

## Visualizing Global Supply Chains and the Impact of Disruptions in OSCM Classes

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### Abstract

The 54-minute Wall Street Journal video *Why Global Supply Chains May Never Be the Same* (<https://youtu.be/1KtTAb9TI6E>) provides a visual introduction for undergraduate and graduate operations and supply chain (OSCM) courses. The video and a companion book by the same author tell the story of a simple product, a USB charger, from its manufacture in Southeast Asia to customer delivery in the US. Also, it depicts the human impact on supply chain workers. This review highlights multiple instructional approaches, including use in introductory and advanced OSCM courses, introduction to business, and other courses. This video can address two key challenges in teaching OSCM: the need to engage students with a visual presentation early in a course and the need to provide a holistic view of supply chains.

Keywords: supply chain management, operations management, supply chain resilience, resource review

### Introduction

This teaching note highlights a 54-minute Wall Street Journal documentary (<https://youtu.be/1KtTAb9TI6E>) on YouTube (WSJ, 2022) and a parallel book (Mims, 2021) that provides a teaching resource for introducing students to key OSCM topics. This resource follows a simple USB charger from a manufacturer in Vietnam through doorstep delivery in the US (see Figure A). In documenting the journey of this product, the video introduces viewers to the complexity, risk, and need for resilience in modern supply chains. For many courses, the video, broken into four 12–15-minute slices (as shown in Table 1), provides an engaging visual introduction to supply chains that can create a positive first impression for students in the course.

Many undergraduate and graduate business programs now include courses in operations and supply chain management (OSCM) to convey how goods and services flow from raw materials to final consumers and ultimate disposal. For many students, OSCM is a nearly invisible part of business. Until COVID and related labor shortages occurred, supply chains routinely delivered products that consumers expected at a reasonable cost and were largely invisible to students, with the possible exception of a shortage of a popular Christmas toy. Hidden beneath this seemingly well-oiled machine were risks, including labor strife at ports, pandemics, and political crises such as trade wars. These risks demonstrate society's vulnerability to disrupted supply chains (Dietrich, 2021; Ferguson & Drake, 2021) and have provided a once-in-a-generation visibility for OSCM to the business world (Henrich et al., 2022).

**Figure A: Product Path**



Hoefle, et al. (2020) and Swaim, et al. (2022) highlight the challenges of teaching core OSCM courses engagingly. A significant part of this challenge is that OSCM faculty often focus on quantitative techniques from operations research, resulting in unengaged students that find the material irrelevant and difficult (Hoefle et al., 2020). Instead of showing visually how OSCM is an essential part of value creation for organizations, as this video does, many students see OSCM as technique and number heavy. This leads students as stakeholders to ask questions: “Why should I care about OM?” “How does OM relate to my major?” “How is this course going to help me get a job or succeed in my job?” (Hoefle et al., 2020, 254). This resource provides a visual, qualitative presentation that engages students in a way they can grasp and relate to, especially given learner preference for visualization in quantitative material. López notes this is especially the case in management education for post-Covid learners (López et al., 2023).

The value of this resource is further borne out by research by Swaim et al. (2022) that demonstrates the importance of first impressions in OSCM classes. In identifying the difference between OSCM classes that students found to be “good” and those found to be “better,” the key difference lies in the instructor and not the course material. Their work found that students’ perception of the first few classes is highly correlated with their final evaluation. Faculty success factors in their research include “applicability of subject” and “sharing real-life experiences”, which the WSJ video clearly does.

The author has successfully used this video content in his five-week MBA Global Operations Class. Following Table 1 below, I show a 12-15 minute portion of the video at the beginning of each of the first four weeks of the course. The video serves as a launching point for class discussion and for helping students to know why OSCM is a

vital topic in contemporary business. Student feedback supports the value of this resource and will lead to further data collection in the future.

### Resource Description

The video (available at <https://youtu.be/1KtTAb9TI6E>, WSJ, 2022) is narrated by Christopher Mims, a technology columnist for the WSJ and author of a parallel book (Mims, 2021). The video starts by pointing out the shock US consumers faced in early 2020 as shortages and supply chain delays mounted. The video (as shown in Table 1) continues in Vietnam where the USB charger is manufactured. The charger is then put in a 40-foot container, the tool of choice for 90% of the world’s non-bulk cargo (Financial Times, 2013), for transportation to the port of Los Angeles. After working through the backlog in Los Angeles, the charger is trucked to a fulfillment center in Georgia. Finally, the charger is delivered to a customer’s door in Connecticut. The video includes interviews with real-world participants and reputable supply chain scholars. Throughout the video, the theme is clear. Supply chains are complicated systems fraught with potential disruptions and negative consequences to workers.

