examined logistics performance within the SSP theoretical framework, the results have not been in total agreement. This model offers the opportunity to add to the existing knowledge base by contributing to the understanding of how the logistics alliance structure affects service quality performance.

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THE LONG-TERM IMPACT OF RAIL ABANDONMENT ON MANUFACTURING IN ARKANSAS

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ABSTRACT

Despite the fact that railroads are an important part of the U.S. economy, the number of rail carriers and miles of rail lines have been declining. The resulting lack of transportation alternatives could have a negative impact on local manufacturing. This study examined the effects of rail abandonment in Arkansas between 1980 and 2000 by comparing measures related to manufacturing in counties that did not have or had lost some rail service with those in counties that had rail service and had not lost any. The analysis revealed no meaningful differences, suggesting the lack of any adverse economic impacts due to rail abandonment. The findings provide important insights for federal, state, and local policymakers and economic development officials; and for railroad economic development, government affairs, and strategic planning management.

INTRODUCTION

U.S. railroads are an important part of the nation's economy and move about 40% of the ton-miles transported in this country (AAR, 2007a). This is more than any other single mode of transportation. In fact, with the recent trend towards sustainability goals, and the desire for decreased dependence on foreign oil, the amount of rail freight is increasing with a trend towards an increased level of intermodal shipments.

Despite these facts, the number of rail carriers and miles of rail lines have been declining. There are currently only seven Class I railroads in the US, and while they represent just 1% of the carriers, they own 68% of the infrastructure, employ 89% of the workers, and earn 93% of the revenue (AAR, 2007a). The peak rail mileage was reached in 1916 with 254,000 miles in the US, but that has been steadily declining and there were just under 141,000 miles of road in 2007(AAR, 2007a). This decline in rail mileage and potential loss of rail service is a major concern of shippers and communities throughout the U.S. (Stewart et al., 1996; Office of Public Services, 1997; AHTD, 2002; Babcock et al., 2003a; Babcock et al., 2003b). In response to this concern, government policy makers have attempted to balance the needs of shippers and communities with the financial burden on railroads that are forced to continue operations over unprofitable branch lines (STB, 1997).

Government control of railroads began when Congress passed the Act to Regulate Commerce in 1887, creating the Interstate Commerce Commission (ICC), and brought railroads under economic regulation of the federal government (Harper, 1982). Inherent in this system of regulation is the concept of Common Carrier Obligations, under which rail carriers sometimes have been required to provide unprofitable services that they would otherwise discontinue (Harper, 1982). In 1995, the ICC was disbanded and the duties of regulating railroads were transferred to the Surface Transportation Board (STB). The Surface Transportation Board regulates rail abandonment to avoid any harmful economic impact on local economies. Before

rejecting an abandonment application, federal abandonment policy requires that the Surface Transportation Board find serious, adverse impact on rural and community development. If firms cannot survive without rail service, and the impact of the abandonment is truly serious, the entire local economy would be affected, not just a single company, and those effects should be apparent over a long period of time.

However, it is not clear that government intervention to prevent rail abandonment is warranted in today's evolving economy. When railroads were the only reasonable form of transportation, they often had monopoly power and sometimes it was abused (Farris, 1969). Under those conditions, there may have been a need for protective regulations, but abandonment of unprofitable branch lines can hardly be classified as monopolistic exploitation. In many instances, rail lines are abandoned because of declining traffic levels resulting from more shippers selecting other forms of transportation, especially trucks. Protests are made typically on behalf of firms that are thought to have no alternative means of transport. Unfortunately, their traffic volumes frequently are not sufficient to permit profitable operations of the line.

This study examined the effects of rail abandonment in Arkansas between 1980 and 2000. Conditions relating to local manufacturing activity in counties that had no rail service prior to 1980 or had experienced rail abandonments prior to 2000, and the changes in those measures, were compared to counties that retained rail service during that period. Data used for the analysis was obtained from the County and City Data Book (U.S. Census Bureau, 2007a). The analysis revealed no meaningful differences, suggesting the lack of any long-term adverse economic impacts on manufacturing due to rail abandonment.

TABLE 1
TYPE OF FREIGHT CARRIED FOR 2006

	Tons Originated		Gross Revenue**	
Commodity Group	(000)	% of Total	($ million)	% of Total
Coal	852,061	43.5	10,821	20.6
Chemicals & allied products	168,275	8.6	6,119	11.6
Farm products	149,392	7.6	4,205	8.0
Non-metallic minerals	140,871	7.2	1,462	2.8
Misc. mixed shipments*	125,880	6.4	7,792	14.8
Food & kindred products	105,433	5.4	3,730	7.1
Farm products	149,392	7.6	4,205	8.0
Non-metallic minerals	140,871	7.2	1,462	2.8
Misc. mixed shipments*	125,880	6.4	7,792	14.8
Food & kindred products	105,433	5.4	3,730	7.1
Farm products	149,392	7.6	4,205	8.0
Non-metallic minerals	140,871	7.2	1,462	2.8
Misc. mixed shipments*	125,880	6.4	7,792	14.8
Food & kindred products	105,433	5.4	3,730	7.1
Farm products	149,392	7.6	4,205	8.0
Total	1,956,572	100.0	52,639	100.0

Source: Association of American Railroads, "Overview of U.S. Freight Railroads," (Washington DC: Association of American Railroads, Policy and Economics Department, January).

