



## **How Paper is Affecting Printing Companies and Approaches to Consider**

*Insights from the October 2022 PIPI Study*

## **PRINTING INDUSTRY PERFORMANCE & INSIGHTS**

Providing regional printing association members  
a printing industry outlook view and actionable knowledge.

October  
**2022**

***PIPI Shows how Paper is Affecting Printing Companies,  
and Suggests Approaches to Consider***

***\*Dr. Ralph I. Williams Jr.***

**Associate Professor of Management**

***\*Andrew Zeiser***

**Assistant Professor of Supply-Chain**

***\*Dr. Richard Tarpey***

**Assistant Professor of Supply-Chain**

**\*Jones College of Business**

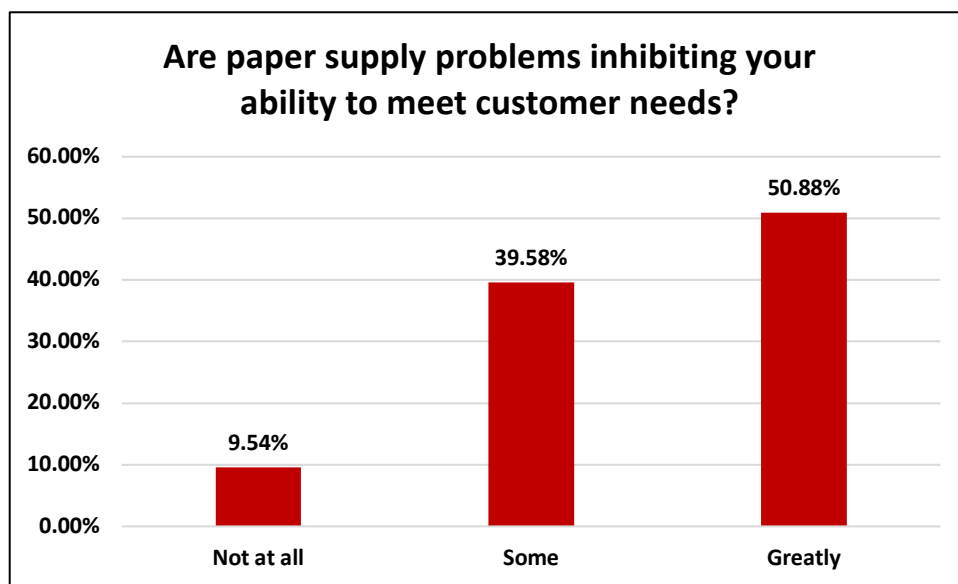
**Middle Tennessee State University**

Our “Big Picture” report from the October 2022 PIPI (*Printing Industry Performance and Insights*) survey shows that printing firm leaders see paper as most affected by inflation among their cost categories. However, increased paper cost is only one side of the story. Paper availability is a huge issue too! Given the vital importance of paper to our industry, in our October 2022 PIPI study, we explored the following topics: paper’s effect on meeting customer needs; is the paper situation getting better; how much firms have increased paper inventory, and is increased inventory helping; and the impact of growing paper inventory on cash. We present our findings for each of those topics below with actionable suggestions. Our last section includes ways to respond to paper supply issues, which we drew from previous supply-chain research and tested in this study.

We much appreciate the 15 regional printing associations that support our PIPI studies. They are listed at the end of this report. I thank the two supply-chain professors listed as coauthors above for their contributions. As we dig deeper, my supply-chain colleagues find what’s going on with paper very interesting.

## How are Printing Paper Issues Affecting Printing Companies

We asked the extent paper problems were inhibiting the ability to meet customer needs with these response options: “not at all,” “some,” and “greatly.” The percentage of responses for each option is presented in the bar chart below. Just over 50% of printing firm leaders chose “greatly.”

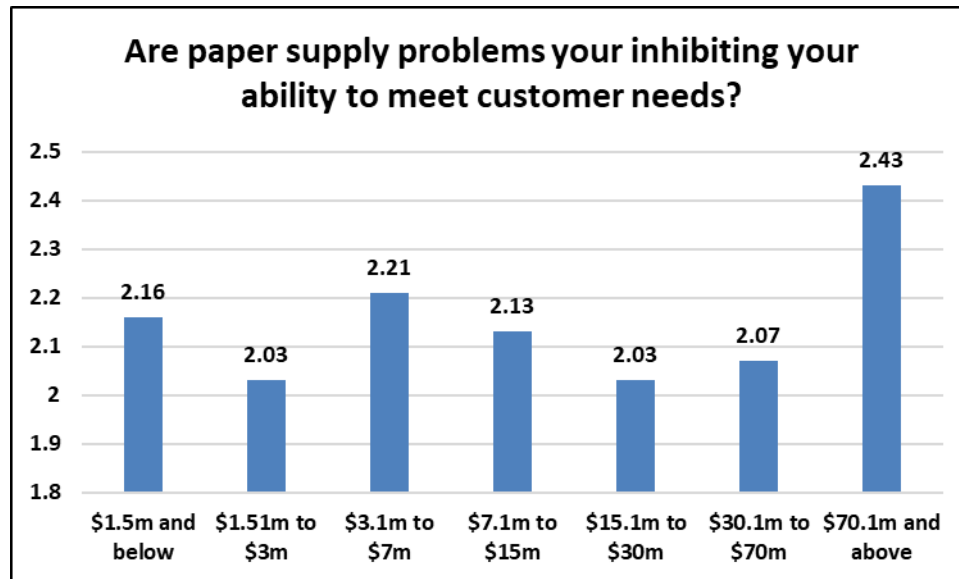


Printing firm leaders, there's an important message in that number. If printing companies are having trouble taking care of customers because of paper supply problems, that paints a concerning picture for our industry. Meeting customer needs is essential to the perceived value of our industry's primary product – printed goods.

