

# Thinking Outside the “Box”:

## Conducting Supply Chain Procurement Research

*Katharine V. Macy*

### Introduction

Supply chain management is a subset of the operations management discipline within business. The Association of Supply Chain Management, which offers the well-reputed APICS training and certification programs defines supply chain management as “the design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand, and measuring performance globally.”<sup>1</sup> Procurement, also known as sourcing, is one aspect of supply chain management focusing on the acquisition of materials and services necessary for providing a product or service. Supply chain management and procurement are business research-intensive activities. The scope of business research needed to be successful at supply chain management often intersects with skills taught by business librarians in financial research and market research-focused classes. This combined with the complex nature of the discipline may be why teaching supply chain research and sourcing feels like a niche specialty and may not always get the attention it deserves. In my experience, students in sourcing and procurement classes often have a variety of majors beyond operations, including finance and marketing, since understanding supply chains is becoming a critical business skill set within today’s global marketplace. As a professional who formerly worked in a variety of analyst roles (marketing, sales, and finance) in the private sector, learning how to research supply chains allowed me to become a better business researcher.

Students studying supply chain management and procurement need to understand how to research beyond finding the price of the product offered by suppliers on a website like Alibaba (<https://www.alibaba.com>) and McRae’s Bluebook (<https://www.macraes-bluebook.com>) so that they can negotiate the best value, determine the quality product, and identify issues in supplier industries that may affect their future employer’s ability to distribute products. This research includes understanding product design, characteristics,

and specifications, including materials, commodity research on key materials used in manufacturing including historical pricing and demand, and market research and news about individual suppliers and the suppliers' industry. Sources these students need to learn to use include trade associations, trade journals, market research, commodity exchanges, and government economic data. This business information literacy session is designed to make teaching supply chain research approachable both for librarians new to teaching this aspect of business information literacy as well as students as they learn to apply their business research skills to a scenario they really could face upon graduation.

For this session, students in the class will assume the role of a newly hired buyer, fresh with their new degree, who needs to buy boxes for a produce distributor that ships throughout North America. Using a jigsaw activity, student groups explore research on different aspects of the product before coming back together to share information and insights through facilitated discussion with the instructor.

## Planning

### Number of participants

Between 8–40. This activity splits the class into 4 groups. If a student group of 10 seems too cumbersome for the dynamics of a particular class, the librarian can split it into 8 groups and assign two groups to particular pages within the worksheet packet and adjust the student group reporting times accordingly after the group activity. Groups may be randomly assigned.

### Audience

Upper-division undergraduate or MBA supply chain or procurement course

## Preparation and Resources

### Preparation

- The librarian should copy the IUPUI Thinking Outside the Box research guide (<https://iupui.libguides.com/ThinkingOutsideTheBox>) and update it with resources relevant to the librarian's institution.
- Update the Thinking Outside the Box worksheet (<http://hdl.handle.net/1805/24497>; see appendix 27A) to reflect the resources listed in the guide. Computers are required for the session.
- If this is an in-person learning session, then the librarian should provide the printed worksheet packet to the students. This packet is designed to guide students in their research during the session as well as provide notes that they can refer to later when thinking through doing research for their course projects. The worksheet packet is six pages total and is broken out as follows:
  - Page 1 is used in the introduction of the session.
  - Pages 2–5 will be completed by different groups during group breakouts, guiding students through their research and allowing all students to capture some of the information shared during discussion at the end of class.
  - Page 6 is blank to allow for additional notes.

## Resources

- Research Guide (<https://iupui.libguides.com/ThinkingOutsideTheBox>)
- Resources from worksheet (<http://hdl.handle.net/1805/24497>; see appendix 27A) (\*-indicates open/free resource)
  - Introduction: US Census NAICS Search\* (<https://www.census.gov/naics>); Wikipedia\* (<http://www.wikipedia.com>)
  - Trade associations: Fibrebox.org\* (<https://fibrebox.org>)
  - Industry/market research resources: IBISWorld (<https://www.ibisworld.com>), MarketResearch.com Academic (<https://www.marketresearch.com/academic/Home/About>)
  - Trade journal: ABI/Inform (ProQuest) ([https://about.proquest.com/products-services/abi\\_inform\\_complete.html](https://about.proquest.com/products-services/abi_inform_complete.html)) and/or Business Source Complete (EBSCO) (<https://www.ebsco.com/products/research-databases/business-source-complete>)
  - Commodity research and economic indicators: Wall Street Journal Commodity Market Center\* (<https://www.wsj.com/market-data/commodities>), Chicago Mercantile Exchange\* (<https://www.cmegroup.com>), FRED\* (<https://fred.stlouisfed.org>), US Bureau of Economic Analysis\* (<https://www.bea.gov>), USA.gov\* (<https://www.usa.gov>), US Census\* (<https://data.census.gov>), Bloomberg Terminal (<https://www.bloomberg.com/professional/expertise/education>). (Note: Bloomberg is referred to, not used in session)