**Table 1: Major Story Points**

<b>Story Point</b>	<b><i>Why Global Supply Chains May Never Be the Same (WSJ, 2022)</i></b>	<b><i>Arriving Today (Mims, 2021)</i></b>	<b>Class questions</b>	<b>Key Learning Point</b>
1. Manufacture to Port of LA	0:00 to 11:30	Chapter 1-9	Why are USB chargers made overseas and shipped to the US?	Present “landed cost” concept based on labor rates (Trading Economics, 2022) and shipping costs (Statista, 2022).
2. Port of LA to Warehouse	11:30-25:56	Chapter 10-13	What is the current status at the Port of LA. What are some of the underlying causes of a shortage of truck drivers in the US? How might autonomous vehicles reduce the need for drivers?	Faculty may lead classes to discuss societal perceptions of truck driving and to research recent trends in electric and autonomous vehicles. Backups at the Port of LA over the past few years are available at: <a href="https://www.portoflosangeles.org/business/supply-chain/ships">https://www.portoflosangeles.org/business/supply-chain/ships</a>

3. Warehouse operations	25:56-37:55	Chapter 14-19	Warehouse operations are facing increased unionization efforts – How might unions and management “humanize” warehouse work?	Faculty may challenge students with questions about the need for unions and recent organizing efforts at firms like Amazon.
4. The Middle and Last Mile	37:55-53:45	Chapter 20-22	The video speaks to the “deskilling” of jobs in supply chains. How might delivery work be “reskilled”?	Faculty may want to challenge students to apply job enrichment concepts – job enlargement and skill variety.
Epilogue	53:45-54:42		How can firms strengthen their supply chains to be more resilient against disruptions?	Faculty may want to speak to firms altering their supply chain strategies to shorten supply chains and make them more resilient (Shih, 2020).

Throughout the trek, the video identifies disruptions in the supply chain and the impact on supply chain workers. First, the viewer is introduced to delays in the ocean transit portion of the supply chain and the dangerous work of sailors on container ships in the Pacific. Next, viewers see the backup at the port of Los Angeles, a point where 40% of imports enter the US. Indeed, delays at the port (whether due to COVID or labor disturbances) have overwhelmed the port for months. Next, the story highlights the “deskilling” of trucking and the aging and shortages of drivers as the USB charger is transported cross-country. Once delivered to a fulfillment center, the video points out the physically challenging work of warehouse and last-mile delivery workers. Automation is ever-present and increasingly used throughout the supply chain.

### Use in Teaching

Faculty can use the WSJ video (2022) in various ways. Perhaps its greatest use will be in introducing undergraduate or graduate survey courses on OSCM. The author has had great success in asking prequel questions to generate discussion such as “Where do you think this USB charger was made? What path did it take to get to your doorstep?” The author finds the video divided into four segments of 12-15 minutes (as shown in Table 1) can be extremely effective in evening MBA classes that meet for long class periods over short terms or in the opening weeks of semester-long undergraduate or graduate OSCM classes. This use can work to create the positive first impressions noted by Swaim et al. (2022) and can address students’ desire for visual content noted by López et al. (2023). As noted in Table 2, faculty can employ the video in online or on-ground classes, augmented by class or discussion board activity. MBA classes should typically emphasize the strategic aspects and risks of global supply chains while

undergraduate students can focus more on the integration of OSCM within the enterprise.

Beyond core OSCM classes, faculty can use this video in Introductory Business, advanced OSCM and non-OSCM classes. Many introduction to business courses allocate a single class period (or week) for each functional area of business. Story points 2-4 of Table 1 provide useful content to start a class discussion on the concept and the importance of OSCM for students just starting as business majors. On the other end of the curriculum, the class questions and key learning points in Table 1 provide fertile ground for students in advanced supply chain classes. Faculty outside of OSCM may also choose to use the WSJ video. For example, the video’s coverage of the potential exploitation of supply chain workers could easily fit into a business ethics class.

Faculty members that use this resource in a core OSCM class can assess student learning in various ways. One approach could be a short answer exam question that presents a current global supply chain (such as Apple’s iPhone) and asks students to identify potential supply chain disruptions and strategic alternatives.