OVERVIEW OF RAILROADS IN THE U.S.

As shown in Table 1, coal is the most important individual commodity moved by railroads. It accounts for approximately 40% of railroads' tonnage and 20% of their revenues. Chemicals make up about 9% of the tonnage, but account for nearly 12% of revenues. Grain and other agricultural products represent about 8% of the tonnage and 8% of revenue. Non-metallic minerals such as sand, gravel, and crushed stone are also important commodities moved by rail. Other important sources of revenue include food products, steel, forest products such as lumber and paper, motor vehicles and parts, petroleum, and scrap materials. Miscellaneous mixed shipments represent only about 6% of the tonnage but nearly 15% of revenues. These mixed shipments are primarily intermodal freight movements; the movement of trailers and containers by rail, and is the fastest growing segment of rail traffic (AAR, 2007b). In 1980, 3 million trailers and containers moved by rail, more than two-thirds of which were trailers. By 2003, however, the railroads participated in nearly 12 million intermodal movements, 9.5 million (80%) of which were containers (IANA, 2007).

Rail lines often are abandoned because of declining traffic levels resulting from some shippers selecting alternative means of transportation, especially trucks. Beginning in the early 1960s, a new and innovative way of making decisions relating to moving goods emerged in the form of business logistics (Bowersox, 1966; Smykay et al., 1961; Drucker, 1962; Harper, 1982; Magee, 1960; Neuschel, 1967). As knowledge of this approach spread, many shippers found that shipping smaller volumes by trucks could be less expensive than shipping by rail even though the cost of truck transportation was more than that of rail. Shippers often found that the use of trucks helped them better meet the needs of their customers as markets responded to a changing economy. Those switching to trucks found the higher transportation costs could be off-set by savings in inventory carrying costs due to smaller shipment sizes, faster and more dependable delivery times, and less damage in transit (Ballou, 2004; Bowersox et al., 2002; Coyle et al., 2005; Gittings and Thomchick, 1987; Harper, 1982; Stock and Lambert, 2001). During the 1970s, even though fuel prices made truck transportation proportionately more expensive, escalating interest rates increased the costs associated with inventory, convincing even more shippers to switch from rail to truck for their transportation needs (Gittings and Thomchick, 1987; Harper, 1982).

Railroads recognized their limitations and began to evolve, eliminating less than carload (LCL) and express traffic, focusing on high volume shippers of bulk commodities and intermodal freight. This development of intermodal traffic, Trailer on Flat Car (TOFC) and Container on Flat Car (COFC), was an important innovation, but the rail industry believed it should be done on a large scale, not for small, individual shippers, and it became part of their overall strategy of downsizing. As smaller shippers switched from rail to truck, railroads began abandoning unprofitable branch lines. During the 1990s, the rail industry closed over 100 intermodal rail yards across the U.S. and began to focus on high volume unit train movements between major cities (Ozment, 2001a; Ozment and Spraggins, 2001). The role of the trucking industry become intricately intertwined with the rail industry as rail took on the long haul movement of trailers and containers, relying on the trucking industry for pick-up and delivery services between shippers and major intermodal yards.

Focusing on high volume long haul freight movements of this nature was accompanied by serious rationalization of the rail network. Changes in government policy on rail abandonment made it easier for railroads to rationalize the rail network and divest itself of unprofitable branch lines and focus on long distance movements of high volume freight

(Office of Public Services, 1997).This generated protests by shippers facing the loss of rail service as carriers abandoned unprofitable, light density branch lines.

Naturally, not all shippers recognize the trade-offs between the costs of inventory and transportation, and some feel threatened by the potential loss of rail service, and some of them look to government for protection from the potential loss of rail service. When faced with a change in its environment, such as a new competitor, new government regulations, or the loss of service (i.e., rail abandonment), an organization may take a long time to realize that it needs to respond or adjust to the change, and it may take even longer to actually make any adjustments. Many notable organizations have gone bankrupt because they failed to adjust to changes in their environment (Staw et al., 1981). Some firms recognize the need to change their operating methods as the economy evolves and switch from rail to truck to take advantage of the potential savings associated with smaller shipment sizes, less damage, and faster and more dependable delivery times (Gittings and Thomchick, 1987; Crane and Leatham, 1993). In fact, such actions may contribute to declining traffic levels that lead railroads to file for abandonment. Other shippers remain rigid, not wanting to change, and rely on government policy to retain their traditional use of rail service. Since very little adverse impact has been shown to be actually associated with rail abandonment, most firms that remain rigid apparently are still able to adjust to their new environments (Gittings and Thomchick, 1987).

As can be seen from Table 2, over 100,000 miles of rail line have been abandoned since the Interstate Commerce Commission was given control over rail abandonment in 1920. Figure 1 is a plot of that data which shows the steady upward increase in miles of rail abandoned until about 1980. The deep decline in abandoned miles in the 1970s was due to the extensive government activity in reorganizing the bankrupt rail system in the Northeastern U.S. which became Conrail, and the sharp decline in abandonment activity during the 1980s and 1990s was due primarily to a change in federal policy which encouraged Class I railroads to sell light density branch lines to independent operators rather than abandon them.