## Description of Lesson/Activity

### Goals/learning outcomes

1. Students will generate search strategies to understand supplier industries.
  - This supports the frame Searching as Strategic Exploration in the ACRL *Framework for Information Literacy for Higher Education*.
2. Students will break down a complex information need into several simple inquiries that can be synthesized.
  - This supports the frame Research as Inquiry in the ACRL *Framework*.

### Time required

50–60 minutes

## Teaching Outline

### Introduction to the session (10 minutes)

1. Hand out the session worksheet packet and set up the activity for the students by explaining that the session will provide them with hands-on business research experience as they work in groups and share their experiences. Provide students with this scenario: “Our class today is assuming the role of a new buyer (fresh out of school!) for a company that distributes produce to grocery stores in the US, Canada, and Mexico. Under the buyer’s responsibility is purchasing packaging

including the cardboard boxes. Since this buyer has never purchased cardboard boxes before, they start by searching for information on the product on the internet.”

2. Help the students fill out the first page of the worksheet packet by demonstrating an exploratory search about the product—cardboard boxes—as students follow along on their computers, with the intention of guiding students to discover the technical product term, *corrugated boxes*. Using Wikipedia, the librarian searches “cardboard box,” then allows the class a moment to read the entry. Guide the students through a brief discussion about the Wikipedia entry for cardboard boxes: “How does Wikipedia define or describe cardboard boxes? Why might that be an issue?” (Answer: a cardboard box is any type of box with paper as the main material. This is an issue because donut boxes from the bakery are considerably different from the heavier boxes used to ship produce.) Ask the class if there is a more specific term that they can find that describes the type of box they are trying to buy, guiding them to the “corrugated boxes” answer, then explain that layman’s terms for products are not always specific enough or completely accurate, which is why doing some simple internet searching for background information is helpful before diving into more resources. Ask the students, “What other information could you find in the Wikipedia entry that may be useful as you research corrugated boxes?” After students comment, follow up with, “What features might be important in a corrugated box that is shipping a product like lettuce” (answer: can withstand high moisture content), “and melons.” [Answer: sturdiness and can ship heavier products]. Explain to the students that taking a few moments to think about, or ask an expert if no familiarity, what the item you are purchasing is supposed to accomplish can help significantly in refining your search; it is an excellent way to find search terms relevant to the product.
3. Explain to students that NAICS codes can be used to search for industry-specific information. NAICS stands for North American Industry Classification System, and many business databases allow you to search using NAICS codes. Demonstrate for students a search for NAICS codes using the US Census NAICS website by searching “corrugated.” Show students the results and have them write down 322211 onto page 1 of the worksheet packet. (Note: this is based on 2017 NAICS Codes.)

### **Explain research activity** (5 minutes)

1. Assign class members to one of four groups to learn more about the product.
  - a. Trade associations—locating data, trends, and statistics and information about the product (technical specifications) (page 2 of the worksheet packet)
  - b. Industry/market research—trends including market size and forecast (page 3 of the worksheet packet)
  - c. Trade journal—recent news about the product or industry (page 4 of the worksheet packet)
  - d. Commodity research and economic indicators—looking further back into the supply chain to understand costs and price (page 5 of the worksheet packet)

2. Explain that students will have 20–25 minutes to work through their assigned part of the class worksheet, which they may not fully complete, especially if they fall down a rabbit hole on a source! They will be expected to briefly present what they find (3–5 minutes). If they do not complete the worksheet, that is okay as it is designed to prepare students to find information on their own after the session as they think about research for their projects.

### **Group research time** (20–25 minutes)

The librarian should give a warning at 10 minutes and 5 minutes.

