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Global Supply Chain Management
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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Revised March 15, 2013
From the Editor…

Welcome to the Summer Fall 2020 issue of the Journal of Transportation Management (JTM), being Vol. 31 No 1. Unfortunately this will be the last issue of the Journal! Times have changed and the demand for a Journal with a practical bent, but that is not in the Social Science Citation Index, has passed. So this is farewell to the Journal of Transportation Management at least for now! But our last issue is a good one with 4 articles.

The issue starts with an article on the truck driver labor market. The second article examines scheduling and delivery issues for bio-perishable goods. The third article looks at cross cultural differences in logistics practice using the Russian market and a German logistics services provider. While the fourth article comments on the national benefits that resulted from railroad land grants in the 1800’s.

Our first article explores the relationships among factor market rivalry, factor market myopia, and strategic blind spots in the context of the labor market for truck drivers. In the trucking industry, factor market myopia and strategic blind spots may mean that managers overlook competition for workers who not only can drive trucks, but can also do many other jobs. The objective of the second article was to identify any gaps in the academic and professional literature regarding the logistics scheduling of perishable biopharmaceuticals. They find a considerable gap and report on findings that may be of interest in the context of COVID vaccine and treatment logistics. The third article explores obstacles to doing business related to the logistics industry in the emerging Russian market, ways of dealing with these obstacles and the role of culture in problem definitions and solutions. The fourth article comments on the benefits provided to the country by the 1800’s practice of making land grants to the railroads. The authors find that the land grants were very valuable to the development of the country with those benefits occurring in a variety of fields.

This and past issues of the Journal will continue to be visible in Digital Commons and be visible to Google Scholar. Authors will continue to be able to receive summaries of downloaded articles monthly, and can examine the Digital Commons web site for data on various aspects of their past articles. One year old and beyond issues will be placed into the system.

Thank you for your submissions and readership over the years! It has been a great run!

John C. Taylor, Ph.D.
Editor, Journal of Transportation Management
Chair, Department of Marketing and SCM, Ilitch School of Business
Wayne State University
FROM THE DESK OF YOUR PRESIDENT...

Many thanks to all, the authors, the editors, to John Taylor and most of all to you, the subscribers for your interest in the Journal of Transportation Management over the years. A special thanks to the memory of Dr. Jerry Wilson for him having gotten the journal back on track when he took over.

Due to the everchanging technological advances in not only transportation, but in the academic world as well, the need for the “printed page” seems to be going away. With that having been said, we must also say a fond Farewell to the Journal, at least for the time being.

In my career in the industry, the printed page has always been of vital importance, but as time moves on and folks grab a tablet, instead of a book, the importance is no longer there. Delta Nu Alpha, over the years has been a strong part of the transportation community. My first encounters in the Delta Nu Alpha family was having attended a conference in Aspen, CO and getting to meet the likes of Terry Priest, Hank Seaton, and Newton Graves, others considered to be top shelf in their respective positions. Of course, Nashville was not without it’s “top shelf” folks as well, Robert H. Beard, Les Overton, Leslie Ewing, and others. Over the years Delta Nu Alpha has been a very important factor in the transportation lives of many.

As I leave you with these thought’s please take advantage of your Delta Nu Alpha Membership. You will never get any more out of it than what you put into it. This organization has been around a long time and with folks like those of you who are reading this, it will continue to be.

Thanks again to all for your support, and your interest n Delta Nu Alpha over the years.

Jim Hall

Jim Hall, CTB

President,
Delta Nu Alpha Transportation Fraternity
FACTOR MARKET RIVALRY, FACTOR MARKET MYOPIA, AND STRATEGIC BLIND SPOTS: THE CASE OF THE TRUCK DRIVER LABOR MARKET

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ABSTRACT
This article explores the relationships among factor market rivalry, factor market myopia, and strategic blind spots in the context of the labor market for truck drivers. Levitt (1960) developed the concept of market myopia to explain how managers often overlooked key competitors in product markets. Trucking managers might do the same thing in looking at competition for truck drivers. Factor market myopia and strategic blind spots help to explain how this happens, and how it becomes more severe in the context of factor market rivalry. In the trucking industry, factor market myopia and strategic blind spots may mean that managers overlook competition for workers who not only can drive trucks, but can also do many other jobs. We find that the labor market for truck drivers offers important lessons on the practical and theoretical ways in which these ideas interact.

INTRODUCTION
Levitt (1960) first described classic marketing myopia, and Porter (1984) identified substitutes as a force to be considered in developing organizational strategies, but both focused on the sales side of a product market rather than the factor markets. For clarity, a product market refers to a place where goods and services are bought and sold. A factor market refers to the employment of factors of production, such as labor or talent, capital, and land. The cola wars are a good example of what Levitt and Porter identified on the sales market side. Coca-Cola and Pepsi focused so much on each other and defined their space as carbonated sugar water that they overlooked the real substitutes from the customer’s perspective: bottled water and fruit drinks. This original version of myopia failed to recognize substitutes and resulted in billions of dollars in acquisition costs that could have been spent on development. A similar phenomenon occurs in logistics human resources (LHR). Further compounding the issue is the reality that shortages aggravate the effects of three key forces in factor markets: factor market rivalry (FMR), factor market myopia (FMM), and strategic blind spots (SBS).

In this paper, we begin with a brief review of the literature on factor market rivalry (FMR), factor market myopia (FMM), strategic blind spots (SBS), and the interactions among them. Then, we examine the conditions that create real and perceived shortages in the truck driver labor market. We also describe this labor market in terms of the research and current conditions. We then develop a series of propositions about the relationship between these constructs, using the truck driver market as an example of how their interplay affects the behavior and factor market success of firms in the trucking industry. We call for further research to confirm, dismiss, or modify these propositions.
LITERATURE REVIEW

In this literature review, we discuss the key concepts in order of breadth for the most part. From an organizational perspective, strategic blind spots (SBS) is the broadest concept. SBS can appear in any part of an organization’s strategy, not just in factor markets. The next broadest concept is factor market myopia (FMM) from an organizational perspective, followed by labor market myopia (LMM). However, we inject factor market rivalry (FMR) second, keeping in mind that it is distinct from the other concepts. SBS, FMM, and LMM are all organizational conditions. FMM and LMM may be considered symptoms of SBS.

Table 1 shows the definition of each concept that we use in this analysis, along with its source or sources and its abbreviation. FMR, FMM, and LMM have definitions from single sources. SBS is a combination of definitions from several sources.

Strategic Blind Spots (SBS)
We define SBS as flaws in a top management team’s (TMT) interpretation of its environment based on false assumptions or cognitive biases. We developed this definition from a more complex analysis by Ng et al. (2009). They discussed interpretive biases that ‘blind’ TMTs from accurately perceiving customers or competitors with differing perceptions and interpretations of the same phenomena (Ng et al., 2009). This leads to gaps or blind spots in a firm’s strategies. The definition varies when the TMT is placed in a competitive situation, as the following discussion points out.

Zajac and Bazerman (1991a, 1991b) introduced the concept of strategic blind spots (SBS) in the management literature. They focused on competitor analysis and the misperception of a competitor’s decision-making. Their perspective was unique because they combined two research perspectives on strategy: 1) industry and competitor analysis, which emphasized decision outcomes, and 2) strategic decision making, which usually emphasizes behavior. As they point out, these two perspectives are not independent of one another. They explicitly define strategic blind spots as “in competitive situations, strategic decision makers typically do not sufficiently consider the decisions of competitive others and that this deficiency leads to a variety of specific judgmental mistakes . . .” (Zajac and Bazerman, p37-38)

<table>
<thead>
<tr>
<th>Concept</th>
<th>Abbreviation</th>
<th>Definition</th>
<th>Sources</th>
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<tr>
<td>Strategic Blind Spots</td>
<td>SBS</td>
<td>Flaws in a top management team’s interpretation of its environment based on false assumptions or cognitive biases.</td>
<td>Developed from Ng, et al., (2009.)</td>
</tr>
<tr>
<td>Factor Market Myopia</td>
<td>FMM</td>
<td>Sources of a firm’s resources are defined too tightly or solutions to problems conceptualized too narrowly.</td>
<td>Ralston et al., (2017)</td>
</tr>
<tr>
<td>Labor Market Myopia</td>
<td>LMM</td>
<td>Sources of a firm’s labor are defined too tightly or solutions to labor problems conceptualized too narrowly.</td>
<td>Opengart et al. (2018)</td>
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This fits with the ideas of factor market myopia (FMM), labor market myopia (LMM), and factor market rivalry (FMR). In their view, a major blind spot for organizations is overlooking, ignoring, or misperceiving what a firm’s competitors might be doing or thinking in factor markets. While FMM and LMM are not blind spots in this definition, they would seem to aggravate blind spots and increase the likelihood that strategic blind spots would occur. Burisch and Wohlgemuth (2016) point out that blind spots occur in dynamic systems, even when a firm has dynamic capabilities. The FMM and LMM clearly play a role here.

Weiland et al. (2020) point out that even research on supply chain sourcing overlooks major streams of research outside its narrow discipline, often ignoring research in economics, geography, political science, and other related disciplines. Given the reach of supply chains in general and transportation in particular, these oversights limit the theoretical understanding of factor markets and their behavior.

A major factor in strategic blind spots is personal, something that one assigns to an individual strategic decision maker: it is easier to see bias in others than to see bias in oneself (Pronin, Lin, & Ross, 2002). There is little doubt that this human characteristic contributes to SBS, FMM, and LMM. Geiger and Antonacoppoulou (2009) examined blind spots and organizational inertia, which also play a role. Ben-Simane and Chaney (2014) explored a cognitive approach to sales markets, pointing out that non-consumers represent a major opportunity for businesses. FMM makes this point for factor markets. In both sales and factor markets, the individual difficulty in recognizing blind spots that result from biases seems significant. It seems that top management team’s (TMTs) are also human.

In addition, the idea that TMTs in an organization tend to assume that rivals see the market in the same way that they see it (Tsai, Su, & Chen, 2011). This is yet another aspect of SBS that causes TMTs to overlook what rivals are actually going to do or are doing, as opposed to your own organization’s actions.

Factor Market Rivalry (FMR)
In factor markets, firms seek resources that they need to operate. If a firm plans to provide customers with products and services, it must have the resources to do so, including human resources with the right knowledge, skills, and abilities (Schweiterman & Miller, 2016). Yet the ability to access or control resources remains a challenge (Ralston, LeMay, & Opengart, 2017). The fight for resources often takes place in a context where a single entity or a few entities control access to these resources (Markman, Gianiodis, & Buchholz, 2009). An example of this would be the truck driver labor market in large U.S. cities prior to deregulation in 1980. The Teamsters Union held sway over the market to such a degree that in 1968, when a researcher sought data on truck drivers, the officials at a trucking company directed him to the union. They told him that having the company name on a survey would assure that drivers did not respond, while backing from the union would assure many responses (Latta, 1968). Access to human resources is often a local phenomenon. While a company might fly an engineer with a rare specialty from a distant office to solve a technical problem, most truck drivers are hired locally, as are most lower level logistics personnel.

Some human resource literature focuses on the recruitment and retention of high performers, which is certainly a factor in recruiting attorneys or professional athletes (Benson, & Rissing, 2020). However, trucking firms need few ‘superstars.’ The factor market rivalry (FMR) in this market applies to routine positions. Driving over the road calls for competence, but a superstardom would be difficult to define. In other words, some truck drivers are better than others, but no one would argue that a ‘super’ truck driver would deliver so much more freight or perform so much better on measurable criteria that he or she would command a wage substantially higher than a driver who was at the hypothetical 80th percentile. The same applies to stevedores and fork truck drivers.

The factor market for truck drivers stretches along the supply chain. This means that qualified people
are likely to be available all along the supply chain, but it also means that qualified employers are available. Rivalry for people who qualify as truck drivers abounds; shortages exist in some parts of the labor market. In these situations, the highest levels of factor market rivalry (FMR) reside in transportation.

Factor Market Myopia (FMM)

FMM is based on Levitt’s (1960) market myopia. The article was published in the Harvard Business Review, a journal intended at the time for an audience of top managers. As such, it was more rah-rah than we expect in academic journals today. Many later writers have undersold the breadth of the concept, describing it as ‘defining your business too narrowly’ or giving the wrong answer to the question, ‘What business am I in?’ (Ballmer, 2011). These descriptions touch the surface of Levitt’s concept, but deny him credit for the idea that organizations should be customer-oriented. This put Levitt at odds with economist John Kenneth Galbraith, who viewed marketing as a means of creating demand rather than discovering it. Galbraith also saw marketing as a means to sell consumers regardless of the organization’s production (Galbraith, 1968; Grant, 1999). Regardless, the article remains important to both academics and practitioners.

One of the examples used in Levitt’s article was the railroad industry, which he saw as strategically myopic to competition from other modes of transportation. In his view, railroads saw themselves as railroads, not transportation companies, so they overlooked competition from motor carriers, airlines, and water carriers (Levitt, 1960). The way firms view markets for potential employees can go astray in much the same way.

Ralston et al. (2017) introduced the idea of factor market myopia (FMM) as a natural derivative of Levitt’s (1960) market myopia and Zajac and Baserman’s (1991) blind spots in strategic decision making and competitor analysis. They defined FMM as a condition that develops “when the solution to particular needs is thought of too narrowly” (Ralston et al., 2017, p 170), and Levitt’s concept of marketing myopia has been shown to be present in many industries (Larsen, 2017; Wilkes, 2020; Sousa, et al., 2018). Ralston et al. (2017) and Ellram et al. (2013) identified factor market rivalry (FMR) as affecting the way transportation strategists saw infrastructure, capacity availability, and human resources. These perspectives rely on a resource-based (RBV) view of the firm.