Attempts to prevent rail abandonment have been very costly. In the early 1970s, the Federal Railroad Administration determined that the cost of preparing an abandonment application could be as high as $50,000 (FRA, 1973). Moreover, government programs to preserve rail service have cost hundreds of millions of dollars, not counting the direct subsidies to keep the northeast rail system operating during the formation of Conrail under the 3R and 4R Acts. If given a choice, most railroads would abandon light density branch lines and concentrate their efforts on moving high volume, long haul traffic. Thus, government subsidy associated with the branch line assistance program and state rail planning in general actually is not "…a rail subsidy but is in fact a shipper subsidy" (Friedlander and Spady, 1981).

ABANDONMENT IMPACT LITERATURE

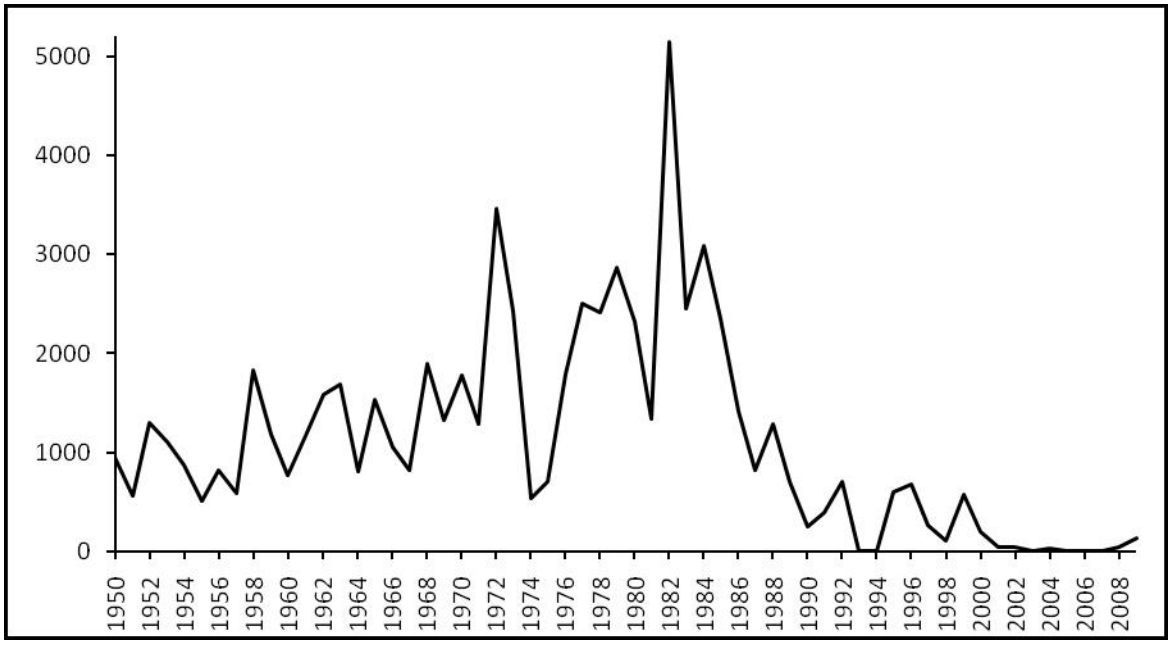
There has obviously been a great deal of concern over the loss of rail service, and its potential impact. Government has attempted to balance the interests of the railroads with those of shippers, communities, and labor. However, the question remains as to whether those efforts have been effective or whether there are adverse impacts associated with rail abandonment. While there have been many studies predicting what the impact of rail abandonment would be, most relevant to this study are those articles examining the actual impact of rail abandonment after the fact. Furthermore, the effects of actual abandonments appear to be less severe than those predicted by most of the prospective studies employing mathematical models, and, according to retrospective studies, the actual level of adverse economic impact due to rail abandonment has not been serious.

TABLE 2
MILES OF RAIL LINE ABANDONED SINCE 1920

Applications				Miles				Granted Since
Filed	Dismissed	Denied	Granted	Filed	Dismissed	Denied	Granted	1920
98	6	4	101	1,140	376	140	1,167	46,104
122	1	2	95	1,616	8	53	1,582	47,686
127	6	3	110	1,937	77	73	1,688	49,374
109	8	4	83	1,528	248	74	811	50,186
107	13	1	117	2,224	909	121	1,538	51,724
106	8	5	92	920	352	334	1,054	52,778
72	6	7	85	860	195	96	817	53,595
76	3	4	74	2,036	197	76	1,890	55,486
136	5	1	89	2,287	48	12	1,320	56,805
104	19	2	82	762	210	65	1,782	58,587
241	6	3	129	142	21	30	1,287	59,874
273	10	3	268	3,978	263	48	3,458	63,332
266	9	5	198	4,436	114	154	2,428	65,760
139	5	1	24	2,247	58	17	529	66,289
113	169	-	42	3,309	2,774	-	708	66,997
94	15	6	99	1,635	281	78	1,789	68,786
84	24	13	147	1,916	533	422	2,500	71,285
127	9	4	113	3,379	360	111	2,417	73,702
13	3	12	123	4,419	73	799	2,873	76,575
130	33	3	105	4,785	5,259	97	2,322	78,896
161	11	1	81	3,219	25	12	1,342	80,239
382	39	3	381	4,821	696	52	5,151	83,390
178	7	2	123	3,702	91	28	2,454	85,844
472	5	7	419	3,878	69	548	3,083	88,927
138	30	3	148	2,877	657	103	2,343	91,269
141	11	4	117	1,890	275	148	1,417	92,686
60	11	2	60	1,208	268	32	818	93,504
250	9	3	47	1,470	200	33	1,293	94,797
35	12	2	35	809	393	76	699	95,496
18	5	1	15	505	134	28	256	95,752
9	1	-	12	181	10	-	396	96,148
18	1	2	15	700	16	1	701	96,849
12	3	1	13	518	13	123	605	98,381
15	1	2	16	688	201	3	677	99,058
5	1	0	5	306	72	0	264	99,322
9	2	0	6	501	19	0	110	99,432
5	0	1	5	205	0	6	568	100,000
4	2	0	4	205	44	0	198	100,198
8	3	0	1	23	28	0	49	100,247
3	1	1	7	2	2	1	43	100,290
3	0	0	2	39	0	0	1	100,291
4	0	2	2	48	0	47	24	100,315
1	0	0	1	8	0	0	8	100,323
1	0	1	0	5	0	5	0	100,323
2	0	0	1	31	0	0	8	100,331
5	1	1	5	102	8	4	40	100,371
3	0	1	3	91	0	96	129	100,450