**Table 2: Teaching Uses**

Use	Note
Undergraduate versus graduate OSCM survey course	The video introduces OSCM for both uses – graduate faculty should focus on strategic aspects while undergraduate faculty may focus more on the complexity of integration.
On-line versus on-ground OSCM survey course	The video can be segmented as shown in Table 1 for both groups. On-line use could lead to a discussion board activity while on-ground use could lead to class discussion. In either case students can be prompted for current supply chain disruptions.
Introduction to business course	Points 2-4 of Table 1 can be used to overview supply chains in a single hour or week of a class.
Advanced OSCM class	Faculty can combine the video and readings from Mims (2021) to cover advanced topics like Port Automation (chapter 6-7), Scientific Management (chapter 8-9), Trucking and Highways (chapter 11-13) and Warehouse Management (chapter 16-19)

<p>Integration in other courses</p>	<p>This video can easily be used in other classes - International business classes can relate to the concept of “landed cost” in global supply chains. Business ethics and human resource classes can connect to the video’s depiction of the dangers and exploitation supply chain workers face in trucking, shipping, and warehousing work. Supply chains require negotiation and coordination among international partners that highlight inter-cultural communication.</p>
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**Analysis and Comparison**

OSCM faculty have a rich collection of teaching resources to draw from. Textbook publishers such as McGraw Hill, Cengage, and Pearson each stock multiple introductory texts. Case resources from Harvard Business School and other vendors and simulations such as the Beer Game and Chuang (2020) abound. A review of these resources shows two major trends. First, many teaching resources have come from faculty in decision or management sciences. As noted, this supports student reactions to introductory OSCM classes as overly quantitative and hard (Hoefle et al., 2020; Swaim et al., 2022). Second, OSCM has evolved from a focus on manufacturing within a single enterprise to a broader view that looks at networked enterprises operating as global supply chains. Hence, OSCM class materials need to be holistic in viewing entire supply chains. Klarin et al. (2021) support the need for a holistic view of courses with international content such as OSCM.

The WSJ documentary certainly is not the only available visual representation of supply chains. Standard textbooks use pictures and text to tell their story, often in 500 or more pages with 15 or more chapters. Some texts offer supplementary video clips for use in class, segmented by chapter or topic. Many faculty also use YouTube videos to supplement specific text material and highlight current events. Students eventually see the entire story, but only after enduring multiple chapters on parts of the story such as “Manufacturing Processes” or “Distribution.” The traditional treatment typically is infused with management science techniques that, while valuable, are often not clearly related to the overall picture.

**Strengths**

Used in addition to traditional materials, the primary benefits this resource provides business students is a holistic visualization of the flow of goods and the role of OSCM on people in networked business enterprises. It is superior to other resources in being professionally produced and compact (54 minutes) on a medium (YouTube) that students use daily. Despite the large footprint that OSCM maintains, students are generally unaware of the “black box” that OSCM constitutes. In most firms, OSCM

employs many workers, integrates with suppliers and customers, spends much of the firm's resources, and emits much of a firm's pollution. As important as business functions such as marketing and finance may be to the firm's success, operational excellence, largely found in OSCM, is pivotal to organizational success (Found et al., 2018). While the video is not a replacement for a traditional text, used at the beginning of a course the video provides an overview where students can visualize the overall story in one 54-minute video.

A secondary benefit to the video content is in introducing the concept of supply chain resilience. One of the great scholarly developments in the supply chain literature in the past 15 years is the concept of resilience (Pettit et al., 2019). Now in the spotlight, Chief Supply Chain Officers (CSCO) "have a once-in-a-generation opportunity to future-proof their supply chains" (Henrich et al., 2022, p. 1) to address resilience and agility needs. Largely unrecognized until the recent COVID epidemic but always present, firms face enormous risks when they depend on long supply chains. Students see the results of this approach on a personal level. Their ability to order products online and see them at their door in a day or two has led to delayed deliveries (Dietrich, 2021).

From a teaching perspective, the WSJ video (WSJ, 2022) stands out from other video resources in the high production values that the WSJ employs in producing the video. They are clearly superior to many textbook supplements. Additionally, the video's integration of human factor aspects (such as the potential exploitation of supply chain workers) responds to growing student interest in ethical sourcing (Guarnieri & Trojan, 2019).

### **Limitations**

As for limitations, while the video is timely as of this writing, it will age. To keep this resource relevant, instructors need to bring current supply chain disruptions to their classes. When they do, the lessons of the COVID era of supply chain disruptions can be made relevant at any point in time. Additionally, as compelling as the story is, it does not answer how organizations should alter their supply chains to become more resilient. Instructors are left to fill in this important gap.

### **Conclusion**

The Wall Street Journal (WSJ, 2022) has created a resource that is well-suited for undergraduate and graduate courses in OSCM. The 54-minute video utilizes a simple product, a USB charger, to trace a product from manufacture to the customer's doorstep in an engaging way that provides students with a holistic, "big picture" of OSCM (Klarin et al., 2021). Compared to often complex and quantitative traditional materials, the video provides an easy to grasp visualization that highlights the complexity and risks of modern supply chains and the societal impact on those that work in the supply chain world. In so doing, the resource provides an excellent first impression for students in several academic courses.

## Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author received no financial support for the research, authorship, and/or publication of this article.

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