Southwest Airlines is a classic example of a firm that avoids factor market myopia (FMM). Unlike the railroads from Levitt’s article, Southwest Airlines strategists clearly understood that they were in the transportation industry, not the airline industry. Consequently, they opened new markets with prices that were competitive with bus transportation or even private cars. Not only are they credited with avoiding market myopia, but also avoiding FMM, thus showing the possible interconnectedness of these two forces.

The concept of FMM was introduced by Ralston, LeMay, and Opengart (2017) and specifically applied to logistics personnel. It extended the use of Levitt’s concept of marketing myopia. Opengart, Ralston, and LeMay (2018) broadened the application of FMM but narrowed its focus to labor markets with the concept of labor market myopia (LMM), a logical extension of the idea. Since the concept is relatively new, it will likely expand in other ways. Ralston and Blackhurst (2020) found that overcoming FMM and LMM plays a role in the development of supply chain resilience. Miller, Muir, and Bolumole (2020a) saw FMM as having an indirect effect on truckload freight pricing. In addition, Garver et al. (2019) saw it as affecting not only operational level employees but also recruiting new university graduates.

Ralston et al. (2017) and Opengart et al. (2018) determined the relationship between the factor market myopia (FMM) and factor market rivalry (FMR). In simple terms, FMM aggravates FMR, and FMR aggravates the effects of FMM, but each can exist without the other. Theoretically, it is possible for a firm to engage in FMR without
suffering from FMM. This is an ideal way to engage in such rivalry. By the same token, it is possible for a firm with few or no rivals to still suffer from FMM, often as a version of “this is the way we have always done it.” For example, logistics and other supply chain jobs still employ relatively few women, partly because firms do not recruit them, especially not for operational jobs. There is now a higher percentage of women driving trucks, but the percentage is still small, rising from 4.6% of drivers in 2010 to 6.6% in 2018 (BTS, 2021).

Other issues arise here. When firms overlook one subset of the labor market for a specific job, such as a truck driver, the people who make up that subset of the labor market may also overlook that as a potential job or career path. Product markets also affect the factor markets. The demand for local delivery drivers for grocery stores and restaurants has increased dramatically during the pandemic. It may be speculation to say so, but it is likely that the demand for delivery will diminish from its COVID peak, but remain higher than it was prior to the pandemic. The pandemic has also resulted in some changes in specific practices for drivers, so they have had to become adaptable.

Miller, Bolumole, & Griffis (2020a, b, & c) wrote three articles that appeared in the Journal of Business Logistics simultaneously, one cited earlier. They will be discussed more thoroughly in the section on the truck driver labor market.

SHORTAGES, PERCEIVED AND REAL: THE TRUCK DRIVER LABOR MARKET

The primary narrative says that the labor markets for truck drivers experience shortages. Based on the behavior of principal organizations in each market, the perception of shortage is real, even if there is no shortage. Some forecasts for the need for truck drivers show long-term shortages, not to mention the current shortage (Schultz, 2020). No major forecasts show a surplus of truck drivers, but some argue that the current supply of truck drivers is adequate because all the freight is delivered (Banker, 2019).

However, even leaders of large organizations in big industries make decisions based on their perceptions. Based on the behavior of the leaders in the motor carrier industry, if the shortages are not real, they might as well be real. Firms act as though there is a national or even global shortage of truck drivers. In the past, major truckload trucking companies sent recruiters to homeless shelters, a story from one of the author’s interviews with large trucking firm executives. Many trucking companies put recruiting messages on their trailers, complete with phone numbers for contacting recruiters.

Top management at J.B. Hunt assumed that higher pay would result in lower turnover, so they increased pay for drivers by $.05 a mile at a time when the typical rate was $.25. It worked for approximately six months. Then, it stopped working. The decision was based on the top managers’ assumption that truck drivers were strictly ‘econs,’ rational economic decision makers who were concerned only with the economics of their jobs, not other things. The work of Miller et al. (2020b) suggests that such independent increases in wages also increase the rate of turnover because it makes it easier for drivers to find better jobs within the industry.

The Truck Driver Labor Market

There was no perceived or real shortage of long-haul truck drivers until after deregulation in 1980 (Taylor and LeMay, 1988; LeMay and Keller, 2018). High levels of unionization protected the industry from shortages but also raised labor costs. These conditions were fostered by government policies, especially regulatory regimes (Hamilton, 2008). Since then, truck driver turnover has been high, reaching 110% and more for large firms in 2000, and seldom falling below 50% in the last few decades.

Many have maintained that there is no shortage of truck drivers despite high turnover. Burks and Monaco (2018, 2019) found that the truck driver market acts like a normal labor market in recent research but acknowledged that the data would not allow long-haul drivers to be sorted out from other
drivers. Consequently, these results fail to contradict the regular reports of high turnover from the American Trucking Associations and others.

Transportation firms compete not only with one another, but also with firms from other industries, for the resources to operate and to serve their customers (Schweiterman & Miller, 2016). This applies to infrastructure, vehicles and other equipment, and more (Ellram, et al, 2013), but it especially applies to human resources. Transportation firms often incorrectly perceive that their competition for human resources comes exclusively from within their sales market. This is precisely what happens when trucking firms consider only other trucking firms as competitors for truck drivers. This is a perfect example of both factor market myopia (FMM) and factor market rivalry (FMR) (Ralston, et al., 2017).

The market is also shifting in terms of employer size. Since 2012, smaller trucking firms have hired new drivers at twice the rate of larger firms, with firms that operate 1-6 trucks hiring 70% more drivers, while firms with more than 500 trucks hired only 20% more (Cassidy, 2019).

The control of resources and access to them will continue to challenge transportation and logistics firms and operations (Ralston et al., 2017). The market structure for hiring employees is often monopsonistic competition, a structure with many slightly differentiated buyers—employers in this market—seeking similar resources—employees with CDLs. That is, in the minds of long-haul drivers, working for one trucking firm may differ little from working for another trucking firm. Consequently, firms may overlook small things that affect driver retention and competitive advantage in the driver labor market (Taylor & LeMay, 1988).

Burks and Monaco (2018, 2019) found that the truck driver market overall is not ‘broken,’ but they acknowledged that the data they used, which came from the Occupational Employment Statistics of the Bureau of Labor Statistics and the Current Populations Survey, would not allow them to sort out the specifics related to TL or over-the-road long-haul drivers. They called for a separate analysis of this segment of the factor market because the overall market for truck drivers behaves in a predictable way when faced with changes in wages and working conditions. Meanwhile, the American Trucking Association continues to publish data on the shortage of long-haul drivers (Schultz, 2020).

One element that affects this market is straightforward: there is no sense of career in the job market. A driver with 20 years of experience still drives the same truck model as the driver with one year of experience and serves the same customer base. A trucking firm with average turnover will likely hire without hesitation, but the job will change little. A few companies have attempted to create the appearance of career ladders, but this does not seem to reduce turnover.

The level of potential rivalry for drivers clearly shows the sheer number of firms in the industry. According to the Bureau of Transportation Statistics, there were 569,467 interstate motor carriers in the US and 928,647 in total for hire carriers, along with another 799,342 private carriers (BTS, 2020). Most (91.3%) had six or fewer trucks, and 97.4% had fewer than 20 trucks (ATA, 2021). Of course, these firms compete with one another for drivers, but firms in other industries would also hire many of those drivers to do other jobs.

PROPOSITIONS

This analysis leads us to several propositions about the relationship between the concepts of FMR, FMM, LMM, SBS, and the truck driver labor market. We use some of the key conditions in the truck driver labor market to develop our propositions.

Proposition 1: FMR in the Trucking Industry Includes Many Firms from Outside the Industry
Two major types of turnover have long been recognized in the trucking industry: 1) job switching
or turnover within the industry, and b) job change or turnover outside the industry (LeMay and Taylor, 1988; LeMay et al., 1993). Miller et al. (2020) found that a single firm raising wages increased turnover within the industry, but many drivers also turnover outside the industry. By turnover outside the industry, we mean truck drivers leave the trucking industry to take jobs in other industries. A common and current example would be a truck driver leaving the industry to take a job in construction. Trade publications aimed at truck drivers offer detailed explanations for why there is at least a perceived shortage and why drivers leave the company. Most of them lay out the reasons drivers leave the industry: poor pay for the number of hours worked because pay is by the mile, not by the hour, restricted driving hours, too much unpaid work, time away from home, poor working conditions, and trucking firms that skim wages (Macmillian, 2020).

These circumstances open the industry to significant outside competition for qualified people. This simply intensified the factor market rivalry (FMR) level.

**PROPOSITION 2: FMM and LMM May Exist Outside FMR**

A firm may suffer from the effects of factor market myopia (FMM) or labor market myopia (LMM), even if no rivals are to be found. These are conditions in a firm, notably characteristics of top management team’s (TMT), so a firm may ignore potential truck drivers or lose them even when there is no competition for their services. This may mean hiring more people with limited qualifications. If cognitive biases exclude women, minorities, or others for reasons that have nothing to do with driving skills and abilities, then the firm is probably suffering to some degree from the effects of FMM, more specifically LMM.

**PROPOSITION 3: For Trucking Firms, LMM Can Aggravate a Key SBS**

Strategic blind spots (SBS) reduce a firm’s ability to compete in the marketplace. This can be especially true when the labor market is defined too narrowly, as in labor market myopia (LMM) situations. In such situations, using a narrowly defined labor market leads to an incorrect perception of the competitive environment (Danneels, 2003). This predisposition to narrowly define the labor market (i.e., other trucking companies) may be due to stagnation or inertia (Rolston et al., 2017). Thus, for whatever reason a firm limits its options to dealing with labor issues, the resulting tunnel vision can aggravate an existing blind spot. One example is how many trucking companies hire their drivers locally? Why do they not branch out to other regions and states? Excuses may be that a firm is not set up for payroll in other states, or we do not have the resources to engage in a national recruitment campaign. The root cause is stagnation or cognitive inertia (Huff, 1997).

One way of overcoming this myopia in labor markets is to simply ask “why that is” three times (Zook, 2015). Going back to our previous example, when one says we cannot recruit from out of state, ask “why.” The response may be, “we are not setup for payroll in that state” Ask why again and you may hear “because nobody ever asked me to do it.” The conversation may continue to a resolution that points out that “doing things the way they have always been done” may be the actual issue for the labor problems the firm is facing. Thus, avoidance of LMM can help reduce the negative effects of SBS.

**PROPOSITION 4: Different Forms of FMM May Have Multiplier Effects**

In other words, the negative effects are worse combined than the sum of the negative effects on each trucking company individually. FMM may take several forms. These may include the labor market myopias discussed so far in this article, as well as others relating to topics such as capital markets and marketing. Capital market myopia relates to overemphasis on the short term at the expense of long-term thinking concerning stocks and other investments (Stein, 1989; Bhojraj et al., 2009). Such thinking can lead to what is called “short-termism” or an overemphasis on the short-term as compared to the long-term regarding strategy and investment related to capital (Bharath et al., 2010). The concept of marketing myopia
dates to the 1960s, when Levitt (1960) discussed the term regarding businesses defining their business narrowly. That is, they defined their business based on their product offerings instead of based on customer needs. Since then, the concept of marketing myopia has grown to include defining one’s customer too narrowly (Smith et al., 2010).

By looking at just these three types of myopia (labor, capital, and market), one can demonstrate how the negative effects of narrowly defining multiple firm resources can spill over to one another in a negative way. If one takes a short-term approach to obtaining capital, it may result in an inability to cover the firm’s cash flow requirements. Such issues are quite common in the trucking industry, with firms resorting to factoring their receivables to cover short-term cash flow needs such as payroll. This exacerbates the negative effects of labor myopia. Defining one’s customers too narrowly (market myopia) could also affect labor myopia. If a trucking company views their customer market too narrowly (i.e., long haul only), it will result in increased labor market myopia (LMM). That is, by focusing only on long-haul drivers, the firm is only tapping labor in one area. If the firm were to engage in a mix of long-haul and short-haul, it would allow them to attract a larger pool of potential drivers (labor). Further, in this example, short-haul drivers would be able to fill in as long-haul drivers occasionally, thus decreasing LMM. Therefore, the opportunity costs of forgoing short-haul customers enhance the negative effects of marketing myopia. Thus, if one form of myopia exists in an organization, it can lead to a vicious cycle that creates a myopia mindset that infects the entire firm, resulting in negative synergistic effects from multiple myopias.

**PROPOSITION 5: The Negative Effects of FMR, LMM, and SBS Are More Pronounced When Combined Than When Alone**

That is to say, the negative effects are more multiplicative than additive. Factor market rivalry (FMR), labor market myopia (LMM), and strategic blind spots (SBS) form what could be termed the “Dark Triad” of resource acquisition and development. Similar to the dark triad (O’Boyle et al., 2013) in organizational behavior research. When simultaneously present within a firm’s strategic thinking, these three constructs can combine to severely restrict the ability of a firm to obtain the necessary inputs to compete in the marketplace.

Factor market rivalry (FMR) leads to restricted input due to competition with competitors (Markman et al., 2009). This, sometimes fierce competition for resources may pose problems, but alone, these issues are not insurmountable. When competition for resources is fierce and a firm’s top management team does not consider the decisions of other firms (SBS), a difficult situation (high FMR) worsens. For instance, the jewelry industry is highly competitive, and most firms are only profitable three or four months per year (due to major gifting holidays such as Christmas and Valentine’s Day). This situation leads to inertia in the industry that “this is just how things are and will always be.” Then, some firms began to purchase used gold, a novel idea in the industry. First, the cognitive bias of many firms prevented them from making or following this move. In their minds, or at least the minds of their top management teams, buying people’s “old gold” is something that only pawn shops do and would never consider the option, because it is perceived as bad branding. The stores that looked past this cognitive bias and inertia and began purchasing used gold year around. This innovative thinking allowed them to be profitable for more months of the year, when compared to myopic thinking firms, thus giving them an advantage.