Source: Interstate Commerce Commission, Annual Report, various years; Surface Transportation Board, Annual Report, 1996-2006.

FIGURE 1
MILES OF RAIL LINE ABANDONED: 1950 - 2009



The following studies used a variety of circumstances and methodologies to study the impact of rail line abandonment. Theodore and Doody (1966) analyzed the impact of abandonment of the Rutland Railroad on the New England economy. Zasada (1968) examined the effects of two rail abandonments on grain elevators in the wheat producing regions of Saskatchewan and Manitoba. The firm of Simat, Helliesen, and Eichner (1973) prepared a report for the U.S. Department of Transportation (USDOT) on the impact of rail abandonment on shippers and communities along 10 branch lines which had been abandoned in the northeastern U.S. during the mid-1960s. Bunker and Hill (1975) studied two abandoned rail lines in Iowa and compared firms that had lost rail service due to abandonment with nearby firms that were still served by a railroad. Due (1975) studied the effects of rail abandonment in Sherman County, Oregon. Allen (1975) reported on the impact of rail abandonment on 10 communities in states from New York to Texas. Sloss et al. (1975) evaluated the impact of rail abandonment by comparing nine counties that had lost rail service with nine counties that had lost no rail lines. Miller, et al. (1977) reported on the results of a study to evaluate the impact of rail abandonment on communities and grain shippers in Iowa. Spraggins (1978) studied grain elevators in Minnesota that had lost rail service between 1966 and 1975 in order to evaluate the Interstate Commerce Commission's policy on rail abandonment. The firm of Ernst and Whinney (1981) prepared a report for the Federal Railroad Administration on shipper responses to the loss of rail service. Gittings and Thomchick (1987) did a longitudinal study of shippers located along six rail lines in Pennsylvania. Crane and Leatham (1993) performed an economic analysis to examine the relationship between transportation expenditures and economic growth for rural areas in Texas. Sanderson and Babcock (2005) studied the effects of rail abandonment at the county level in Kansas using an econometric approach that had not been used in prior studies. Despite the variety of circumstances studied and methodologies employed in these various studies, the net result has been the finding that there were minimal negative impacts from rail line abandonment.

Railroads are for-profit corporations, and they base abandonment decisions on their ability to profitably perform their services. In most instances, railroads attempt to abandon rail lines only after shippers have reduced their use of rail sufficiently for the line to become unprofitable to the railroad. In fact, there is evidence to suggest that, while shippers may be aware of "trade-offs" in general, very few shippers are aware of how to accurately measure the trades offs between carrier rates and inventory carrying costs associated with shipments size, transit times, and transit time variability because the actual measurement of relevant costs is not something that is intuitive, and can require collection and computation of complex data (Ozment, 2001b).

Consequently, attempting to assess the effects of abandonment impact on individual shippers can provide misleading results. This is consistent with federal policy requiring the STB to find "serious, adverse impact on rural and community development" before rejecting an abandonment application (STB, 1997,). If the overall economic wellbeing of areas that have lost rail service is not worse off than areas that have not lost rail service, then one would conclude that in the aggregate, shippers have adequately adjusted to the new environment, and there has been no serious adverse impact on the local economy or manufacturing. This paper examines changes to the local economy and manufacturing at the county level, to determine if there are any long term differences between counties that lost rail service and those that did not.

HYPOTHESES

In many instances, rail lines are abandoned because of declining traffic levels resulting from more shippers selecting other forms of transportation, especially trucks. Protests are made typically on behalf of firms that are thought to have no alternative means of transport, but remaining traffic volumes may not be sufficient to permit profitable operations of the line. Protective government policies may be simply enabling some shippers to continue inefficient and archaic business practices. Shippers who lose rail service because they are "the last to leave" should be able to find new and more efficient methods of transportation. If firms cannot survive without rail service, and the impact of the abandonment is truly serious, the entire local economy should be affected, not just a single company, and those effects should be apparent over a long period of time.