### **Presentations/discussion** (20 minutes)

Group spokesperson(s) briefly (3–5 minutes) present key findings and search strategies learned using the worksheet to guide their presentations. The librarian should remind the class that they can take notes on the appropriate worksheet page that corresponds with each presentation.

### **Wrap-up** (5 minutes)

Briefly summarize key learnings from the presentations and the session for the students. Emphasize that depending on the industry, different pieces of information can be found in different places—for instance, the trade association may not have technical information, but buyers may find that in trade journals and that the trade association website may be full of industry news.

## **Transferability**

### **Substitute databases**

Market/industry research

- D&B Hoovers (<https://www.dnb.com/products/marketing-sales/dnb-hoovers.html>)
- Marketline Advantage (<https://www.marketline.com/academic-librarians/>)
- S&P Global NetAdvantage (<https://www.spglobal.com/marketintelligence/en/client-segments/academia>)

Articles

- ProQuest Central ([https://about.proquest.com/products-services/ProQuest\\_Central.html](https://about.proquest.com/products-services/ProQuest_Central.html))

Supply chain

- Panjiva (<https://panjiva.com/platform>)

### **Ability to transfer to online or to in-person**

Synchronous online. The librarian should follow the same basic plans but be prepared to split the class into smaller groups using a breakout room type feature during the class.

Asynchronous online: The worksheets for this activity can be used to create an asynchronous learning activity using a learning management system such as Canvas or Blackboard. However, the group activity is changed, and the collaborative activities allow for participation on the students’ own time. Suggested adjustment:

1. Create an introduction video setting up the activity.
2. Assign each student to a group of 4.
3. Instead of assigning each group to a specific worksheet to work on together, assign each student to a specific worksheet, and each group should have one person assigned to each of the four worksheets.
4. Students are expected to work through the worksheet then prepare a short online video presentation (3–5 minutes) teaching the worksheet to the rest of their assigned group.
5. Set up links to 4 optional discussion groups based on each of the worksheets where students can help each other if they struggle with the worksheets. This also enables the librarian to monitor and intervene.
6. Finish the activity by having the students submit a reflection online about the resources and what they learned.

### **Ability to transfer to different class sizes or audiences**

To use this in a class greater than 40, rather than putting together a brief presentation, a facilitated discussion will need to occur led by the instructor to help the class learn what each team has discovered. Call on the assigned groups to help guide the larger student group through the research.

# Appendix 27A

## Worksheets

1. Worksheet (PDF, Word): <http://hdl.handle.net/1805/24497>
  - a. The worksheet is available online and can be edited by librarians to fit their institution’s needs.
  - b. The figures below are from the worksheet and are options to include within the chapter. These can be changed and not all need be used.

Worksheet	<b>Teaching Business Information Literacy, Ch. #</b>	Macy, Katharine V.
<h2 style="text-align: center;">Thinking outside the “box”</h2> <p style="text-align: center;">Researching buying boxes to understand procurement research</p> <p><b>Task</b></p> <p>You have recently graduated and have been hired as a procurement specialist by a California agriculture distributor that packages and ships boxed produce across the United States, Canada, and Mexico. You are in charge of purchasing boxes for shipping bulk lettuce to grocery stores. You have never had to buy cardboard boxes before and you know very little about them beyond receiving them when you order things from Amazon. To make good purchasing decisions and be able to negotiate prices, you will need to study up.</p> <p>Your first step is to learn more about cardboard boxes, so you do some <b>background research</b> by going to Wikipedia, which can be an excellent source for finding general background information on some purchasing materials. [Search Wikipedia for Cardboard Box. Note: Wikipedia is best with commonly purchased items and raw materials and should be used to help you find important terms to search in other resources!]</p> <p>You learn that cardboard box is a layman’s term and refers to many types paper-based boxes. Understanding that you are looking for solid boxes to ship lettuce you realize that what you are looking for is called a _____ box or a _____ shipping container.</p> <p>You find a link to another Wikipedia about the _____ box design.</p> <p>[Hint: all blanks above are the same].</p> <p>What can you learn from the box design article that could be helpful when searching other sources? Note keywords and phrases. Is there any information that can help you understand things you need to consider in regards to technical specifications?</p> <p>What other specifications might you want to consider when talking to a supplier for buying a box based on shipping lettuce? What issues might present themselves with this product that you will want to ensure you consider when working with a box supplier in designing a box to meet your needs?</p>		

### Figure 27.1

Introduction to the activity: page 1 of the worksheet packet.