To illustrate the issue of the compounding effects of strategic blind spots (SBS) and myopias, imagine a situation in which a firm operates in a highly competitive market and suffers from an SBS mentality in their top management team. Now, we combine this with a narrow view of their potential labor market. This situation is an example of a dark triad spoken of earlier. Labor markets are so sensitive that even one firm’s actions can increase turnover for the entire industry (Miller et al., 2020). Thus, missing a small thing, such as the actions of a single firm, can adversely impact driver retention.
(Taylor & Lemay, 1988). Now, extend this line of thinking to consider the possibility that the action from one firm outside the industry could also have such an impact across a broad range of resources. To overcome such mistakes, firms must view the labor market (and other markets) broadly or suffer consequences. In sum, the negative effects of FMR, FMM, and LMM are manageable independently, but when all three exist simultaneously, they form an almost insurmountable disadvantage for a firm to overcome.

**FURTHER RESEARCH**

In the future, research should empirically investigate the effects of factor market rivalry (FMR), factor market myopia (FMM), and strategic blind spots (SBS), measuring the effects of each construct independently and in combination. Multiple combinations should be analyzed to determine whether the effects of various combinations of any two are worse than others (i.e., FMM and FMR vs. FMM and LMM).

A second area of future research could investigate the role perceptions play in this process (see Chen, 1996; Schweiterman & Miller, 2016; Ralston et al., 2017). That is, understanding how one perceives their environment (Weick, 1993; Weick et al., 2005) plays a role in SBS. Specifically, knowing one’s biases or perceiving that one may not understand the thinking of competitors reduces a firm’s susceptibility to SBS and LMM.

**CONCLUSIONS AND MANAGERIAL IMPLICATIONS**

There is little debate that companies and managers, over time, may face the challenges of marketplace rivalries, be limited by myopic corporate visions, and from time to time experience the outcomes of unforeseen business environment blind spots. Describing, defining, and otherwise identifying the boundaries associated with these business phenomena may help managers limit the impact that each may inflict on a company’s competitive capabilities. Competitors that remain myopic and fail to recognize strategic blind spots will be substantially weakened in a factor market.

No business environment is more prominent at this time than the labor market for commercial motor carrier drivers and, more specifically, the over-the-road long-haul driver segment. Since the 1980s, trucking has experienced economic cycles, generating vicious factor market rivalry for scarce resources of drivers. It is well understood that there is a churning of drivers. Drivers often move from one company to another company that provides the same pay and working conditions. This transfer of drivers between rivals fails to add labor capacity to the industry as a whole. To alleviate driver capacity issues, companies have traditionally initiated plans to reduce the number of days away from home for drivers and improve driving conditions by placing tractors on 3-to 5-year lease programs to keep newer tractors rotating into the fleet, and increasing driver pay. Again, while these efforts may help to retain drivers, they may not adequately increase the population of new drivers in the industry.
when it comes to identifying potential drivers and focus on the traditional segments consisting of male drivers that a company may attract from construction or factory jobs. Labor market myopia describes tunnel vision. It may be that this myopia may limit the capability of a firm to compete and, thereby, escalate the development of competitive blind spots.

Clearly, the motor carrier industry often struggles with driver resources. Researchers have worked together with managers to help identify solutions to such factor market rivalry in an industry that has struggled with the situation for more than 40 years. Perhaps, our propositions pertaining to the combined effects of labor market myopia and strategic blind spots within factor markets will help researchers and managers achieve the next major step in understanding how to obtain drivers to transport an ever-increasing demand for materials and products.

We see several points in this research that affect managers directly. First, managers in trucking companies should work to see the labor market from the perspectives of other industries. Construction serves as a good example. Most truck drivers either have construction skills or can get those skills, so it may be easy for a driver to quit the trucking company and take up a hammer or a saw. Drivers can also switch to other logistics jobs like warehouse worker, fork truck driver, and so on. Trucking managers who fail to do this will continue to overlook or misperceive the nature of competition for key resources. Second, truck driver labor markets tend to be local. That means that hiring managers in each location must be trained to examine the situation in local markets. If the labor markets are local, so are the problems associated with labor market myopia and factor market rivalry. Third, if trucking managers suffer from one form of myopia, the chances are great that they suffer from another. If they fail to recognize rivals from one sector, then they are likely to overlook rivals from another. Fourth, market myopia goes both forward and backward. Transportation firms served as classic bad examples in the original work on market myopia. Transportation managers need to make themselves aware of the problems that labor market myopia can create for them in the local markets where they compete for key resources.

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BIOGRAPHIES

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SCHEDULING AND DELIVERY LOGISTICS OF BIO-PERISHABLE GOODS: A REVIEW OF LITERATURE AND RESEARCH OPTIONS

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ABSTRACT

Logistics scheduling, specifically that of order and delivery schedules, is an essential part of a firm and the supply chain. The objective of this paper was to identify any gaps in academic and professional literature regarding the logistics scheduling of perishable biopharmaceuticals. A literature review of the logistics scheduling of general products, perishable medical supplies, and flu vaccines was conducted in order to verify any potential gaps in the literature. The approach used to study this issue was based on the grounded theory concept of qualitative research, and by then focusing on an extensive review of scheduling, ordering, and delivery in these industries. A gap in the literature was identified. The identification of this gap in academic and professional literature regarding logistics of perishable biopharmaceuticals provides a contribution to the body of knowledge. Suggested future research is identified. Finally, research propositions are included to begin to address the research gaps.

INTRODUCTION

Logistics scheduling is an essential part of a firm and the supply chain. How and when a product is ordered and the delivery schedule involved is a determining factor in a company’s success and in obtaining a competitive advantage. Learning about logistics scheduling and the importance it has on a company and supply chain is critical in attaining that competitive advantage in an industry. Logistics scheduling of material is constantly reviewed and evaluated and is increasing at a high rate as supply chains expand. Supply chain managers are faced with the issue of how and when to schedule the delivery of products, especially those that are perishable.

Currently, there is a problem in logistics scheduling as it relates to perishable biopharmaceuticals. The objective of this paper is to demonstrate the gap in academic literature regarding logistics scheduling of perishable medical supplies based upon issues with order and delivery schedules in medical and administering facilities. While the assumptions are valid for a wide range of perishable pharmaceuticals, the paper will concentrate on flu vaccinations. The logistics scheduling of flu vaccinations is used as an example to emphasize the disconnect presented in supply chains and the effect it has on facilities and the customer population. As seen in the literature review, multiple mathematical models have been created to simulate and address scheduling challenges with transportation, personnel, and machinery in general. However, there is little research that has been conducted concerning the logistics scheduling of orders and delivery of perishable materials in the medical field.

Little is known about logistics scheduling of flu vaccinations as it pertains to ordering and delivery of perishable biopharmaceuticals to the medical or administering facilities of pharmacies regardless of whether they are stand alone or located within other retail locations such as big box retailers. Other fields of logistics scheduling have been well researched with multiple theoretical frameworks and mathematical models being developed to help analyze information to promote a firm, industry, or supply chain. However, there appears to be a gap in the information regarding the logistics scheduling of perishable medical supply order and delivery process. The lack of medical industry specific
models and approaches affects medical and administering firms and supply chains across industries all over the world, as well as the populations exposed to various viruses like influenza (i.e., the flu). Clearly, the time sensitive nature of these types of products validates the need to do further examination beyond the generic logistics scheduling and delivery models.

As background, the Centers for Disease Control and Prevention (CDC) lists influenza as a contagious respiratory virus that affects the nose, throat, and chest. The flu can cause mild illness or even lead to death, and this unpredictable virus can range in severity each season. Greater risk groups for contracting the flu are children, elderly people, women who are pregnant, individuals with chronic health conditions, and those living in enclosed facilities, such as nursing homes with 5-20% of the U.S. population getting the flu each year (Flu.gov, 2013). Flu season generally lasts from December to March but can start as early as October and last till May. Between 1976 and 2006, flu-related deaths in the United States ranged from 3,000 to 49,000 each year (CDC, 2013). Because there is little time between the identification of the proper vaccine strain mix and the production of the vaccine, and the beginning of the flu season, it is critical that the logistics system be able to deliver vaccine to many vaccination points in a timely and reliable fashion.

Following this introduction, the article is slightly different than a traditional research paper. The next section of this article is a brief methodology used to identify, examine, and analyze academic articles regarding logistics scheduling using a grounded theory concept of qualitative research. The results of the search are then provided as the basis of the literature review, which is further broken down into sub-categories including logistics, logistics scheduling, and logistics modeling for an overall view of logistic scheduling concepts. Each of those sections are immediately followed by the problems faced in each category. The article then focuses on healthcare logistics scheduling of perishable medical supplies and more specifically the logistics scheduling of the flu vaccination. Afterwards, this article presents the results from the research and describes the relationships found through the literature review and emphasizes the gap in academic literature regarding healthcare logistics scheduling, with an example of flu vaccinations. Next, the article provides a summary of the literature review along with limitations that were found. Finally, the article addresses future research topics and approaches, and then provides conclusions.

**METHODOLOGY**

The purpose of this article is to identify issues with logistics scheduling of perishable medical supplies, with an example of flu vaccinations as it pertains to product ordering and delivery. The approach is based on the grounded theory concept of qualitative research presented by Glaser and Strauss (1967). By focusing on an extensive literature review of scheduling, ordering, and delivery, research gaps in the literature were found. For the first half of this literature review, top business journals were the primary focus for this study with the mathematical models for logistics scheduling being mainly from the operations management field. Keywords and phrases of logistics, logistics management, supply chain management, ordering schedule, delivery, logistics ordering, logistics scheduling, and logistics delivery were the main concentration for the search of academic articles to collect an extensive body of knowledge for the topic of logistics scheduling. For the latter half of this literature review, the terms healthcare, medical supply, perishable products, biohazard, vaccination, and influenza were added to the key phrases. Top business journals were once again targeted, followed by an overall sweeping search of all journals, resulting in an emphasis in medical journals. Table 1 shows a summary of the relevant articles reviewed.

**LITERATURE REVIEW**

**Part I: Logistics Scheduling Overview**

Logistics Opportunities and Issues to gain Competitive Advantage

management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements.” Logistics goals and objectives differ among various strategies and business orientations within the supply chain (Stank, Davis, and Fugate, 2005; Richey, Genchev, and Daughtery, 2005). Logistics is a key factor in developing competitive advantages for businesses and supply chains. (Bowersox, Mentzer, and Speh, 1995; Mentzer, and Kahn, 1995; Novack, Rinehart, and Langley, 1994). Logistics has been defined as including transportation network design, warehouse location and design, materials handling, system inventory management, order management and fulfillment,
procurement, and customer service and spans the entire supply chain (Mentzer, Stank, and Esper, 2008; Kent and Flint, 1997; Lynch, Keller, and Ozment, 2000; Langley, 1986; Langley and Holcomb, 1992; Mentzer et al., 2001). These disciplines are integrated and depicted in Figure 1.

Various methodologies and concepts of logistics have been designed to improve customer service and increase profit while decreasing total costs (Leuthesser and Kohli, 1995; Wolfe, 1990). Logistics capabilities are not only linked to strategy but are also affected by market conditions and competition (Lynch et al., 2000; Van Damme and Ploos Van Amstel, 1996), and the strategic use of these capabilities and competencies can lead to competitive advantage (Esper, Fugate, and Davis-Sramek, 2007; Morash, Droge, and Vickery, 1996; Zhao, Droge, and Stank, 2001). In logistics, multiple components are considered in the decision process to increase conceptual integration (Novack, Rinehart, and Wells, 1992). Supply chain management is becoming more strategic and through the implementation of visibility and aligning the processes and products within the supply chain, is improving its competitive advantage (Bartlett, Julien, and Baines, 2007; Stavrulaki and Davis, 2010).

However, logistics is not a perfect science and has endured a lot of scrutiny and difficulties in being properly designed within a supply chain. Through the faces of innovation in technology, changes faced with deregulation, and even the concept of supply chain itself, logistics has encountered multiple challenges throughout time (Rutner, Aviles, and Cox, 2012). Firms constantly face obstacles to move a product with reliability and predictability to maintain plant operation and supply to its retailers. Innovations in logistics have impacted the business practices for moving products around the world (Grawe, 2009; Grawe, Chen, and Daugherty, 2009).

As can be seen in Figure 1, there is a significant amount of interaction that occurs within logistics to perform even the most basic tasks. Multiple disciplines are constantly interacting with each other across businesses and supply chains. As supply chains expand, whether with additional players within an existing supply chain or across the globe with new partners, the challenges faced by logistics professionals continue to increase. Perceived expectations and performance evaluations are constantly monitored by customers as a measure of satisfaction (Churchill and Surprenant, 1982). Any changes or challenges across the area of logistics identified in Figure 1 can disrupt the entire flow of the logistics platform. This in turn can affect the firm and supply chain from the single delivery to the strategic level.

The concept of sustained competitive advantage is a factor that is analyzed across firms and supply chains. The factors of value, rareness, imitability, and substitutability have been discussed as the potential indicators of competitive advantage (Barney, 1991). Once these factors are analyzed across the multiple disciplines of logistics, the issues faced by the firm or supply chain are constantly reviewed for the best strategy that can be placed into practice to minimize costs and increase customer satisfaction across the board. Many companies choose to outsource in order to tackle logistical obstacles in hopes of reducing costs but face additional challenges of perceptions, timeliness, strategic orientation, and the release of power and control to another entity (Bolumole, 2001). Given the challenges of a dynamic business environment described in the literature, firms’ logistics operations and processes are constantly evolving and expanding as firms and supply chains continue to grow.