Thus, if the overall changes in economic conditions of areas that have lost rail service do not decline or are not worse than the changes in areas that have not lost rail service, then one would conclude that, in the aggregate, shippers have adequately adjusted to the new environment. If, however, the effects of rail abandonment have been negative, this impact should be manifest in the economic conditions of the area and the rates of change in those conditions over time. Thus, for the purposes of this analysis, the following two general hypotheses regarding the effects of rail abandonment on manufacturing are tested:

H1: The manufacturing sector of areas that have retained rail service will be better than those of areas that do not have rail service or have lost rail service.

H2: Over time, the change in manufacturing conditions in areas that have retained rail service will be better than the change in conditions in areas that do not have rail service or have lost rail service.

DATA AND VARIABLES

To test these hypotheses, data from the *County and City Data Book* and from the U.S. Census Bureau's Website for *USA Counties* were examined (U.S. Census Bureau, 2007a; 2007b). The variables that were analyzed reflected the manufacturing conditions in Arkansas counties in 1982, 1992, and 2002. The percentage changes shown over the first 10-year period (i.e., between 1980-1990), or the second 10-year period (1990-2000), or the full 20-year period (1980-2000) are divided by 10, 10, or 20,

TABLE 3
VARIABLES USED IN THE ANALYSIS

Number of Manufacturing Establishments	Number of Manufacturing Employees
Percentage Change in Manufacturing Establishments	Percentage Change in Manufacturing Employees
Manufacturing Value of Shipments ($ millions)	Manufacturing Payroll ($ millions)
Percentage Change in Value of Shipments	Percentage Change in Manufacturing Payroll
Shipment Value per Manufacturer	Manufacturing Pay per Employee
Percentage Change in Shipment Value per Mfr	Percentage Change in Manufacturing Pay/Employee

FIGURE 2
ARKANSAS RAIL NETWORK: 1975 & 2002

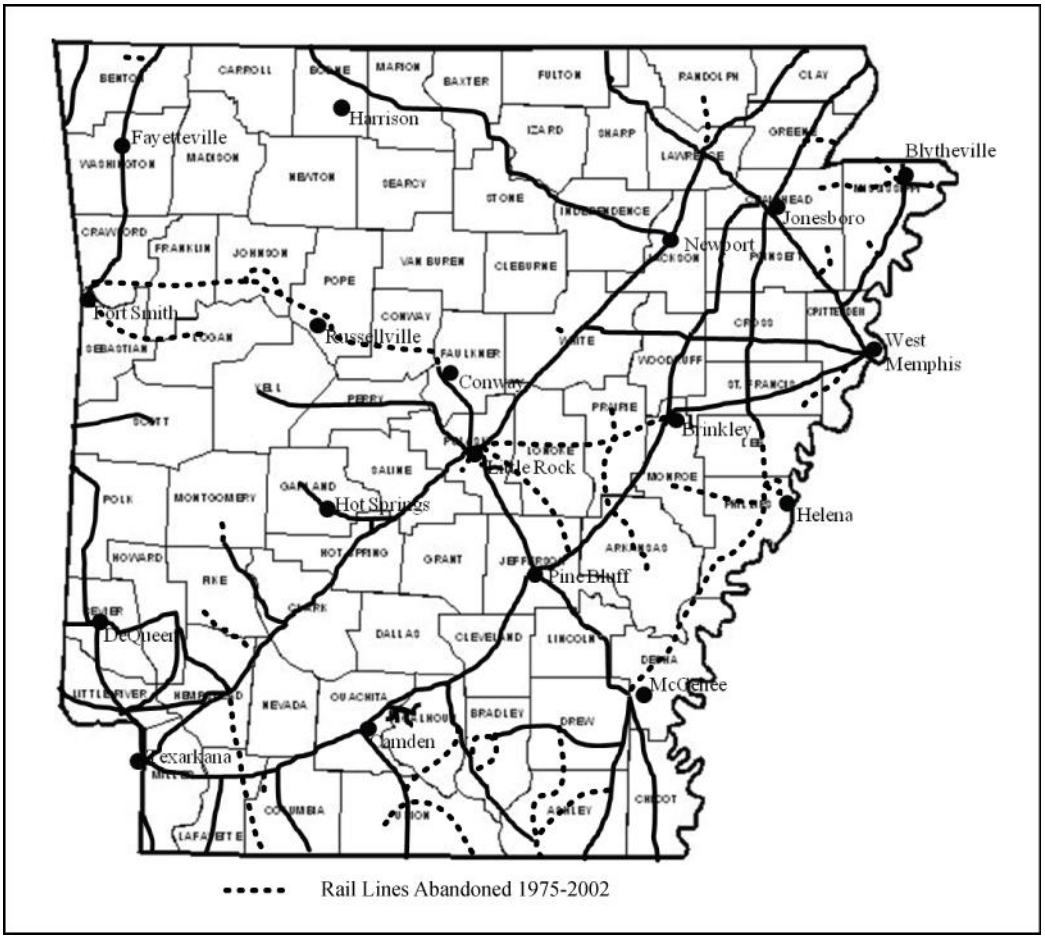


TABLE 4
POPULATION OF ARKANSAS COUNTIES

Counties with Abandonments*	
County	**2000 Population**
Arkansas	20,749
Ashley	24,209
Bradley	12,600
Calhoun	5,744
Carroll	25,357
Clark	23,546
Cleburne	24,046
Craighead	82,148
Crittenden	50,866
Desha	15,341
Drew	18,723
Franklin	17,771
Grant	16,464
Greene	37,331
Hempstead	23,587
Jefferson	84,278
Johnson	22,781
Lawrence	17,774
Logan	22,486
Lonoke	52,828
Madison	14,243
Mississippi	51,979
Monroe	10,254
Montgomery	9,245
Nevada	9,955
Newton	8,608
Ouachita	28,790
Phillips	26,445
Pike	11,303
Poinsett	25,614
Prairie	9,539
Pulaski	361,474**
Randolph	18,195
Saint Francis	29,329
Saline	83,529
Searcy	8,261
Sebastian	115,071**
Stone	11,499
Union	45,629
Van Buren	16,192
White	67,165
Average**	25,955

