

TOP PERFORMING SUPPLY CHAINS: AN INNOVATIVE APPROACH FOR TEACHING SUPPLY CHAIN MANAGEMENT

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ABSTRACT

Supply chain management is critically important for organizational success in today's global business environment. Organizations formulate various strategies to enhance supply chain performance and are continually seeking ways to gain a competitive advantage. This paper highlights one specific strategy: the Demand-Driven supply network (DDSN). Gartner (formerly AMR Research) has published the Top 25 Supply Chains for several years with DDSN being a main feature of companies on that list. This paper will discuss how the Top 25 can be used in various ways to teach supply chain management and to do research about top performing supply chains. We will also discuss lessons learned while using the Top 25 in the classroom.

Introduction

Today's global supply chains are extremely complex and achieving a competitive advantage very often depends on managing the supply chain effectively. The number of exchanges that occur in the overall process of planning, sourcing, making and delivering products, services and the related supply chain information translate to a large number of relationships which must be managed. As these exchanges occur and the material moves through a series of providers and ultimately reaches consumers, the efforts of several parties need to be aligned – this is referred to as the supply chain [18].

The following definition for “supply chain management” also highlights the need for integration and coordination:

“Supply chain management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders” [10].

This description emphasizes the need to coordinate across the entire network of companies in the supply chain. Supply chain effectiveness depends on the management of each critical relationship at each link of the supply chain.

For the above reasons, supply chain management continues to be a topic of great interest to teachers, students and practitioners. Because of the continued strong interest in supply chain management, looking at companies that are very successful with their supply chain initiatives may hold many worthwhile lessons for use in the classroom and in research. Gartner/AMR Research has assisted our efforts tremendously by evaluating and publishing the Top 25 Supply Chains for the past seven years. This list recognizes those companies that have achieved a high level of success in their supply chain performance. Gartner also provides some fundamental performance metrics and descriptions of company performance along with the Top 25 list.

Lee offers the following list of characteristics or “six rules of thumb” for designing agility into the supply chain:

- “Provide data on changes in supply and demand to partners continuously so they can respond quickly. ... Ensuring that there are no information delays is the first step in creating an agile supply chain.
- Develop collaborative relationships with suppliers and customers so that companies work together to design or redesign processes, components, and products as well as to prepare backup plans.
- Design products so that they share common parts and processes initially and differ substantially only by the end of the production process. I call this strategy “postponement.” ... This is often the best way to respond quickly to demand fluctuations because it allows firms to finish products only when they have accurate information on consumer preferences.
- Keep a small inventory of inexpensive, non-bulky components that are often the cause of bottlenecks.
- Build a dependable logistics system that can enable your company to regroup quickly in response to unexpected needs. (this can be accomplished through an alliance with a third-party logistics provider).
- Put together a team that knows how to invoke backup plans” [11].

Many of these elements have been utilized successfully by such companies as Hewlett Packard [4][12][13][14][15] and Dell Computer [16]. Both of these companies also appear in the Gartner/AMR Research Top 25 list on a consistent basis [5][6][7].

Demand Driven

Gartner/AMR Research has publicized the term “demand-driven supply network” in the course of their published research about the leading supply chains known as the Top 25 Supply Chains [3]. The term “demand-driven supply network” is a prominent factor within the discussion of the Top 25 Supply Chains in the annual publications that accompany the release of the list [1].

A demand-driven supply network (DDSN) “is a system of technologies and business processes that sense and respond to real-time demand across a network of customers, suppliers and employees” [3]. “DDSN leaders are ‘demand sensing,’ have more efforts for ‘demand shaping,’ and focus on a profitable ‘demand response’ [3].

Gartner/AMR is the leading promoter of the “demand driven” concept. According to Gartner/AMR: “The report identifies the top 25 manufacturers and retailers that exhibit superior supply chain capabilities and performance. Supply chain leaders are able to shape demand, instantly respond to market changes, and crush their competitors. According to AMR Research benchmarking data, leaders carry 15% less inventory, are 60% faster-to-market, and complete 17% more perfect orders. These advantages separate predators from prey” [1].

The criteria for selection to the Top 25 list are as follows: “The first component of the ranking is publicly available financial data and is weighted at 60% of the total score, with return on assets and inventory turns each accounting for 25%, and trailing 12 months growth accounting for 10%. The second component of the ranking is AMR Research’s opinion, which is weighted at 40% of the total score. The opinion component is based on a structured voting methodology across AMR Research’s team of analysts” [1].

Over the years the selection criteria for the Top 25 has been modified. The most recent criteria are: 25 percent for Peer Opinion, 25 percent for Gartner Opinion, 25 percent for 3-Year Weighted Return-on-Assets, 15 percent for Inventory Turns and 10 percent for 3-Year Weighted Revenue Growth. Each evaluation category is then combined into a final Composite Score [5].