Current Logistics Scheduling Literature
Qi (2005) refers to logistics scheduling as providing a single framework to job scheduling and transportation. The relevant literature review shows that a large portion of academic articles are based on either transportation scheduling or the scheduling of people or machines. Transportation scheduling has been examined through the use of structural equation modeling to improve delivery schedules in order to provide a source of competitive advantage to the supply chain (Tracey, 2004). A case study completed at Scottish & Newcastle PLC, a UK brewing company, implemented scheduling software.
to apply to vehicle routing scenarios (Eibl, Mackenzie, and Kidner, 1994). Labor scheduling in supermarkets has been analyzed to determine the number of front-end cashiers required as customer volume fluctuates (Melachrinoudis and Olafsson, 1995). Convergent logistics carriers who receive a premium are more inclined to satisfy supply chain participants to reach mutually beneficial goals; in other words, the premium allowed carriers to be more flexible in scheduling options (Wagner and Frankel, 2000). Value-ordering strategies have been developed to address the discrepancies in the generative schedule and current status of a factory by analyzing the reactive scheduling process, such as machine breakdowns, delayed deliveries of materials, and not meeting expectations of quality control and/or customer satisfaction within the factory (Suh et al., 1998). These representative articles highlight the cross section of research that focus upon the scheduling aspect of logistics. By broadening the search to include supply chain articles, similar results of scheduling research were identified. First, Morash and Clinton (1997) conducted a comparison of supply chain structures and global integrative practices as firms and supply chains continue to expand around the world. Scheduling of product order and delivery is constantly under review as supply chains coordinate cross-functional activities across the practices of other firms, suppliers, customers, and entire supply chains. The research highlighted that both internal and external factors must be reviewed and highly involved to allow logistics scheduling to work properly with the right strategy to take place and be successful.

Logistics management is often used to describe the scheduling of the logistics processes. Balancing customer service, inventory, variance, total costs, and quality control by involving scheduled distribution has been analyzed using the computer-based system Materials Logistics Management Program to obtain a competitive advantage throughout the supply network (Bowersox, Carter, and Monczka, 1993). Holweg (2005) describes the problems that occur through logistics scheduling and the constraints felt by suppliers between the raw material supply base and automotive manufacturers. However, scheduling involves various factors and changes frequently based on the company, product, and supply chain. How scheduling is designed is based on the type of supply chain that is implemented and the product or service provided (Esper et al., 2007; Grawe et al., 2009; Lynch et al., 2000; Mentzer et al., 2008).

The scheduling challenges have been reviewed across a spectrum from simple check methods to integrated mathematical models. On the low complexity end, the balanced scorecard provides a more simplified method in measuring performance across the supply chain and can be funneled to specific areas of the supply chain or within the firm (Barber, 2008). More complex solutions include logistics scheduling analysis to minimize job delivery time and total transportation cost to guarantee performance through algorithm modeling (Chen and Lee, 2008). A heuristic using logistic growth and substitution finds minimal cost of delivery schedules for short life cycle products by modeling growth, saturation, and decline (Chou, Chang, and Yang, 2001). Finally, physical distribution quality, with scheduling as a key component, plays a pivotal role in customer perceptions of service, and valid and reliable models have been developed to measure this perception of service (Bienstock, Mentzer, and Bird, 1997; Mentzer, Gomes, and Krapfel, 1989).

However, the models that have been developed do not analyze the actual scheduling problem focusing on the product’s order and delivery process. Most focus on the scheduling of transportation, people, and/or machines. While these topics are incredibly important to firms and supply chains, there is a large disconnect in the actual logistics order and delivery process in relation to schedule. When this concept is applied to time-sensitive or perishable products, the need for evaluating ordering and delivery schedule as a significant portion of the logistics process comes into effect.

Part II: Perishable Logistics Scheduling Overview
Perishable Logistics
Nahmias (1982) defines perishable goods as those that “Undergo change in storage so that in time they
may become partially or entirely unfit for consumption.” Perishable products are abundant in the grocery industry and create a unique situation for how a supply chain needs to be designed in order to properly schedule and deliver these products in the best form and in a timely manner to improve customer satisfaction. Focusing on the customer or customer service provided when managing emergency supply chains has shown to be a significant indicator for overall satisfaction (Oloruntoba and Gray, 2009). Also, lead times are of high importance when assessing the potential delays in materials when changes in time-distance or temperature is introduced (Bogataj, Bogataj, and Vodopivec, 2005). Advanced inventory dispatch policies and collaborative replenishment have been studied in discrete event simulations to assess the perishable goods environment supply chain. They determined the use of these advanced inventory distribution policies (i.e., models) improved perishable good supply (Thron, Nagy, and Wassan, 2007). In the food industry, the impact of poor scheduling is often offset with a high willingness to substitute when perishable items are out of stock (Van Woensel et al., 2007). Heuristic assessments show that implementing FIFO policies for perishable products minimizes the number of expired items by 40% as compared to random allocation approaches (Huq et al., 2005). Due to high demand uncertainty and an inflexible production environment, such as in the poultry supply chain, implementing a “leagile” (lean and agile) supply chain is not the most feasible (Van Der Vorst, Van Dijk, and Beulens, 2001).

Another related time sensitive area is seasonal items. Seasonal demand products have received a great deal of research attention due to their unique scheduling challenges. Products such as Christmas items, winter clothing, flowers or any perishable item with a shelf life have been addressed with multiple mathematical models to address these seasonal demand inventory management problems (Gupta, Sundararaghavan, and Ahmed, 2003). Multiple studies examined seasonal sales patterns resulting in the “Seasonal Forecast Delta Model” to maximize profit while determining the optimal sales quantities required during seasonal retail times (Gupta et al., 2003; Groebner and Merz, 1990).

Like all products, perishable items face the need for shortened lead times, order quantity, and selling price. Shortening lead times has been shown to reduce work in progress and inventory as well as to improve responsiveness and flexibility in logistics (Persson, 1991). Heuristic modeling allows for determining the ordering schedule of deteriorating products and variable demand by allowing for changes in order size and replenishment cycles (Bahari-Kashani, 1989). Selling price plays a significant role in determining the replenishment schedule for deteriorating products with time-dependent rates (Dye, 2007). Ordering schedules for large or box-store type retailers, such as Wal-Mart are based on dynamic pricing and market forecast to maximize profit (Pan et al., 2009). Each of these demonstrate the importance of scheduling in time-sensitive supply chains. However, many are not specific to perishable items and others focus on simple substitution strategies as a solution to scheduling shortcomings.

Perishable Healthcare Logistics
Logistics in the healthcare field affects every part of the world, whether through highly organized facilities with state-of-the-are technology or in small, third-world clinics employing limited services. Innovations in buyer-supplier relationships provides an alternative to outsourcing for logistics activities and actually improve the relationship among suppliers and hospitals (Su, Gammelgaard, and Yang, 2011). Also, healthcare delivery supply chains have experienced improvement through the implementation of cellular operations in material supplies and admission processes (Parnaby and Towill, 2009). Finally, multiple perspectives of pharmaceutical supply chains show constant shifts in how biopharmaceutical medications are purchased, distributed, and sold throughout the supply chain (Rossetti, Handfield, and Dooley, 2011).

Scheduling of Perishable Medical Supplies Logistics
In the medical field, perishable items include, but are not limited to items such as blood, organs, and vaccinations, where products have to be properly stored and often have a very limited shelf life.
Furthermore, these items rarely can be substituted in cases of scheduling errors or other stockout situations. Another unique nature of these types of items is biosafety concerns when handling these materials and needs to be addressed within companies and across the supply chain for safe delivery and handling (CDC, 2013). Blood ordering strategies is one area of the scheduling problem where extensive literature exists. In the medical field from transfusion to surgeries, several models have been developed to prevent over-ordering (Gupta, Kumar, and Diwan, 2003; Vibhute, Kamath, and Shetty, 2003) and to promote proper protocol for procurement (Morritt et al., 2005; Palmer et al., 2003; Bashawri, 2002). While the CDC maintains responsibility for the surveillance, detection, and warning of any potential risks regarding the public blood supply, multiple supply chains are involved in the scheduling, ordering, and delivery of these products to facilities with the highest quality possible. Purchasing perishable goods in anticipation of customer demand has been found to be a better practice than investment buying in portions of the perishable, medical supply chain (Sandelands, 1994). The Immunization Safety Office (ISO) collaborates with the federal, state, and local health agencies to administer and plan for emergency situations regarding vaccination information (CDC, 2013). Genuine partnerships of shared information with knowledge of operations and motivations can overcome conflict and allow for quick response of perishable items (Whiteoak, 1994; Hartmann and De Grahl, 2012). However, while the theory provides possible solutions to the challenges, in practice there remains a disconnect in the logistics scheduling of perishable biopharmaceuticals and needed service levels.

A severe problem presented in the healthcare field is the scheduling of perishable biopharmaceuticals. Often facilities store a small amount of medicine, such as vaccinations, blood pressure medicine, insulin, and cholesterol medicine for disbursing among patients for a short time. Usually an estimated five-day supply is kept within the building walls for normal daily use (CDC, 2013). When any type of crisis occurs that can disrupt the supply chain or dramatically impact demand, the small supply of products is quickly depleted, and a lag time between ordering, delivering, and ultimately administering these products to patients occurs causing a disruption in the supply network management (Tatham and Pettit, 2010). A shortage in supply due to any type of supply chain disruptions has been seen to cause problems within the healthcare field with severe consequences to the medical facility and to the patient (Richey, Kovacs, and Spens, 2009; Hale and Moberg, 2005). Therefore, the specific policies and procedures in the healthcare industry further hinder just-in-time systems of healthcare logistics systems and ultimately impede product quantity and service in the industry (Jarrett, 1998).

The technology of time temperature integrators (TTI) has been used to improve the process. For example, the Defense Logistics Agency includes TTIs with every shipment of the flu vaccine as they move across the globe. The goal is to ensure the safety and quality of temperature sensitive products but can vary greatly depending on the product used (Sahin et al., 2007). Another related consideration is the amount and type of storage space, as these factors have an impact on both routing and inventory decisions involving perishable biopharmaceutical products (Stacey, Natarajarathinam, and Sox, 2007). Next, deterioration of perishable goods is a key parameter in the quantity ordered as well as the preservation methods or storage areas utilized (Verbic, 2006). Large supermarkets have implemented automated store ordering (ASO) systems to improve the efficiency and quality of the perishable line items held in inventory, inventory replenishment, and to reduce the amount of deteriorated items, excess inventory, and lower inventory holding costs (Van Donselaar et al., 2006). Finally, Yan and Wang (2013) built on the large retailer results and developed a continuous inventory model to allow retailers of seasonal perishable goods over a finite period of time to maximize expected profit through optimal ordering quantities and pricing.

The overall results of the literature search indicate that multiple models and frameworks have been
developed and evaluated regarding perishable products. However, none capture the issue faced in the medical field of not only perishable biopharmaceuticals but also that of limited and seasonal supply with fluctuating demand and constantly changing products and factors that affect the production of those products. The following section further develops this problem using flu vaccinations as the primary example. However, it should be noted, that this challenge can be applied to other types of vaccines and perishable products. For example, an unscheduled deployment of a large number of soldiers to an area requiring vaccinations or emergency movement of first responders to a hurricane event in certain foreign countries.

Example: Flu Vaccination Scheduling
The following example provides greater insight into the situation faced with the disconnect in the logistics scheduling of order and delivery of bioperishable materials in the medical field and across the supply chains involved. To emphasize the gap in literature regarding this matter, the example of flu vaccinations has been used to bring better understanding and knowledge to a situation that affects a large number of people and continues to spread throughout the world (CDC, 2013).

Vaccinations are a specialized area of healthcare that needs to be planned properly in order to provide appropriate care to the total population. This includes the subgroups of children’s vaccinations, vaccinations needed for adults as they are exposed to various diseases, and as depicted in this paper, flu vaccinations that affect everyone. During the 2012-2013 flu season, 54.9% of children and 35.1% of adults were vaccinated in the United States, and there were approximately 200,000 people hospitalized for the flu and approximately 36,000 deaths (CDC, 2013). Chick, Mamani, and Simchi-Levi (2008) show that a cost-sharing contract between buyers at the government level and vaccine manufacturers provides incentives to improve optimization within the supply chain and thus the supply of flu vaccinations. Optimizing supply can reduce the number of affected individuals from this virus.

The scheduling of orders and deliveries of flu vaccinations is an annual problem that must take multiple factors into account (Nahmias, 1982). The first is determining the severity of the flu season based on the previous year data. If it was mild, patients are less inclined to get a flu shot and providers are less inclined to order additional medicine. However, if the flu season turns out to be severe, flu vaccinations will be depleted. Although medical providers can order additional flu vaccinations, there are very few companies who make the vaccination after the initial pre-order (CDC, 2013). Also, due to the pre-orders being placed from January to May, these companies only make a certain amount of medicine for that season and deliver the vaccinations beginning in July through November (CDC, 2013). If the flu season is extreme that specific year, these companies will run out of vaccinations if additional, late orders are placed. As an example of the scale of the challenge, during the 2012-2013 flu season, six manufacturers provided approximately 145 million doses of the flu vaccination in the United States (CDC, 2013).

To help answer the previous challenges, three research laboratories study the flu virus: Division of Intramural Research (DIR), Division of Clinical Research (DCR), and Vaccine Research Center (VRC) (NIH, 2013). These organizations also have to identify what modifications will be made to the vaccine each year. The introduction of new flu vaccinations for a varying virus creates bottlenecks in the supply of the vaccination and thus reduces availability to the population (Assi et al., 2012).