Counties without Abandonments	
County	**2000 Population**
Baxter	38,386
Benton	153,406**
Boone	33,948
Chicot	14,117
Clay	17,609
Cleveland	8,571
Columbia	25,603
Conway	20,336
Crawford	53,247
Cross	19,526
Dallas	9,210
Faulkner	86,014
Fulton	11,642
Garland	88,068
Hot Spring	30,353
Howard	14,300
Independence	34,233
Izard	13,249
Jackson	18,418
Lafayette	8,559
Lee	12,580
Lincoln	14,492
Little River	13,628
Marion	16,140
Miller	40,443
Perry	10,209
Polk	20,229
Pope	54,469
Scott	10,996
Sevier	15,757
Sharp	17,119
Washington	157,715**
Woodruff	8,741
Yell	21,139
Average**	25,278

* Counties that had no rail service or had lost rail service between 1980 and 2000.
**Counties with population over 100,000 were not included in the analysis.

respectively, to provide average annual rates of change.

The variables analyzed in the study are shown in Table 3 and reflect a variety of economic conditions relating to manufacturing. Some of the data were not available for all counties, so in the results section the number of observations is shown together with the means and p-values, which indicates whether the differences in means of the two groups is statistically significant.

The sample included 75 counties in Arkansas, which were divided into those that did not have rail service as of 1980 or had experienced abandonment prior to 2000 and counties that had rail service as of 1980 and had not lost any rail service during that time. Figure 2 shows a map of Arkansas showing the rail network system as of 1975 and 2002. Dashed lines on the map indicate those rail lines that were abandoned between 1975 and 2002. Many counties have experienced abandonments, and clearly, some of those still have rail service in other areas, but for convenience of discussion, those counties that experienced abandonment during the study period will be referred to as "counties with abandonments" and those that did not lose any rail service during the study period will be referred to as "counties without abandonments." The counties in each category, and their populations as of 2000, are shown Table 4.

The counties marked with an asterisk are the largest in Arkansas. As can be seen, each of these four counties had populations in 2000 of over 115,000; two had populations of over 150,000 and one had a population of over 300,000. Two of these four counties had rail service and had not lost any rail lines since prior to 1980 (if ever). Since no other county had a population of more than 90,000, these observations are outliers, so they were omitted from the analysis. However, including these counties in the analysis, had no significant impact on the results.

RESULTS

After omitting data for the four largest counties in Arkansas, for the reasons noted above, the values of N should be 39 for counties that had abandonments and 32 for those that did not; however, in some instances, the data was not available for certain counties. Reasons provided by the Census Bureau include, "data not applicable, not available, suppressed, withheld to avoid disclosure pertaining to a specific organization or individual, or value would amount to less than half the unit of measurement shown (U.S. Census Bureau, 2007)." The variables used in the analysis are those shown in Table 3, and reflect levels and changes in measures of manufacturing. The percentage changes over the various periods have been adjusted to annual rates of change. The changes from 1982 to 1992, from 1992 to 2002, and over the entire 20-year period are provided.

Table 5 shows the differences in counties that lost rail service and those that had not, with respect to the number of manufacturing facilities, the value of manufacturing shipments, and the percentage changes in those variables between 1982 and 2002. There were no significant differences in either the number of manufacturing establishments or the average annual percentage change in establishments in counties with rail service compared to those that had lost rail service.

Although there were differences in the average value of manufacturing shipments and the average value of shipments per manufacturer, the differences were not statistically significant. Nor were there any significant differences in the growth rates in the average value of manufacturing shipments or the average value of shipments per manufacturer.

Similarly, as shown in Table 6, the number of people employed in manufacturing, and manufacturers' payroll were not significantly different for counties that lost rail service compared to counties that had not. As would be

TABLE 5
IMPACT OF RAIL ABANDONMENT ON MANUFACTURING AND VALUE OF MANUFACTURING SHIPMETNS: 1982-2002

Counties with Abandonments		Counties without Abandonments		
N	Mean	N	Mean	P-Value
Number of Manufacturing Establishments				
39	37	32	31	0.309
39	43	32	37	0.341
32	37	23	38	0.824
Percentage Change in Manufacturing Establishments				
39	1.9	32	2.1	0.815
32	(2.0)	23	(1.5)	0.541
32	(0.1)	23	0.1	0.644
Value of Manufacturing Shipments ($1,000)				
36	244,542	26	146,631	0.192
33	379,376	25	308,480	0.457
24	558,756	21	507,418	0.747
Percentage Change in Value of Shipments				
33	13.9	23	15.1	0.846
22	3.0	18	3.1	0.966
22	6.5	18	8.9	0.202
Shipment Value per Manufacturer (dollars)				
36	5,242,200	26	4,010,658	0.257
33	7,547,883	25	7,217,422	0.831
24	14,039,339	21	13,527,307	0.862
Percentage Change in Shipment Value per Manufacturer				
33	11.7	23	10.4	0.841
22	8.1	18	7.2	0.784
22	7.4	18	9.6	0.305

expected based on that information, the manufacturing pay per employee was also not significantly different between those counties that had lost rail service and those that had not. Furthermore the percentage changes in number of manufacturing employees and payroll were not significantly impacted by rail abandonment.