Companies in the Gartner Top 25 for three recent years are listed in Table 1:

Table 1. Top 25 Supply Chains from Gartner

Rank	2011 Companies	2010 Companies	2009 Companies
1	Apple	Apple	Apple
2	Dell	Procter & Gamble	Dell
3	Procter & Gamble	Cisco Systems	Procter & Gamble
4	Research in Motion	Wal-Mart Stores	IBM
5	Amazon.com	Dell	Cisco Systems
6	Cisco Systems	PepsiCo	Nokia
7	Wal-Mart Stores	Samsung Electronics	Wal-Mart Stores
8	McDonald's	IBM	Samsung Electronics
9	PepsiCo	Research in Motion	PepsiCo
10	Samsung Electronics	Amazon.com	Toyota Motor
11	The Coca-Cola Company	McDonald's	Schlumberger
12	Microsoft	Microsoft	Johnson & Johnson
13	Colgate-Palmolive	The Coca-Cola Company	The Coca-Cola Company
14	IBM	Johnson & Johnson	Nike
15	Unilever	Hewlett-Packard	Tesco
16	Intel	Nike	Walt Disney
17	Hewlett-Packard	Colgate-Palmolive	Hewlett-Packard
18	Nestle	Intel	Texas Instruments
19	Inditex	Nokia	Lockheed Martin
20	Nike	Tesco	Colgate-Palmolive
21	Johnson & Johnson	Unilever	Best Buy
22	Starbucks	Lockheed Martin	Unilever
23	Tesco	Inditex	Publix Super Markets
24	3M	Best Buy	Sony Ericsson
25	Kraft Foods	Schlumberger	Intel

Source: [5][6][7]

Teaching Demand-Driven Concepts

The Gartner/AMR Top 25 Supply Chains provides a widely recognized list of outstanding performers who leverage their supply chains to full advantage. These companies are excellent examples to use in classroom discussion or to assign for student research projects. The author has used the Top 25 list in several ways for student assignments for the past six years at two different universities. The following section offers a few examples of class assignments related to the Top 25.

Example Class Assignments

There are many ways to utilize the Top 25 Supply Chains and many of the examples have been classroom tested by the author. In this section we describe several examples of class assignments that have been utilized with the undergraduate supply chain class.

Assignment Example #1

Compare ONE company from the Gartner Top 25 Supply Chains with ONE company that is not in the Gartner Top 25 (or even the Top 100). Discuss strengths or special characteristics; discuss the differences between the two companies; provide some recent performance numbers to compare the two companies (do more than just one quarter). The Research Paper should be 5 to 8 pages in length. Follow the APA format guidelines. List your References and cite your References appropriately in your paper.

STUDENTS - DO NOT use the following companies: Wal-Mart, Dell, UPS and FedEx

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Assignment Example #2

This assignment was used for Term Papers during Spring 2007, Spring 2008, Fall 2008, Spring 2009, Fall 2009, Fall 2010, Spring 2011, Fall 2011 and Spring 2012. The following list was provided as suggestions for students to consider:

- What can we learn from AMR's Top 25 Supply Chains?
- How do suppliers contribute to the Top 25 Supply Chains? (give specific examples)
- Supply Chain Integration and the Top 25 Supply Chains
- In depth analysis of 2 or 3 companies listed in the Top 25 Supply Chains
- Detailed description of the Demand Driven Supply Network (DDSN)

You can find some of the basic information by doing a Google search for "Gartner Top 25 Supply Chains" or "AMR Top 25 Supply Chains".

These example assignments are suggested uses for the Top 25 Supply Chains. We would not recommend utilizing all approaches in a single class. These assignments have been used in classes with excellent results.

Some Classroom Results

Overall, the use of the Top 25 has been a great addition to the Supply Chain and Production and Operations Management (POM) classes. The students are able to research widely known companies such as Proctor and Gamble, Toyota, Nokia, Apple and Coca-Cola.

These assignments have been used for a Supply Chain Logistics course in a Distribution and Logistics undergraduate program and the assignments have also been adapted for the POM course in the College of Business. Some of the statistics for the most recent semesters are shown in Table 2 on the following page.

Some version from the five example assignments have been used for the most recent academic years from 2009 through 2012. A majority of the students have continued to elect the Top 25 Supply Chain companies as part of their assignment during those years.

The most popular topics for the few students who did not select a Top 25 topic included: Green Supply Chain, Reverse Logistics, and Supply Chain Relationships. These topics were among the options available in specific classes or they were approved by the instructor.