According to the CDC, the best way to prevent getting the flu is by getting a flu vaccination. There are two types of flu vaccines – flu shots containing a killed virus and nasal spray flu vaccines contained a live but weakened flu virus – and take approximately two weeks for the body to develop antibodies (CDC, 2013). These vaccinations are designed to protect the individual from the expected three most common strains expected that flu season. The goal is to reduce the overall impact of the flu on the population as a whole each year while helping the individual customer by decreasing his likelihood of becoming ill.
Facilities that provide flu shots are constantly competing with other facilities, such as Wal-Mart, Walgreens, CVS, Kroger, and private practice physicians. Often facilities under-order due to the increased competition and the risk of high cost, leftover vaccinations that have a very short shelf life (Tersine and Toelle, 1984; Toelle and Tersine, 1989). Prior to growth of other facilities being able to order vaccinations (i.e., drug stores, pharmacies, box stores, etc.), private practice facilities would schedule vaccinations with various local businesses, such as Peterbilt, Safety Kleen, etc. to provide vaccinations to the employees. Now in many cases and due to the shift in how and where flu vaccinations are administered, traditional medical providers are cutting their orders from 5,000 vaccinations to 1,000–1,500 vaccinations. Given the competition and cost of deterioration of unused stock, these challenges exacerbate an already difficult situation. Flu shots are only minimally profitable but are an important vaccination that is encouraged every year. Approximately 36,000 people died in one recent year from the flu in the United States (CDC, 2013). The increased challenges of vaccine supply and increased competition of allowing additional facilities to provide flu vaccinations creates a dilemma that may have actually reduced overall health. The questions become: have people receiving flu vaccinations increased? Has the death toll of people from the flu declined? And the big question is while more facilities are offering flu vaccinations, is there actually more supply? If so, then why does the system stockout and why are facilities reducing the amount ordered? While these problems would take much more research to answer, the scheduling of these flu vaccinations is extremely important to determine how and when orders need to occur in order to maximize coverage, optimize supply, and decrease the number of individuals affected by the flu virus.

**RESEARCH QUESTIONS**

The example of the flu vaccine demonstrates the tradeoffs that exists within this supply chain. The assumption would be that additional providers would increase the total number of vaccines administered each year. However, the increased competition coupled with the time sensitive and perishable product create a unique problem. The already tight profit margins are further constrained with increased competition leading to a reduction in order size to mitigate holding costs and risks. Therefore, the question becomes is the current supply chain actually creating a form of destructive competition that ultimately hurts the national and individuals’ health. This leads to the first set of research propositions.

P1: The changing nature of the medical supply chain is increasing the number of outlets for perishable, time sensitive vaccines.

P2: Medical suppliers are carrying less specific vaccines due to carry costs and risks.

P3: The net effect is a reduction in the overall system (national) number of vaccinations due to the changes.

These basic research questions frame the overall examination of the impact of the changing nature of the perishable, time sensitive vaccine supply chain. It is necessary to determine if there is a major issue. Regardless, the literature identified a gap in the research for this type of medical materials. This leads to a second set of research items that should be examined.

P4: All medical providers would benefit from increased forecast model accuracy of bio-perishable materials.

P5: Improved bio-perishable material forecasting would reduce provider costs, increase profitability and increase service levels to customers.

P6: The overall impact of an improved model would be an increase in the overall or national health due to higher fulfillment rates.

**CONCLUSION**

This paper differs from other investigations in the literature in that it identifies exhaustively and qualitatively the gap in academic literature, in logistics scheduling of product ordering and delivery, specifi-
cally with perishable biopharmaceuticals, and gives perspective for the need of quantitative models to assess this gap. The information available shows that scheduling is an extremely important topic in businesses and throughout the supply chain. As businesses continue to grow and the world becomes smaller through the use of communication and information technology, competition continues to rise as competitive advantage is sought. The need for logistics scheduling of products is a necessary step to obtain such goals.

The majority of the literature available that addresses logistics scheduling focuses on transportation, people, and machinery. While this is a very important topic for firms and supply chains, it does not address the specific needs of the logistics schedule pertaining to ordering and delivery of individual products, such as perishable biopharmaceuticals. This paper provides a contribution to the body of knowledge by identifying this gap in academic literature.

This is an initial step in exposing a gap in academic and professional literature and a mere stepping stone in the development of a framework for the logistics scheduling of the order and delivery methods used for perishable medical supplies. While this research did provide an extensive literature review, the scope is limited. Limitations in this research include highlighting the top business journals for information regarding logistics, logistic management, and logistics scheduling and searching the operations management field for the mathematical models that have developed to address scheduling of transportation, people, and machines. An opportunity would be to expand the literature review to medical journals using the same search terms. The literature review is extensive but can be further expanded to develop qualitative and quantitative research to incorporate into a theoretical model that can be utilized to begin filling this gap in literature regarding perishable medical supplies.

The next step to provide a more complete analysis of logistics scheduling in the area of ordering and delivery of flu vaccinations, and additional research needs to be conducted. First, a theoretical frame-work needs to be developed and empirically tested to fill the gap identified in this article. While a single overarching solution to the gap may be unrealistic at this point, a model could focus on a particular product or possibly a supply chain of a specific product or group of products as a starting point. Second, it would be of great interest to focus on a specific industry, such as concentrating on humanitarian organizations where process modeling and optimization are still in the early stages of development (Blicken, 2010). Third, future examination of the relative importance of logistics scheduling would be of great interest to analyze the effects of this topic on a firm and the entire supply chain. The overall impact to the supply chain would be to analyze the effects of logistics scheduling not only on an individual product, such as flu vaccinations, but across the entire supply. This article presents an examination to begin the process addressing various healthcare concerns and logistics scheduling challenges in various situations: a crisis situation, a shortage in supplies, a natural disaster, or the annual challenges of vaccine distribution.

REFERENCES


### BIOGRAPHIES

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This paper explores obstacles to doing business related to the logistics industry in the emerging Russian market, ways of dealing with these obstacles and the role of culture in problem definitions and solutions. The paper is based on the case of a German logistics services provider entering and operating in the Russian market. Data were obtained from interviews of top managers of its Russian subsidiary and analyzed using qualitative research methods. Findings show that the firm treats difficult logistics problems in Russia as business opportunities and applies its traditional strengths reflecting its national and organizational culture to overcome the obstacles and problems. However, the firm must rethink its business strategy and step out of its traditional cultural comfort zone to deal with specific obstacles explained by “high power distance” and other dimensions of the Russian national culture.

INTRODUCTION

This is a case study of one interesting cross-border business venture: a German logistics company entering the Russian market. Russia, with a surface area of 17 million km², is by far the largest country in the world (The World Factbook, 2020), and arguably presents the ultimate challenge in logistics. Harsh Russian winters, particularly in Siberia, serve as a world-wide definition of extreme cold. Critically important also are the logistics infrastructure (ports, roads, warehouses), customs, information systems and the operating environment of business in general. The World Bank takes most of these factors into account to rank 160 nations on a logistics performance index (LPI), a measure of how a country’s logistics is conducive to international trade (The World Bank Group, 2018). Russia is #75, with an LPI of 2.76.

By contrast, Germany (LPI = 4.20) is number 1 (The World Bank Group, 2018). The German Autobahn is a world standard of a good road. Just as German roads, equally known (and admired) are German cars. The automotive industry around the world is widely recognized to be the driver behind logistics development and the leader in logistics innovation. The choice for this case study of a German logistics provider specializing in a wide range of logistics services for the automotive industry provides a rare opportunity to look deeper into a potentially conflicting interaction of the ultimate German precision and sophistication entering its almost extreme opposite in the Russian market.

While the business challenge and potential cultural clash for which this case sets the stage may be intriguing, there is also a pragmatic reason for conducting this study. Russia’s population is 142 million (The World Factbook, 2020). It is a lucrative market for transnational corporations around the world, and one of the least tapped into. Russia, the biggest part of the Soviet Union, remained clad in an iron curtain for seven decades in the 20th century and was largely an enigma for the rest of the world. After the collapse of the Soviet Union in 1991, it went through a tumultuous transition of its social and economic system to something akin to free-market capitalism. The time that passed since then is too short to reveal the country’s true nature and character for foreign firms to be comfortable doing business there. Nor did the international academic community have a good chance at researching it yet. There are few answers in the pre-Soviet period too. Russia had not been
capitalistic or a commercially-oriented country by western standards during the tsarist rule (Tongren, Hecht and Kovach, 1995).

Many companies entered the new market only to learn that their initial ideas and models on how to operate there simply did not work. Only 5% of the American companies in Russia showed a profit in the early stages (Tongren, Hecht and Kovach, 1995). Some companies, such as Walmart, left the market (Schell, 2011). Others, such as Auchan and DHL, are very successful. Many problems of entering the Russian market, logistics-related or otherwise, seem to be on the surface and well-known. Tongren, Hecht and Kovach (1995) speak of “endless problems of permits, raw material shortages, culturally-based worker sloth and transportation problems.”

However, the Russian problems should affect everyone in the same way. Why should some companies, all of them successful in their home markets and largely around the world, be able to operate profitably in Russia, whereas others should fail and withdraw? Some academic research described in more detail in the next section points to cultural differences between the countries as a possible explanation. However, national cultures alone cannot explain such opposite results for Auchan and Carrefour, the two major French retailers. Auchan has been very successful, while Carrefour withdrew from the Russian market after two failed attempts to enter it.

Among success factors, organizational culture and strategy in a foreign market are commonly considered of key importance. Thus, the scope of this research is the role of national culture, organizational culture and the strategy of logistics services providers entering an emerging market.

Specifically, the research questions that guide this study are:

1. What are the various logistics problems that a German logistics services provider has encountered in its Russian market?

2. What strategies are used to overcome these problems?

3. What role does cultural difference assume in both the definitions of and solutions to logistics problems encountered by the company?

The remainder of the paper has the following structure. The next section presents a review of relevant literature and conceptual frameworks used in the study. After that, the study method is explained. Findings reflecting the research questions above follow. The paper concludes with a summary of findings, acknowledgement of limitations, and suggestions for future research.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORKS

There are two areas of empirical literature that are important for this article. One deals with national cultures, the other with studying organizational culture and strategies.

This study relies on the widely accepted definition of national culture by Kluckhohn:

“Culture consists in patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values.” (Kluckhohn, 1951).

Following Kluckhohn’s (1951) definition of culture Dutch social sciences researcher Geert Hofstede added a handy “shorthand” definition as “the collective programming of the mind that distinguishes the members of one group or category of people from another” (Hofstede, 2001). Culture includes values, which are invisible, and manifests itself in symbols, heroes and rituals, collectively called practices. (Hofstede, 2001).
The main contribution of Hofstede’s work was the creation of initially four, later five and then six dimensions of culture: power distance, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity, long-term vs. short-term orientation, and indulgence vs. self-restraint. Any national culture can be compared to others along these dimensions. Since many of the phenomena in this study can be tied to these dimensions and their consequences, the six dimensions as well as their most salient consequences that have a bearing on this study are briefly described further. A comparison of Germany and Russia’s scores on these dimensions is presented in Figure 1.

According to Hofstede (2001), power distance is “the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally.” In his study, Russia ranked very high on the power distance index, whereas Germany’s score is low.

Uncertainty avoidance is “the extent to which a culture programs its members to feel either uncomfortable or comfortable in unstructured situations” (Hofstede, 2001). The two countries do not differ much on this dimension: Germany’s score is high, Russia’s very high.

Individualism (vs. collectivism) refers to “the degree to which individuals are supposed to look after themselves or remain integrated into groups, usually around the family” (Hofstede, 2001). Germany scored high on individualism in Hofstede’s study, Russia’s score he described as low to medium.

Masculinity (vs. femininity) refers to “the distribution of emotional roles between the genders” (Hofstede, 2001). “Tough” masculine societies are opposed to tender “feminine” societies. Germany is high on masculinity, Russia is low.

Long-term orientation (vs. short-term) “refers to the extent to which a culture programs its members to accept delayed gratification of their material, social, and emotional needs” (Hofstede, 2001). Both Germany and Russia score high on this dimension.

FIGURE 1
GERMANY AND RUSSIA’S SCORES ON HOFSTEDE’S CULTURAL DIMENSIONS

Compiled using data from Hofstede Insights (2020).

Notes: PD - power distance; UA - uncertainty avoidance; Indiv. - individualism (vs. collectivism); Masc. - masculinity (vs. femininity); LTO - long-term orientation; Indulg. - indulgence (vs. self-restraint).
Indulgence (vs. restraint) refers to the extent to which people try to control their desires and impulses. Both Germany and Russia score low on this dimension, implying that it is common for people in these cultures to exercise self-restraint.

For each of the dimensions, Hofstede listed “consequences” – associated practices that can be observed, including those related to the workplace. Relatively close scores of Russia and Germany suggest that both societies are likely to display a variety of similar “consequences”. Among the features Russia and Germany share, the most relevant to this study are the following: uncertainty in life is a continuous threat to be fought; need for clarity and structure; higher stress and anxiety; only known risks are taken; inner urge to be busy; conservatism, law and order (opposed to openness to change and innovation); top managers involved in operations; suspicion of foreign managers; fear of failure (opposed to hope of success); strong appeal for technological solutions; belief in specialists and expertise (Hofstede, 2001).

The differences in scores on the other dimensions imply a likelihood of differences in attributes of the two societies. Those most interesting for this study are summarized in Table 1.

In summary, Russia and Germany are positioned on the opposite ends of several cultural dimensions, which may imply a cultural shock for a German company entering the Russian market. Hofstede’s cultural dimensions and consequences showing both similarities and differences between the two countries as described above were used to identify and analyze the observed phenomena. They were considered as a basis for deductive codes for data analysis in this study. The method is described in more detail in the next section of the paper.

The works of two other researchers, Edward T. Hall and Mildred R. Hall, are relevant to this study. In Understanding Cultural Differences (Hall and Hall, 1990), the authors, based on in-depth open-ended interviews, described cultural differences in

| TABLE 1 | SELECT KEY DIFFERENCES IN CULTURAL CONSEQUENCES BETWEEN GERMANY AND RUSSIA |
|---------|---------------------------------|------------------|
| Dimension | Germany                                      | Russia                      |
| Power distance | All should have equal rights        | Power holders are entitled to privileges |
|             | Decentralized decision structures;  | Centralized decision structures; more |
|             | less concentration of authority      | concentration of authority   |
|             | Less corruption                      | More corruption             |
|             | Openness with information            | Information constrained by hierarchy |
| Individualism | High employee commitment to organization | Low employee commitment to organization |
|             | In business, task and company        | In business, personal relationships |
|             | prevail over personal relationships  | prevail over task and company |
|             | Competition stimulated               | Economic monopolies         |
|             | Laws and rights supposed to be the same for all | Laws and rights differ by group according to tradition |
|             | Direct communication style           | Implicit communication style |
| Masculinity  | Preference to earn more             | Preference to work less     |

Adopted from Hofstede (2001).
communications as well as other practical cultural dimensions for several nations, including Germany, but not Russia.