Only one variable in Table 5 had differences that were statistically significant. The average annual rate of change for manufacturing pay per employee from 1992 to 2002 was significantly higher for counties with abandonments than for those that had not lost rail service. The average annual change for the entire period was marginally higher for those counties that had lost rail service. With a p-value of 0.11, there is only an 11 percent probability that these differences resulted from random variations.

In 1992, the average pay per employee in counties with abandonments was $18,848 compared to $19,242 in counties with rail service, a difference of about 2.1%. By 2002, however, the average pay per employee in counties with abandonments had increased to $28,970 compared to $27,702 in counties that had not lost rail service, a difference of about 4.4%. The average annual rate of increase over this ten year period was 5.3% for counties with

TABLE 6
IMPACT OF RAIL ABANDONMENT ON MANUFACTURING EMPLOYMENT AND PAY:
1982-2002

	Counties with Abandonments		Counties without Abandonments		
	N	Mean	N	Mean	P-Value
Number of Manufacturing Employees					
1982	35	2,114	25	1,812	0.473
1992	33	2,403	25	2,284	0.816
2002	32	2,575	23	2,616	0.932
Percentage Change in Manufacturing Employees					
1982-1992	32	3.5	22	2.7	0.643
1992-2002	26	(1.2)	18	(0.7)	0.473
1982-2002	29	0.8	18	1.2	0.569
Manufacturing Payroll ($1,000)					
1982	36	30,328	26	23,754	0.346
1992	33	50,182	25	47,100	0.796
2002	24	69,950	21	74,843	0.766
Percentage Change in Manufacturing Payroll					
1982-1992	33	10.7	23	13.3	0.560
1992-2002	22	3.0	18	2.7	0.722
1982-2002	22	6.9	18	7.5	0.724
Manufacturing Pay per Employee (dollars)					
1982	35	13,284	25	12,622	0.446
1992	33	18,848	25	19,242	0.758
2002	24	28,970	21	27,702	0.503
Percentage Change in Manufacturing Pay per Employee					
1982-1992	32	4.6	22	5.3	0.231
1992-2002	22	5.3	18	3.7	0.008
1982-2002	22	6.3	18	5.3	0.113

abandonments compared to 3.7% in other counties, and that difference was statistically significant.

As with the majority of previous studies, there is little support for the hypotheses that counties that have lost rail will be economically disadvantaged with regards to manufacturing, either when compared directly or when compared to changes over time. If anything, one might argue that manufacturing in counties that have lost rail service is improving at a slightly better rate than those that have not. For most measures reported, the averages are slightly higher in those counties with abandonment; however, most of these differences could be due to random variations in the data.

CONCLUSIONS

Clearly, rail transportation is important to our economy. About 40% of the total ton-miles moved in this country move by rail (AAR, 2007a), and many industries are heavily dependent on rail services. However, railroads are for-profit enterprises, and when a shipper is truly dependent on rail transportation, its volume is typically sufficient for the rail carrier to make

a reasonable return on its investment and not abandon their rail lines. Economic changes in the U.S. and a better understanding of transportation choice decision-making have changed the competitive environment in which railroads compete. Changes in government policy have paralleled these changes permitting the railroad industry to evolve into its current role of focusing on what it does best through a strategy of downsizing. What the rail industry does best is move large volumes long distances with minimal switching or interchange.

Some shippers have accepted the changes in the economy and their transportation alternatives and recognize the need to consider the cost of inventory and other costs beyond just that of transportation when making mode choice decisions. These shippers have even contributed to rail downsizing by choosing truck over rail, reducing rail traffic levels that have led to abandonment. Remaining shippers who may be unaware of new decision methods might naturally fear (and protest) the loss of rail service when in fact they may benefit by switching to another mode of transportation. If these shippers cannot survive without rail service and the impact of the abandonment is truly serious, the entire local economy would be affected, not just a single company, and those effects should be apparent over a long period of time.

The analysis provided here compared manufacturing in counties in Arkansas that have lost rail service to counties that have not and found no meaningful differences between them. Consequently, there appears to be no evidence of any long-term adverse economic impacts on manufacturing due to rail abandonment. While there is no way of determining from this analysis whether individual firms may have experienced adverse economic effects, including bankruptcy, due to the loss of rail service, it seems clear that local manufacturing in general is not affected. This is consistent with the findings of other post abandonment impact studies.

However, going forward the policy environment and market factors could again favor rail transportation over truck for a wider range of industries. Governmental policies could evolve to focus more and more on carbon footprint thereby favoring rail. Shipper "total cost analysis" of overall logistics costs, in an era with low inventory carrying costs due to low costs of capital relative to the 1980's-2000's; and higher transportation costs for trucking due to rising oil prices and driver shortages, could tip analyses in favor of rail. Should this occur, there could be future negative impacts in counties where rail was abandoned, and at that future point in time it may be difficult to recreate rail right of way and service.