Worksheet

*Teaching Business Information Literacy*, Ch. #

Macy, Katharine V.

## Part 1: Trade Associations

What is a Trade Association?

Using a search engine search: “Corrugated box” AND “Trade Association”

What trade association websites do you see in your results?

In your search results you likely will see a link to a page for the Fibre Box Association (FBA), the international trade association representing manufacturers of corrugated boxes. (If not in your results, then search for it by name—but it should be there!).

Look for a subheading on the trade association site that includes words like: **information, data, statistics, trends**, and/or **reports**. Sometimes this information is available for free other times it isn't. Often you must be a member. (Note: As students you can often call and explain you are a student studying the industry and they may provide you with the report or the data you need.)

What type of data, statistics, and/or reports does the Fibre Box Association provide?

Trade Associations also sometimes provide education about the product. Look for this under website subsections such as **about** and **education**. For the FBA, click “About” and “What is Corrugated?”

Corrugated board is made of 2 pieces of flat material called \_\_\_\_\_ and 1 curved piece of corrugated \_\_\_\_\_.

The arches in the corrugated medium are called \_\_\_\_\_ and they vary in sizes, the most common being A, B, C, E, F.

Why might you want to use a larger versus a smaller flute?

### Figure 27.2

Trade associations: page 2 of the worksheet packet.

## Part 4: Commodity Research & Economic Indicators

When thinking about sourcing consider what major commodities are used to produce a product. A corrugated box is made of paper container board. (Try searching paper in Google or Wikipedia)

- A. What is the major material used in making paper? \_\_\_\_\_
- B. What raw material is the major ingredient for answer A above? \_\_\_\_\_

The resource listed in B above can be a byproduct of the lumber industry, being produced by saw mills, so understanding trends in pricing lumber, can reveal trends in pricing for materials for corrugated box and paper manufacturers (this material is approximately 70-75% of a box by raw material cost).

1. Go to **Wall Street Journal Commodity Market Center**. Click on Agriculture under Futures. Click on the word “Lumber” in the chart to get more detailed data.  
What is the current price for a Lumber contract? \_\_\_\_\_  
How much is up or down from a year ago? \_\_\_\_\_
2. The **Chicago Mercantile Exchange (CME)** aka “the Merc” is a financial and commodity derivative exchange based in Chicago, Ill. Click on Markets, then agriculture. You can then find Lumber products (scroll down!)  
What lumber product name are they currently selling futures for? \_\_\_\_\_  
Click on Data at the top of the website. Explore Volume and Open Interest, and the Daily Bulletin under reports to see the information you can find.
3. **FRED** is online database provided by the Federal Reserve Bank of St. Louis that provides open **economic research** collected by the government including. Search: Pulp. What information can you find?
4. When researching for a product and its related commodities think about what **economic indicators** can provide insights. For instance, trends in **consumer spending**, found on the **US Bureau of Economic Analysis website**, explains consumer demand, which when up means more products are being shipped so demand for boxes will be higher resulting in higher costs for boxes. Another metric that is a leading indicator as to the pricing of raw materials is **Housing Starts**, because when construction is up, more lumber is going through the mills, which means more wood chips as byproducts are produced, making chips cheaper versus when wood chips need to be produced as the primary product, so costs to make boxes decreases. Go to **USA.gov** and search for housing starts. What does the **US Census** call this economic indicator?

The **US Census** website allows you to search for data from the **US Economic Census** and the **Annual Survey of Manufacturers**. Search <http://data.census.gov> using the NAICS code to easily find data.

The **Bloomberg Terminal** database (in library use only) is an excellent resource for studying commodity markets, finding economic indicators and doing supply chain research. If you would like help learning how to use this database please make an appointment with the business librarian.

### Figure 27.3

Commodity research and economic indicators: page 5 of the worksheet packet.

## Endnotes

1. Sharon Rice, “The Total Scope of Supply Chain Management | APICS Blog,” accessed February 22, 2021, <http://www.apics.org/sites/apics-blog/thinking-supply-chain-topic-search-result>.

## Bibliography

Rice, Sharon. “The Total Scope of Supply Chain Management | APICS Blog.” Accessed February 22, 2021. <http://www.apics.org/sites/apics-blog/thinking-supply-chain-topic-search-result>.