Hall and Hall’s findings relevant for this study are listed below:

- Germany is high on **monochronism**: people prefer to focus on one task at a time.
- Germans look for **consensus in decision making**. It takes longer, but then they stand firm on it. This **persistence** and stubbornness is often the reason for business success.
- Germans are **obsessed with details**.
- “German businesses **plan for the future**, methodically building a solid foundation. They are not preoccupied with immediate results.”
- **Power** is the name of the game in the German business.”
- **Intellectual power** seems to rank the highest in Germany.”
- **Order** is a dominant theme in German culture… None of this drive for order, however, prevents Germans from being **creative.”**
- **Decentralization** and compartmentalization are common for German businesses.
- Germans place high value on **quality** of products and services.
- Germans **follow rules and expect others to do so** (Hall and Hall, 1990).

The words and parts of phrases above boldfaced above were considered as a basis for deductive codes for the data analysis in this study.

To sum up this stream of literature, the national cultures have been well studied. However, due to Russia being closed to the rest of the world until relatively recently, there is definitely a lack of empirical studies on the country. Most recent publications addressed largely to businessmen and offering practical advice on doing business in Russia (Morrison, Conaway and Borden, 1994; Tongren, Hecht and Kovach, 1995; Gesteland, 2005) are not based on empirical studies and do not fill the void.

The second area of literature, research in organizational culture and business strategies, has been so potent that there are whole volumes written with a goal to provide some guidance in this field (Alvesson and Berg, 1992; Askanasy, Wilderom and Peterson, 2000). A brief review below covers only those organizational culture and strategy typologies of firms that were actually used to analyze the data in this study.

J. Steven Ott summarized prior research to provide a broad descriptive definition of organizational culture as follows:

“Organizational culture is the culture that exists in an organization, something akin to a societal culture. It is made up of such things as values, beliefs, assumptions, perceptions, behavioral norms, artifacts, and patterns of behavior. It is a socially constructed, unseen, and unobservable force behind organizational activities. It is a social energy that moves organization members to act. It is a unifying theme that provides meaning, direction, and mobilization for organizational members. It functions as an organizational control mechanism, informally approving or prohibiting behaviors (Ott, 1989).”

According to Ott, organizational culture has three sources, which are also dependent on each other to some degree:

1. The broader societal culture in which it resides.
2. The nature of an organization’s business or business environment.
3. The beliefs, values and basic assumptions held by the founder(s) or other early dominant leader(s) (Ott, 1989).
In “Competitive Strategy” (1980), Michael E. Porter identified three generic strategies of successful businesses: overall cost leadership (cost advantage over competitors); differentiation (higher pricing reflects uniqueness of additional value to the customer); focus strategy (concentrating on a particular segment of the market: geographical, product line, etc.) (Porter, 1980). Later empirical research, such as by Dess and Davis (1984), supported his findings. This typology is used in the paper to compare the studied firm’s operations in Europe and in Russia.

One of the early empirical studies was conducted by Miles, Snow, Meyer, and Coleman (1978). They examined organizational adaptation to environmental change and uncertainty. According to them, each firm has to solve three broad adaptation problems: entrepreneurial (definition of the product/service to sell and the target market/segment), engineering (operational solution) and administrative (rationalizing and stabilizing the business through the process of leadership and control) (Miles et al., 1978). Based on the firm’s strategy to approach these problems, it can be classified as primarily Defender (protecting its turf by becoming efficient in a narrow product and/or market under control of “mechanistic” structure and process based management), Prospector (pursuing new product and market opportunities with flexible technology and facilitation from the management), Analyzer (recognizing differences in products and markets and pursuing and balancing both defender and prospector strategies where appropriate), and Reactor (inconsistent non-proactive response to environmental change and uncertainty resulting in perpetual state of instability) (Miles et al. 1978).

As part of the data analysis, this study attempted to link the studied firm’s strategy in Russia to these well-recognized strategies described above. The method used in this study is presented in more detail next.

**METHODOLOGY**

For situations lacking prior developed research streams, qualitative methods of research are more advantageous than quantitative. As some readers may be unfamiliar with qualitative research methods, a brief overview is provided below.

Qualitative research differs substantially from quantitative. The “purpose of qualitative research is to understand and explain behavior, beliefs, identify processes and understand the context of people’s experiences” (Hennink, Hutter and Bailey, 2011, p.17). Qualitative research does not involve statistical data analysis. Instead, textual data are collected, e.g., through interviews, and analyzed. The nature of the analysis is interpretive: the researcher seeks “to interpret the meanings that participants themselves give to their views and experiences” (Hennink, Hutter and Bailey, 2011, p.17). Without seeking generalization, qualitative methods allow exploring the context and uncovering potential links between phenomena that can further be put to test by quantitative methods in subsequent research (Charmaz, 2006). Table 2 shows key differences between qualitative and quantitative research as summarized in the methodological work of Hennink, Hutter and Bailey (2011).

Qualitative research is not just one fixed method but a “broad umbrella term that covers a wide variety of techniques and philosophies” (Hennink, Hutter and Bailey, 2011, p.8). We followed a typical route identified by Hennink, Hutter and Bailey (2011) for research situations with available conceptual frameworks. The data were collected through in-depth interviews. The transcripts were analyzed for initial codes. In qualitative research codes refer to topics, issues, opinions and ideas discussed by the participants (Hennink, Hutter and Bailey, 2011). We used both deductive codes (those motivated by conceptual frameworks and theories) and inductive codes (issues raised by the participants themselves). The process of further interpretation of the codes resulted in writing of memos and ultimately a theory usually referred to as a grounded theory in qualitative research.

Grounded theory was first proposed by Glaser and Strauss (1967). It does not refer to a “grand,” formal theory, but to a substantive theory addressing specific problems in clearly defined areas (Charmaz,
2006). To illustrate, this study resulted in a grounded theory that describes perceptions of the Russian business environment by a German firm and ways it finds to be successful in that market. The theory is called “grounded” because it is well supported by data, or in other words, grounded in data (Hennink, Hutter and Bailey, 2011). For example, textual data analysis resulted in 240 initial codes and in this paper we use over 20 quotes from the interviews as textual data to support our inferences. The quotes were chosen based on their relevance, brevity and expressiveness.

The lack of research on Russia’s national culture in general and its effect on logistics in particular has already been noted. Industry level statistical data collected by the government are not considered to be public information there. In addition to just recently opening to the world, the profound character and dynamic pace of the country’s changes would make the analysis of macro data difficult, if not impossible. This underscores the importance of qualitative methods traditional for analysis of cultures but rarely applied to the field of logistics.

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>KEY DIFFERENCES BETWEEN QUALITATIVE AND QUANTITATIVE RESEARCH</th>
</tr>
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<tbody>
<tr>
<td><strong>Objective</strong></td>
<td>To gain a detailed understanding of underlying reasons, beliefs, motivations</td>
</tr>
<tr>
<td><strong>Data</strong></td>
<td>Data are words (called textual data)</td>
</tr>
<tr>
<td><strong>Study population</strong></td>
<td>Small number of participants or interviewees, selected purposively (non-randomly)</td>
</tr>
</tbody>
</table>

Referred to as participants or interviewees

<table>
<thead>
<tr>
<th>Data collection methods</th>
<th>In-depth interviews, observation, group discussions</th>
<th>Population surveys, opinion polls, exit interviews</th>
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<tbody>
<tr>
<td><strong>Analysis</strong></td>
<td>Analysis is interpretive</td>
<td>Analysis is statistical</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>To develop an initial understanding, to identify and explain behavior, beliefs or actions</td>
<td>To identify prevalence, averages and patterns in data. To generalize to a broader population</td>
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Adopted from Hennink, Hutter and Bailey (2011).
This study was based on three semi-structured interviews of the top managers of a Russian subsidiary of a German logistics services provider. Face-to-face interviews were chosen for the study to take full advantage of the flexible, exploratory nature of the method and its strengths in gaining in-depth information on the questions of research interest and possibility of illustrations from real life of the company and personal experiences of the interviewees.

The rationale behind choosing this company within the logistics industry and the choice of nationality of the company were discussed in the opening section of this paper. The company is privately owned. It provides specialized logistics services to major customers in a variety of industries around the world. Its main market is Western Europe and Germany in particular, and it is prominent in automotive logistics. In the light of the business strategy typologies discussed previously, the firm’s strategy in its home market may be described as that of differentiation (on quality) and focus on specific industries and larger companies. This is a Defender type of strategy.

It is customary for logistics providers to follow their larger clients around the world, so the decision to start operations in the Russian market is both driven by opportunity and desire to continue to serve existing customers in their new market. The firm entered the Russian market through an acquisition.

The top managers of the subsidiary were a German general manager and two Russian managers responsible for transportation and warehousing services, respectively. These managers were viewed as charged with the task of cross-cultural adaptation of the German company to the Russian market and possessing a degree of “biculturality” needed for the task as described by Hofstede (2001).

FINDINGS

The findings section of this paper is organized along the first two research questions (problems in the Russian market the firm encountered and solutions it implemented), with insights into the role of culture (the third research question) incorporated into the two.

Problems the Firm Encountered in The Russian Market

The analysis of data revealed that all issues reported by the interviewees dealt with Russia-specific problems the firm faced and they all fell under two categories: those of a logistics nature and those that are not.

The interviews identified a variety of logistics-related problems specific to Russia that concern warehousing, such as low degree of automation and inadequate warehouse management systems, and transportation, particularly international: long distances involved, seasonal shortage of truck capacity, and complexity of border crossing and customs clearance. The latter was brought up by all the three interviewees:

General Manager (GM): So we have problems with the customs, with import logistics and with dependency on Russian carriers. We also have a problem on the distribution side in Russia.

Warehouse manager (WM): The problem is that we are separated by distances, unfortunately. Besides these distances, there also appear different borders.

Transportation manager (TM): …the customs clearance procedure in Russia, it is rather complex. It has at the moment nothing in common with the one in Europe...

However, the company has an interesting approach to these problems. For a problem-solving company, problems are not obstacles; they are business opportunities:

GM: I want to point out that we are here to solve these problems. This is exactly what we tell the government officials, because [for the government] to solve everything is not necessarily beneficial
for us, especially the customs issues in Russia. It is better for us, because not everyone can solve those problems internally. The more difficult the problem, the more the client is willing to pay for its solution.

This approach falls under the Prospector strategy of adaptation to the business environment. It is also indicative of the value placed on intellectual power by Germans as described earlier by Hall and Hall (1990).

However, it is problems outside the area of logistics that are the real obstacles to business of the firm. The worst of them are man-made. In fact, the human factor is the main problem:

TM: Before I speak about any logistics difficulties, I will begin with the fact that we encountered a problem with personnel. The problem with personnel was that the people who graduated from respective colleges here in Russia specializing in automotive business ... left those schools with a very theoretical kind of knowledge that was little applicable to practice. In other words, a graduate of one of those schools was little different from a person without the specialized education.

TM: So I can designate it as a problem, because in my opinion people are key to any development, and so we still encounter this problem up to now... This problem, in contrast to Germany, I can point out as the main issue.

The human factor problem that is often cited as the reason for a variety of failures in the conduct of business is also diplomatically referred to as the “mentality” or “certain cultural traits” problem. From a foreigner’s perspective it manifests itself in poor communication, disrespect for deadlines and outright dishonesty and cheating at work – things that go against the traditional German cultural values:

WM: Let’ begin with the easiest, something that is obvious to any foreigner who comes to Russia. It is communication, something a foreign citizen is used to... That is practically immediate communication, in other words, any, absolutely any question, even request, should receive a response immediately. Not an answer necessarily, but some kind of reaction.

WM: Second, all that concerns deadlines. This already directly affects quality... Just a response by the deadline. Or the work fulfilled by the deadline. There are some situations here when a foreign citizen fails to find understanding while communicating with Russians.

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TM: At the moment, the existing system allows the drivers, and I will use strong language, to cheat their fleet owners financially with profit for the driver himself. There is work to stop it, and we fight this too. We already went to the border and discussed various situations that arise there.

The human factor problem cannot be easily solved by training or other typical means the company uses at home. When it becomes a great obstacle (and risk), such as when the firm considered buying a fleet of trucks, the options are clear: either accept the risk or back off. In line with the Defender’s strategy and an apparent culture of low, calculated risk projects only, the firm has backed off, at least for now (German persistence may dictate a comeback when the situation improves):

TM: Even so there are always some loopholes left and some options they [drivers] can try, so we looked very carefully at potential problems several times, all possible nuances of purchasing our own fleet, because there is demand in the market, but every time we would find that it is not yet beneficial in the end. That’s why we work based on contracts.
that exist with our partners, carriers directly, on a permanent basis. This is more profitable currently. We’ll see what happens to the market in the future; perhaps we’ll come back to this question a fourth time.

The last phrase suggests that the firm does not expect the Russian mentality to change, but will go ahead with the project as soon as there is enough profit to justify the costs associated with risk of losses due to employee dishonesty, a very pragmatic approach characteristic of the company’s culture and in line with its national culture.

Predictable from Hofstede’s very high power distance index, everything related to the Russian government and legal system is likely to be different from the situation in Germany and perceived as a problem by the firm’s management. The interviews show that the Russian government indeed plays a huge role in the way business is conducted:

- Laws and rule-making are complex and often unpredictable
- Formal and informal approval for any business project is necessary
- Preferential treatment is common and will benefit some but will put others at a disadvantage

WM: …if we speak of Russia, this is relatively strict… relatively high level of regulation in customs law – everything that is connected with actual movement of goods and services across the border.