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Journal of Transportation Management

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1. Equations are placed on a separate line with a blank line both above and below, and numbered in parentheses, flush right. Examples:

$y = c + ax + bx$
$y = a + 1x + 2x + 3x + ax$

2. References within the text should include the author's last name and year of publication enclosed in parentheses, e.g. (Wilson, 2004; Manrodt and Rutner, 2004). For more than one cite in the same location, references should be in chronological order. For more than one cite in the same year, alphabetize by author name, such as (Wilson, 2001; Mandrodt, 2002; Rutner, 2002; Wilson, 2003). If practical, place the citation just ahead of a punctuation mark. If the author's name is used within the text sentence, just place the year of publication in parentheses, e.g., "According to Manrodt and Rutner (2003) ...,". For multiple authors, use up to three names in the citation. With four or more authors, use the lead author and et al., (Wilson et al., 2004). References from the Internet should contain the site name, author/organization if available, date the page/site was created, date page/site was accessed, and complete web addresses sufficient to find the cited work.

3. Endnotes may be used when necessary. Create endnotes in 10-point font and place them in a separate section at the end of the text before References. (1, 2, etc.). Note: Endnotes should be explanatory in nature and not for reference purposes. Endnotes should NOT be created in Microsoft Insert Footnotes/ Endnotes system. The Endnotes section should be titled in 12 point, uppercase and bolded.

4. All references should be in block style. Hanging indents are not to be used.

5. Appendices follow the body of the text and references and each should be headed by a title of APPENDIX (#) in caps and 12 Point, and bolded.

6. The list of references cited in the manuscript should immediately follow the body of the text in alphabetical order, with the lead author's surname first and the year of publication following all author names. The Reference Section should be headed with REFERENCES in caps, bolded, and in 12 point font. Work by the same author with the same year of publication should be distinguished by lower case

letters after the date (e.g., 1996a). For author names that repeat, in the same order, in subsequent cites, substitute a .5 inch underline for each name that repeats. Authors' initials should have a space between the initials, e.g., Smith, Jr., H. E., Timon, III., P. S. R., etc. A blank line should separate each reference in the list. Do not number references.

7. All references to journals, books, etc., are *italicized,* NOT underlined. Examples are as follows:

Journal Article:
Pohlen, Terrance L. (2003), "A Framework for Evaluating Supply Chain Performance," *Journal of Transportation Management,* 14(2): 1-21.

Book Chapter:
Manrodt, Karl (2003), "Drivers of Logistics Excellence: Implications for Carriers," In J. W. Wilson (Ed.), *Logistics and Transportation Research Yearbook 2003* (pp. 126-154) Englewood Cliffs, NJ: Prentice-Hall, Inc.

Book:
Coyle, John J., Bardi, Edward J., and Novack, RobertA. (2004), *Transportation*, 6th ed., Cincinnati, OH: South-Western College Publishing.

Website:
Wilson, J. W. (2003), "Adapting to the Threat of Global Terrorism: Reinventing Your Supply Chain," [On-line]. Available: http//:georgiasouthern.edu/coba/centers/lit/threat.doc. Created: 11/01/02, Accessed: 11/12/03.

MANUSCRIPT SAMPLE

A FRAMEWORK FOR EVALUATING SUPPLY CHAIN PERFORMANCE

Terrance L. Pohlen, University of North Texas

ABSTRACT

Managers require measures spanning multiple enterprises to increase supply chain competitiveness and to increase the value delivered to the end-customer. Despite the need for supply chain metrics, there is little evidence that any firms are successfully measuring and evaluating inter-firm performance. Existing measures continue to capture intrafirm performance and focus on traditional measures. The lack of a framework to simultaneously measure and translate inter-firm performance into value creation has largely contributed to this situation. This article presents a framework that overcomes these shortcomings by measuring performance across multiple firms and translating supply chain performance into shareholder value.

INTRODUCTION

The ability to measure supply chain performance remains an elusive goal for managers in most companies. Few have implemented supply chain management or have visibility of performance across multiple companies (Supply Chain Solutions, 1998; Keeler et al., 1999; Simatupang and

Sridharan, 2002). Supply chain management itself lacks a widely accepted definition (Akkermans, 1999), and many managers substitute the term for logistics or supplier management (Lambert and Pohlen, 2001). As a result, performance measurement tends to be functionally or internally focused and does not capture supply chain performance (Gilmour, 1999; *Supply Chain Management*, 200 I) . At best, existing measures only capture how immediate upstream suppliers and downstream customers drive performance within a single firm.

Table 1 about here

Developing and Costing Performance Measures

ABC is a technique for assigning the direct and indirect resources of a firm to the activities consuming the resources and subsequently tracing the cost of performing these activities to the products, customers, or supply chains consuming the activities (La Londe and Pohlen, 1996). An activity-based approach increases costing accuracy by using multiple drivers to assign costs whereas traditional cost accounting frequently relies on a very limited number of allocation bases.

$$y = a^2 - 2ax + x^2$$

REFERENCES

Manrodt, Karl (2003), “Drivers of Logistics Excellence: Implications for Carriers,” In 1. W. Wilson (Ed.), *Logistics and Transportation Yearbook 2003* (pp. 126-154) Englewood Cliffs, NJ: Prentice-Hall, Inc.

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