Table 2. Student Frequency for Top 25 Assignments

Semester	Number Electing Top 25 Topic	Total Students in Course Section
Spring 2007	30	36
Spring 2008	25	35
Fall 2008	36	40
Fall 2010	12	22
Spring 2011	14	24
Spring 2012	15	21

Other highlights of these assignments are as follows:

- Questions from students about the best way to find more information about the Top 25 Supply Chain companies
- More discussion/questions from students about specific companies
- In depth research is required
- Higher interest level for this assignment compared to the typical textbook assignment

In general, these can be summarized as the students are more engaged in the topics related to this assignment.

One caveat should be mentioned. Dell and Wal-Mart have received more publicity in general and have a huge amount of published information available. If an instructor chooses to adopt one of these assignments, he/she may want to exclude Dell and/or Wal-Mart. This will force students to conduct research on the companies that have not received a tremendous amount of attention already. Federal Express and UPS are also prohibited for other assignment options.

What We Can Learn

Students, teachers and practitioners can learn many lessons from the Top 25 Supply Chain companies. Examples of ‘best practices’ and ‘lessons learned’ are the topics of interest for practitioners and they are also the topics that students will likely report as a result of their research. Dell and Wal-Mart are the most prominent examples that are widely recognized and widely used in textbooks, case studies and other publications to demonstrate specific leading supply chain concepts. There are many reasons for this as they are usually the ones to demand and execute new and innovative approaches in supply chain management. The following examples will demonstrate the potential lessons to be learned from companies in the Top 25 supply chains.

Nokia – Nokia was #1 for 2007 and #2 for 2008. The company excels at speed-to-market for new product introductions. To deliver their new products they utilize rapid-response manufacturing and quick ship logistics. Nokia has instituted many “agile” capabilities in their supply chain [11]. In each instance, information technology plays a key role. “As a pioneer in value chain strategy, Nokia has led in supplier development, S&OP, and collaborative product development” [19].

Cisco Systems – Cisco’s efforts are viewed as an outstanding example of “business transformation ... using Internet technology to integrate its core processes and culture.” These

are some of the results that indicate Cisco's leadership in supply chain management and their ability to leverage the Internet:

- "90 percent of orders [are] taken online.
- Monthly online sales exceed \$1 billion.
- 82 percent of support calls [are] now resolved over the Internet.
- Customer satisfaction has increased significantly" [17].

Information sharing and the associated information systems appear to be a key element for this achievement and recognition. From this we can learn how a company has been able to utilize the Internet in a very successful manner and we can point to Cisco as a benchmark for other companies to emulate.

Another indicator of the focus on improvement of supply chain performance is the fact that "an average of four new names [appear] each year" in the Top 25 Supply Chain list [5]. Other companies like Colgate-Palmolive show steady improvement as they climb to higher rankings within the Top 25. Colgate-Palmolive reached the No. 13 position for 2011 after showing steady improvement from past years after ranking No. 17 in 2010 and No. 20 in 2009 [5]. Unilever is another example which appeared in the Top 25 "for the first time in 2009 and saw the biggest jump among our group this year, rising six spots to No. 15" [5]. The newcomers to the list each year are likely to be companies who have made significant supply chain improvements in the very recent timeframe.

Research Opportunities

There is very limited research that has utilized the Gartner/AMR Research Top 25 Supply Chains. Most of the information has been published in trade journals or the popular press. The "Demand Driven" strategy has not been thoroughly researched and is limited primarily to the publications from Gartner/AMR Research. Companies utilizing the Demand Driven approach need to be explored in greater depth to create a better understanding of the successful approaches. More in-depth empirical research about performance for the Top 25 Supply Chains would also be a fruitful research avenue.

One opportunity that presents itself is to use the Top 25 Supply Chains as a sample of companies to investigate empirical evidence to verify the relationship between supply chain performance and organizational performance. Hendricks and Singhal [8] [9] provide empirical evidence about the negative impact on shareholder value when supply chain glitches occur. The implication from their research is that successful supply chain management does contribute to favorable financial results and increases shareholder value. The work by Hendricks and Singhal [8][9] serves as a starting point for potential research topics utilizing the Top 25.

Based on these limited examples we suggest that there is a definite shortage of research that relates financial results to supply chain performance explicitly. There is a major gap in the research which needs to be addressed by looking at the positive impact of supply chain management on organizational financial performance. Comparing Top 25 companies with "not Top 25" companies could be a first step to address this gap.

Summary

Research for this paper seems to indicate that Demand-Driven needs to be explored further to see how it differs from both Lean and Agile. When we add the Gartner viewpoint, Demand Driven does appear to become more distinct due to the intense information technology applications that are utilized by many of the companies with successful DDSNs.

Utilizing the Gartner Top 25 Supply Chains for class assignments allows students and faculty to explore DDSN in more detail. This also provides an opportunity to learn more about different supply chain initiatives being employed by the companies on the Top 25 list. More

research to better understand the superior supply chain performance of these companies has the potential to be a major contribution to the body of knowledge in the supply chain research stream.

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