Not seeing the regulatory role of the Russian government in primarily fighting abuse, the German manager appears to be genuinely surprised at the perceived lack of logic behind a new government policy (an abrupt decision to move customs clearance from Moscow to the border)

GM: The problem was that behind the change in politics was nothing, meaning there was no infrastructure on the border. We were very surprised.

Fortunately, the power game is Germans’ strong point. The interviewed managers know how to deal with the government:

- stay informed to allow sufficient time for planning,
- fit the government policy,
- start from the top to get an approval for a project,

GM: We petitioned the chamber of commerce and received a confirmation that we will be warned about further closings of the posts.

GM: I want to make a point that German politicians are constantly in contact with us… We are in close relations with the German embassy, the foreign trade mission, we have meetings with those secretaries in the German government who are in charge and who always offer their help here, in the Russian business market.

GM: So we as a company made the decision to offer our “knowhow,” come with our clients and invest our money so that we will fit into the plan of changing the customs policy of the Russian Federation.

GM: We have heard of this [government red tape] and we have made a decision specifically about our project … to go another way. In the very beginning we involved the Chamber of Commerce. They immediately organized a meeting for us on a very high level [of the government]… thus we went from top down… Based on our experience we think that this is how business should be conducted in Russia.

A couple of conclusions follow from the quotes above. First, it is obvious that as predicted from Hofstede’s high uncertainty avoidance index, the firm is building a structure (process) to protect itself and guarantee some time to react to any negative
Development. It appears that after a few mistakes and close calls, the firm has learnt how to deal with the Russian government. The solution is based on the firm’s traditional German strengths, which also appear to be a part of its organizational culture: learning, reliance on analytical solutions, and using power to its advantage. This resonates with qualities of the German national culture described by Hall and Hall (1990) we identified in the literature review.

While the problem of finding a way to deal with the Russian government is perceived by the management as solved, another problem, also partially connected to the government is still a major stumbling block: an uneven competitive playing field perceived by the management as unfair, as expected from the high individualism score of Germany on this cultural dimension, according to Hofstede (2001).

The uneven competitive playing field is a result of two factors:

- preferential treatment of other companies by the government (a consequence of a high power distance index and being relatively low on individualism);

- presence of extremely low cost competition in the logistics services market (in contrast to Europe) due to a difference in the legal and business environment and apparent preference of low price over quality by local customers.

GM: The problem is that our competitor ... is closely connected to [a government-owned company]. On the political level they have different opportunities than we do; thus, specifically, our capability is not quite realized.

GM: We almost brought this project to a certain stage of completion, but the competitor took this part of the business right from under our nose, having better conditions and better rates, than we could get on the market.

TM: So working with larger carriers that carry full insurance we certainly as intermediaries of sorts are not always in the position to offer the best delivery. Because a big company that has such insurance policy already offers rates substantially higher than those smaller companies. And respectively with our markup that is put on top, it is not always competitive.

Thus, Russia presents a variety of challenges for a German logistics firm, from internal, personnel, issues to unique macro problems of market competition and the role of the government. Things work very differently in Russia, and while this fits well with the Russian national culture, it is often a shock and a surprise to the German company. However, the company is not deterred and is actively looking for solutions.

Solutions to Problems

The principal solution the firm is in the process of implementing is a major one: a shift in strategy. The firm realizes that it has to leave the comfort zone of stable operations and display flexibility and creativity – the Prospector strategy qualities while keeping its market focus, quality differentiation European strategy. The company relies on its culture-based strengths but has to be creative (these qualities are part of German national culture according to Hall and Hall (1990)):

- Unique technical or process oriented solutions,
- Meticulous planning followed by quick practical action,
- Taking calculated risks, including investment risks,
- Long-term business orientation

GM: We recognize that placing a bonded customs warehouse in ... [location] is the first step. The second step will be right when we get a license for it. We will create there a hub to receive consolidated cargoes, clear them through the customs and provide distribution. In this way we
The firm treats difficult logistics problems in Russia as business opportunities. It applies its traditional strengths reflecting its national and organizational culture such as strong analytical approach and searches for technology- and process-based solutions to overcome these problems. However, it also encounters specific threats explained by a very high power distance in the Russian national culture to doing business in Russia: human resources problems, a big role of the government in business, and an uneven competitive playing field. Unable to conduct business as usual in the Russian market, the firm must rethink and adjust its European business strategy of market segment focus and quality-based differentiation to include a third dimension, uniqueness of a logistics solution. This requires the firm to show flexibility of operating outside its traditional cultural comfort zone. In terms of strategies identified by Miles et al. (1978), the firm tries to pursue a Defender strategy in the Russian market, but often finds itself a reluctant Prospector, as it must respond to a dramatic change in the environment. Fortunately, its national and organizational cultures support the relatively independent structure of the Russian subsidiary’s operation, so the response is usually more than adequate and the company secures its position for the future in the market. Overall, this makes the company fall under the Analyzer strategy because the firm attempts to minimize risk while maximizing the opportunity for profit, the very definition of the Analyzer strategy (Miles et al., 1978). The company’s response to threats from the environment is consistent, not limited to a particular frame and often involves a major change in the operation. The only peculiar feature is that the company would rather be a Defender, its traditional German domestic strategy, but it is realistic and sees that it must make an adaptation to a specific market situation.

CONCLUSION

As has been noted in the beginning of this article, there is an acute lack of academic literature on logistics realities of the new Russia as well as studies that look into aspects of its national culture and its manifestations in business. There is not much written on the role of national and organizational culture of a company in adaptation of its foreign subsidiary to the host country’s culture. This study does not fill that void. It is merely a small step. Yet, it is valuable in that it describes some of the real logistics problems of doing business in Russia today as well as other obstacles to doing business in Russia and one way to deal with them.

The study certainly showed a great degree of influence of the national culture of the home country and the part of it that was ingrained in the organizational culture of the company on the company’s behavior in the foreign market whose national culture is very different. The findings do not seem to support Hofstede’s conclusion that “foreign subsidiaries of multinational organizations function internally more according to the value systems and beliefs of the host culture, even if they formally adopt home-culture ideas and policies” (Hofstede, 2001). In fact, the contrary seems to be true for the studied company, however, the qualitative method used in research does not assert any generalizability of the findings. Rather, the study demonstrated that the home country’s effect is extremely strong and is more in line with findings of Alder (1996), and Laurent (1983).

The study uses a method that is outside the mainstream of logistics research, but it is the very method that allows a deeper look at the company’s strategy in a foreign territory. This adds an additional perspective to the typology of Miles et al. (1978) that assumed that the company is anchored in its environment and adopts the strategy in a stationary situation. In the increasingly global business world, third party logistics services providers often must follow their global customers around the world and offer the same logistics services, and often with an expectation of the same quality but better price, as they do in their primary markets. This study sheds a light on a situation where such logistics intermediary,
driven by a dual desire of serving its global customers and pursuing profitable business opportunities in the new market, already has a previous business strategy, but is now forced to adjust it on the go, not having planned for it. As a result, the home country strategy, while still having a preferred status, is complemented by a different strategy, but only to the degree where it is necessary.

The study has a number of limitations. No measure of business success of the company is provided. Private companies do not report data to the public and may keep their subsidiaries in a foreign market for some time for strategic reasons even if they are not profitable. Profit is also not necessarily a good measure of success in a new and growing market, nor is market share. A survivor principle in the new market is not applicable either. Another limitation is a relatively narrow scope of a case study of just one logistics firm. Broader and more in-depth studies could follow. They may deal with logistics services providers from other countries. An interesting research question would be to compare effects of different types of market entry, as well as the motivation behind it (those reluctant and cautious market entrants following their customers versus true Prospectors looking for new opportunities).

Despite the limitations, this study provides a validation of several theoretical frameworks and a context for future research. On a practical level, it offers a deeper insight into the business realities of the Russian logistics market, the challenges it poses for foreign firms and the potential solutions to the problems.

REFERENCES


**BIOGRAPHY**

**Dr. Vitaly Brazhkin** is an assistant professor at the University of West Florida. He received his MBA (1995) and Ph. D. in supply chain management (2014) from the University of Arkansas. His research interests are in transportation, warehousing and education. His peer-reviewed research has been published in *Supply Chain Management: An International Journal, Journal of Business Logistics, Transportation Journal, Decision Sciences Journal of Innovative Education* and others. He has presented his research at national and international conferences held by Council of Supply Chain Management Professionals, Decision Sciences Institute and other organizations. Email: vbrazhkin@uwf.edu
SELECTED RAILROAD CONTRIBUTIONS TO THE UNITED STATES:
AN ECONOMIC AND HISTORICAL REVIEW

Brian Gurney
Joshua P. Hill
Montana State University Billings

ABSTRACT
Railroads were instrumental in opening the western U.S. in the 19th century. The main incentive provided for the railroads to connect San Francisco, CA and Omaha, NB were land grants out of the public domain. In a period of 21 years (1850-1871), 174 million acres were patented (deeded) primarily to what would become four major railroads. Many acres were returned to the government, some were sold and many others were retained or disposed of through holding companies. This paper emphasizes an oft-overlooked reality: that in many cases the railroads leveraged these land grants in support of the growth and prosperity of the U.S. and that privatizing these lands to the railroads was the most productive use of those resources at that point in history. Further, those grants continue to bear fruit in the present day. We contend that the counterfactual, one in which those lands remained in the public domain and under control of the federal government, would not have yielded anywhere near the development and wealth that they created under the railroads’ control.

INTRODUCTION
Many are aware that the major railroads received large land grants in the 1800s. Federal and state land grants to the railroads during the 19th century totaled 174 million acres. (Ellis, 1946) For a sense of magnitude, that is larger than the state of Texas (172 million acres). That these grants were large is not in question. Whether they were, on balance, beneficial for the American populace is. The appropriate policy to pursue in regard to these grants in the present day is closely tied to this question.

Railroads in some form are listed as having existed since 1830, or 190 years of history. Any industry with almost two centuries of history is bound to have baggage. One interest group is served while another is shunned or hurt. Characters who have questionable values and morals come and go. Governments make decisions that serve special interests rather than those of the people in general. However, critiques of rail grants focus almost exclusively upon the costs of the policy and overlook the benefits. It is our goal here to provide a richer investigation of the reality and selective net benefit of these grants. We focus mainly on railroads that were established west of the Mississippi River and the grants that were enacted by the U.S. Congresses of 1862 and 1864.

We find that, while the grants were large in the 19th century, only a small fraction of the land grants originally patented still remain under railroads’ control today. We also find that the value that the railroads have generated, in numerous domains, is considerable and most plausibly outweighs the costs to the American people as a whole.

THE COMMON PERSPECTIVE
Many publications and much commentary would have the reader believe that the railroads are immoral holders of public lands. This perspective is based upon claims that they treated workers poorly, that in the modern age their diesel-electric locomotives are exacerbating climate change, and that railroads are monopolists with a tendency toward bribery and deceit.

Some examples of these critiques of the railroads are as follows:
As many know, the railroads used a considerable number of Asian workers, primarily Chinese, for rail construction. Though certainly not limited to the railroads, this practice elicited sufficient public outrage as to result in the Chinese Exclusion Act (1882). Of course, the outrage at that time was not about how poorly Chinese workers were treated by the railroads but rather their willingness to work for low wages. In the modern age, concern has shifted away from the impact of Chinese workers’ impact upon wages at the time and to how harshly the workers were treated.

Additionally, the land grants and general management of the railroads in the 1800s is often said to have been a hotbed of corruption. One author states unequivocally that “At the center of national corruption, both financial and political, were particular corporations: the railroads…An important subgroup of the railroads—the trans- continentals chartered to cross the western United States—were particularly open to corruption.” (White, 2003)

Another take says the possibilities of power involved in such a concentration of land ownership, irrespective of the timber, hardly require discussion. The danger of abuse of that power, in the absence of restrictive regulation, is obvious. This danger, moreover, is greatly increased because a few of the largest owners of this land also occupy dominating positions in railroad transportation over great sections of the country.” (U.S. Bureau of Corporations, 1913-1914)

On the environmental front, the railroads have been targeted for environmental concerns in the early 21st century. For example, the California Air Resources Board examined "...toxic air contaminants..." emitted from a Union Pacific railyard in Oakland, California. Sources of these emissions were "...locomotives, cargo handling equipment, on-road trucks, and off-road vehicles." (Mahmood, 2008).

It’s clear that railroads took advantage of opportunities to bend the rules in their favor. “In the Act of July 2, 1864, Congress inserted a provision which required the railroad companies to pay the cost for surveying, and conveying the lands, previous to the issuance of patents” (McAllister, 1939). The federal government did not have the funds to pay for surveying, therefore the surveyors were essentially railroad employees. It was the ‘fox guarding the chicken coop.’

In all of this, the reality is, as usual, a bit more nuanced than the prevailing perspective would have us believe. Clearly, there were costs of and harm from the rail expansion. However, there were also large benefits.

### NINETEEN DECADES OF AMERICAN HISTORY

The railroads have witnessed and, in many instances, contributed to the evolution of the United States. For a sense of the timeframe and history involved, note the following events from 1860 forward:

- **1861** – Abraham Lincoln becomes president. U.S. Civil War begins.
- **1865** – Lincoln assassinated. U.S. Civil War ends.
- **1872** – Yellowstone National Park established.
- **1898** – Spanish-American war.
- **1903** – Ford Motor Company formed. First World Series.
- **1914** – World War I.
- **1920** – First radio broadcast.
- **1927** – First transatlantic flight.
- **1929** – Great Depression begins.
- **1934** – Dust Bowl begins.
- **1941** – U.S. enters World War II.
- **1950** – Korean War begins.
- **1957** – Russians launch Sputnik.
- **1962** – Cuban missile crisis.
- **1968** – President Robert F. Kennedy assassinated.
- **1969** – Neil Armstrong walks on the moon.
- **1979** – Three Mile Island nuclear accident.
- **1991** – Gulf War.
- **2001** – Terrorist attacks in the U.S.

### THE 1862 AND 1864 LAND GRANTS

Recall that this is a time in the eastern U.S. where the Civil War is underway. Also during this time, Congress and presidential candidates were searching for a way to ‘open the west’ (west of Omaha,
Nebraska). They envisioned a transcontinental railroad that would operate from San Francisco, California to Omaha, Nebraska. The problem was that there were insufficient funds in the federal treasury to support this huge endeavor directly. The solution arrived at was to provide land out of the public domain as an incentive for railroad construction.

The 1862 Act was entitled, “An act to aid in the construction of a railroad and telegraph line from the Missouri River to the Pacific Ocean, and to secure to the government the use of the same for postal, military and other purposes.” (37th U.S. Congress, 1862). The 1864 Act (38th U.S. Congress, 1864) was an extension of the 1862 Act and offered an even greater quantity of land.

For both Acts, “Right of way was granted through the public lands to the extent of 200 feet in width on each side of the track, and a grant of land to the amount of five (increased to ten by the act of 1864) alternate sections per mile on each side of the road within the limits of 10 (increased to 20) miles on each side of the road, not sold, reserved, or otherwise disposed of by the United States at the time of the definite location of the line. All mineral lands were excepted from the operation of this act.” (Commissioner of Railroads, 1883, p. 514) From 1850 to 1871, the railroads received around than 174 million acres of public land.

**AN EXAMPLE OF LAND ACQUISITION AND DISPOSITION**

The railroads did not necessarily want or need 174 million acres. Many acres were desolate and lacked any chance of being turned to productive ends. Obstacles included lack of access to water and poor soil conditions and meant no potential farmer would consider the land as a possible homestead. This made it improbable that the railroads could sell

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**FIGURE 1**

*HIGHLIGHTS OF UNION PACIFIC HISTORY AND MILESTONES*
these lands and such an inability to sell defeated the purpose of the Act and thereby the ability of the federal government to subsidize railroad construction. However, an unforeseen result of this reality was that railroads had a vested interest in the development of the areas in which the land was located. Approximately 52% of railroad land grants (92 million acres) eventually came under the control of just four railroads (Wilner, 1981). Those railroads include: the Northern Pacific, Santa Fe, Southern Pacific and the Union Pacific. Figure 1 depicts some highlights of Union Pacific history and milestones.

Over a period of approximately 134 years, the Union Pacific railroad acquired over 22 million acres. This number includes the original grants enacted by congress, but also grant land from the mergers and acquisitions that occurred over this period of time. Table 1 illustrates the M&A activity that helped contribute to this total.

If the focus is narrowed to the state of California, by 1878 11 million acres had been granted to the railroads, although by 1956 the amount held by rail companies had declined to 2 million acres (Sanderson, 1958). In the interim, some of this land was returned to the federal government, some was sold and some reallocated into railroad-affiliated holding companies. Though smaller today, these grants have served to help keep rail companies out of bankruptcy court and off of the public dole even to the present day (Gurney, 2019).

### Table 1

<table>
<thead>
<tr>
<th>ACRES (MILLIONS)</th>
<th>RAILROAD</th>
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</thead>
<tbody>
<tr>
<td>7.7</td>
<td>Northern Pacific</td>
</tr>
<tr>
<td>7.1</td>
<td>Kansas Pacific</td>
</tr>
<tr>
<td>6.8</td>
<td>Southern Pacific</td>
</tr>
<tr>
<td>1.1</td>
<td>Chicago &amp; North Western</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22.7</strong></td>
</tr>
</tbody>
</table>

### Value Creation

The ostensible purpose of land grants was to encourage the construction of transcontinental rail links and to open up the west. This was certainly deemed an acceptable goal at the time and it seems likely that rail grants at least expedited the accomplishment of this goal. In addition, however, rail companies made contributions well beyond this narrow goal. These contributions include, but are not limited to, agriculture, energy, higher education, real estate development, telecommunications, and, perhaps most importantly, simply getting land into productive use. Following is a discussion of some of these benefits for each category.

#### Agriculture

A conservative estimate is that the Southern Pacific Railroad (SPRR) controlled 3 million acres of land by 1900. Being dependent on the boom and bust cycles of gold mining was not an option for long-term prosperity so the railroad became instrumental in developing California’s agricultural industry. The railroad sold land to prospective farmers and brought in federal and state experts on agriculture to educate and train the budding farming community. In addition, the SPR built much of the irrigation system in California.

As an example of the depth of the commitment the railroad had to California’s agricultural sector, in 1905 the Colorado River breached an irrigation wall and began to drain into the Imperial Valley. The state agency in charge was unable to stop the flooding but the railroad stepped in and spent over
$1,600,000, or roughly $48 million in today’s dollars, to contain the river and stop the flooding in February 1907 (Orsi, 1975) with no apparent request for repayment.

The railroad sold many thousands of acres in small tracts to anyone who wished to establish a farm. They would finance the purchase of the land, train the farmer in state-of-the-art agronomy and provide the necessary transportation to get the product to market. “Moreover, especially after the 1880’s, the financial and organizational resources of the Southern Pacific were channeled into effective programs to achieve these goals. The railway collected and disseminated scientific information, assisted farm groups in organizing and developing their markets, exerted its considerable corporate muscle to wrest more agriculturally-oriented decisions from California’s political system, and sponsored social and economic development upon its original grants, as well as lands it purchased specially for that purpose” (Orsi, 1975). This is an excellent example of self-interest harnessed for public good, something exemplified by, but not limited to, this case in California.

**Energy**

The 1864 Pacific Railroad Act resulted in 4,582,520 acres in the Wyoming Territory (Nickerson, 2014). A wholly-owned subsidiary of the Union Pacific Railroad was the Union Pacific Resources Group (UPRG), established in 1987. UPRG was the top driller of wells in the U.S. between 1992 – 1995 and generated $1.45 billion in revenues in 1995 (Klann, 1996). Using right-of-ways granted by Congress, pipeline companies contracted with the railroad to ship oil and gas along 1,871 miles of railroad tracks.

In the present day, Burlington Northern Santa Fe and Union Pacific move virtually all of the coal out of Wyoming’s Powder River Basin. Although these volumes have declined with the changeover to natural gas and renewables. At its peak the Union Pacific loaded 26 coal trains per day. The level of railroad infrastructure necessary to serve this demand was “…one of the largest railroad construction projects in modern times” (PR Newswire, 1998).

**Higher Education**

Leland Stanford was one of the Big Four who built the western half of the transcontinental railroad. He was also the governor of California in the early 1860’s. Leland and wife, Jane Lathrop Stanford founded Leland Stanford Jr. University in memory of their son. It opened in the fall of 1891.

Today, Stanford University is a world renowned institution comprising seven schools, more than 16,000 students from 91 countries and 1,800 postdoctoral scholars (Stanford University). By 2003, the campus employed three Nobel laureates, 4,000 faculty, staff and students, over 50 bioscience start-ups and 10 venture capital firms on or around the campus.

By 1910 the Southern Pacific Railroad was encouraging employees to enroll in International Correspondence courses and courses offered through the University of California Extension Division. The railroad offered an employee stock subscription that provided for monthly installment payments (Hofsommer, 1986).

In 1995 the University of California at San Francisco was a land-locked campus and could not afford the real estate to expand. It was considering splitting the campus by opening another campus outside of the city. The Southern Pacific Railroad, now owned by Union Pacific Railroad, had real estate that abutted the San Francisco campus. Through Union Pacific’s subsidiary, Catellus, the campus was given 30 acres of land which at that time was valued at $170 million (US Fed News Service, 2013).

**Real Estate Development**

Southern Pacific Railroad spun-off much of its land holdings in 1990 to a new subsidiary called Catellus Development Corporation. Catellus received 855,000 acres of land, predominately in California. In 25 years, Catellus has moved forward to develop industrial, commercial, retail and residential properties in California and 10 other states. Many of these development projects are quite significant. For
example, the 303-acre Mission Bay project in San Francisco has a built-out value approaching $3 billion, and this sum is after subtracting 49 acres for parks (Barista, 2004).

Contrast this largess with the fact that the Union Pacific entered into receivership (bankruptcy) in 1883 and did not reemerge until 1897. Add to this that the subsequent decades were full of ups and downs for rail haulage. The advent of commercial air travel took a heavy toll on most railroads in regard to passenger traffic and led many of them to the edge of bankruptcy. Similarly, the opening of the Interstate Highway system coupled with relatively inexpensive oil prices took a toll on railroad freight revenues (Steel Interstate Coalition). In the present day, railroad revenue is being negatively impacted by the shift from coal to natural gas. For example, annual shipments of coal by rail to the electric power sector declined by 42% in ten years, from 705 million short tons in 2008 to 406 million short tons in 2018 (U.S. Energy Administration, 2020).

Enter the land grants to help soften some of these market shocks. The ability of the railroads to divest themselves of land holdings was always a stabilizer for them, and one that at least the Union Pacific has been increasingly using in recent years. A cursory review of railroad land sale dispositions in recent years is shown below in Table 2.

**Telecommunications**

In 1970, Southern Pacific (railroad) created a subsidiary, the Southern Pacific Communications Company (SPCC). The mission of the SPCC was to leverage the company’s microwave communications system by providing new communication transmission services to business, government and other customers. By 1974, the SPCC became the first common carrier communications company to offer coast-to-coast voice transmission by microwave. In 1983, GTE acquired SPCC and renamed it GTE Sprint Communications.

Over the next three decades Sprint went through a series of acquisitions and divestitures. The latest development with Sprint occurred in the summer of ’19, when Sprint and T-Mobile entered into a $26 billion merger.

**Putting Land to Productive Use**

It is easy to forget, in this day and age, that a major concern of the federal government in the 1800s was to find ways of divesting land. The Louisiana Purchase was a massive area and it was clear to everyone at the time that this land would best be used by private individuals. Most of the colonies had large claims, many of which conflicted, over

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**TABLE 2**

<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Value of Sale</th>
<th>Railroad</th>
</tr>
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<tbody>
<tr>
<td>1988 - 1996</td>
<td>$2,200,000,000</td>
<td>Southern Pacific Railroad</td>
</tr>
<tr>
<td>1990</td>
<td>$500,000,000</td>
<td>Union Pacific Railroad</td>
</tr>
<tr>
<td>1994</td>
<td>$405,000,000</td>
<td>Union Pacific Railroad</td>
</tr>
<tr>
<td>2009</td>
<td>$116,000,000</td>
<td>Union Pacific Railroad</td>
</tr>
<tr>
<td>2011</td>
<td>$17,500,000</td>
<td>Union Pacific Railroad/Catellus</td>
</tr>
<tr>
<td>2015</td>
<td>$110,000,000</td>
<td>Union Pacific Railroad</td>
</tr>
<tr>
<td>2016</td>
<td>$67,000,000</td>
<td>Union Pacific Railroad</td>
</tr>
</tbody>
</table>
land west of their operating borders. In the forming of a new nation under the Articles of Confederation and the Constitution these claims were ceded to the federal government. “Beginning with the Land Ordinance of 1785, the clear intent was to divide these lands into parcels for disposal to private parties. The federal and state governments were to benefit from the proceeds of land sales. More importantly, they were to benefit from the economic development which was to result from the wise disposition of these lands into private hands. The national government did resist the unauthorized settlement of the public lands, but in the interest of controlled and profitable disposition, not in the interest of public retention of those lands.” (Huffman, 1989)

Through rail grants, various homestead acts, and other federal policy, the effort was to find ways of clearing federal holdings, not of maintaining or enlarging them. Of course, the reality is that the federal government largely failed in this aspect. Today, more than 27% of all land in states west of the Mississippi is still in the ownership of the federal government (Authors’ calculations based upon Department of Interior figures). It was not until the Progressive Era (1890s-1920s), that the idea of the federal government retaining ownership and engaging in active management was first broached. In retrospect, this movement can be seen to have been, at least in part, a means to avoid recognizing how abjectly the federal government had failed at divesting itself of land holdings.

If all of the lands granted to the railroads had been retained by or returned to the federal government, this percentage would rise to somewhere between 33% and 40%. From a policy perspective, it is very difficult to imagine that the federal government would have used this additional land more effectively over this period than the private sector did. In fact, given the complexity of managing federal lands for competing ends (Nelson, 1995; Hayes, 2018) it is quite likely that the biggest benefit gleaned from rail land grants was getting land into the private sector where market forces could work to allocate land to higher valued use.

CONCLUSIONS

The persistent view that the land grants were a form of theft, or that the existence of the trans-continentals was at best a necessary evil is clearly unwarranted. In fact, the land was bartered to construct a railroad to the Pacific Ocean and the Congress of the United States set the parameters.

The question becomes how one can make a statement or create a movement to try to reclaim land that was lawfully patented (deeded) over a century and a half ago. With the passage of such a time period, the railroads themselves may not have an accurate inventory of what land remains. Even more to the point, if it were practical, would it even be desirable to increase federal holdings west of the Mississippi? The onus is clearly upon those advocating such a policy to make a compelling case.

What should be highlighted is the role that the railroads and their lawfully acquired lands have played to advance the U.S. Out of self-interest, the railroads helped facilitate California to become America’s breadbasket. They provided thousands of jobs and millions of dollars in taxes and helped supply energy for a growing nation. Biomedical discoveries may be around the corner indirectly due to the land, infrastructure and research funding undertaken by the railroads. The railroads have used the granted lands and added value in everything from constructing research parks to coastal intermodal shipping facilities.

The next time your cell phone rings while you’re just getting ready to eat a California plum, while sitting in a building that 80 years ago was a railroad switching yard, think about the benefits of the land grants.

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Guidelines for 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:

\[ y = c + ax + bx \]

\[ y = a + 1x + 2x + 3x + ax \]

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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, 2001). At best, existing measures only capture how immediate upstream suppliers and downstream customers drive performance within a single firm.
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


*Revised August 30, 2011*
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