We are not trying to paint a bleak picture here. But, printing firm leaders, it is vital that you strive to stay informed and continuously learn more about what's going on with paper. For instance, have regular discussions with your paper suppliers, not chats about specific orders or bids, but seek their view of what's going on and what's coming. In addition, you might occasionally look at sources such as the *American Forest & Paper Association's* website to view their news or sign up for their e-newsletters.

Moreover, you must develop systematic processes for handling paper in your firm. We will discuss this topic later.

We further examined the “Are paper supply problems inhibiting your ability to meet customer needs?” by firm revenue size category. We coded the responses as follows: 1 = not at all; 2 = some; and 3 = greatly. NO firm revenue category had an average response under 2.0, reinforcing the importance of paper supply. Interestingly, the largest firm revenue size category (\$70.1m and above) showed the most significant impact of paper supply problems on meeting customer needs.



Here are some quotes printing firm leaders provided in our survey about their paper supply problems. These first quotes address inefficiency prompted by paper supply problems.

- “The... time needed to find paper is heavily impacting our production workflow.”
- “It used to take 20 minutes to order paper; now, it takes three hours and multiple substitutions to get the job done.”
- “We have had to buy truckloads of paper tying up our money in order to keep paper.”
- “Supply chain issues have driven the company to maintain a higher inventory level where JIT inventory availability had been the norm.”

The following quotes address paper supply’s impact on taking care of customers and maintaining or growing revenue.

- “I am losing clients because they do not... understand the problem we are having.”
- “Have to use more expensive papers, or the customer cancels the job.”
- “If we can't get the paper, we can't get the printing jobs.”
- “We have had to turn down a great number of jobs due to unavailability of paper.”
- “In addition, the unpredictable availability of certain types of paper, in addition to increasing prices, has impacted the ability to accept certain jobs.”
- “Prices are knocking customers who print out of the market.”
- “...which hurts our industry because print buyer steer to other avenues other than print.”
- “...we definitely cannot add new customers because we cannot secure the paper.”
- “We would have increased an additional 20% if not for material allocation limitations by the paper vendors.”<sup>1</sup>

However, we did see the positive quotes below.

- “Supply chain conditions are improving. Optimistic about building inventory.”
- “Paper supply shifted from scarcity to oversupply.”

These more optimistic quotes reflect the positive average revenue growth numbers in our October 2022 PIPI “Big Picture” report.

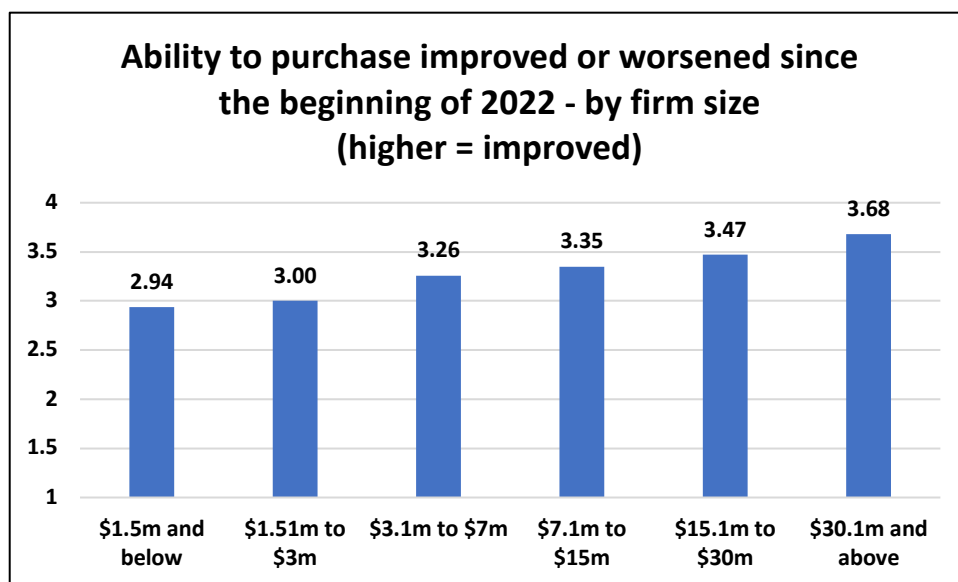
We asked, “Has your ability to purchase paper improved or worsened since the beginning of 2022?” Respondents had the following options: 1 = gotten much worse; 3 = about the same now; 5 = has improved dramatically. The average response was 3.28, which indicates a bit of improvement since the beginning of 2022.

We analyzed our “...ability to purchase paper improved or worsened since the beginning of 2022” responses by firm-size category. Those averages are shown in the bar chart below. It appears larger firms may have seen more improvement in

---

<sup>1</sup> Multiple leaders shared specific amounts of revenue lost due to paper issues. For confidentiality, we are not sharing those specific numbers, but trust us, those revenue amounts are substantial.

paper supply purchasing since the beginning of 2022. In considering why that's the case, assuming our findings are accurate, one might propose that mills and merchants are taking better care of larger buyers, which is reasonable. However, one might also propose that larger companies have more resources to address paper supply issues, such as more staff to address that problem. If that's the case, and even if it's not, smaller companies may seek to apply more resources to address paper supply issues. For instance, smaller firms may delegate some of their paper purchasing-related tasks to multiple staff members, or leaders may get more specifically involved in procuring paper.

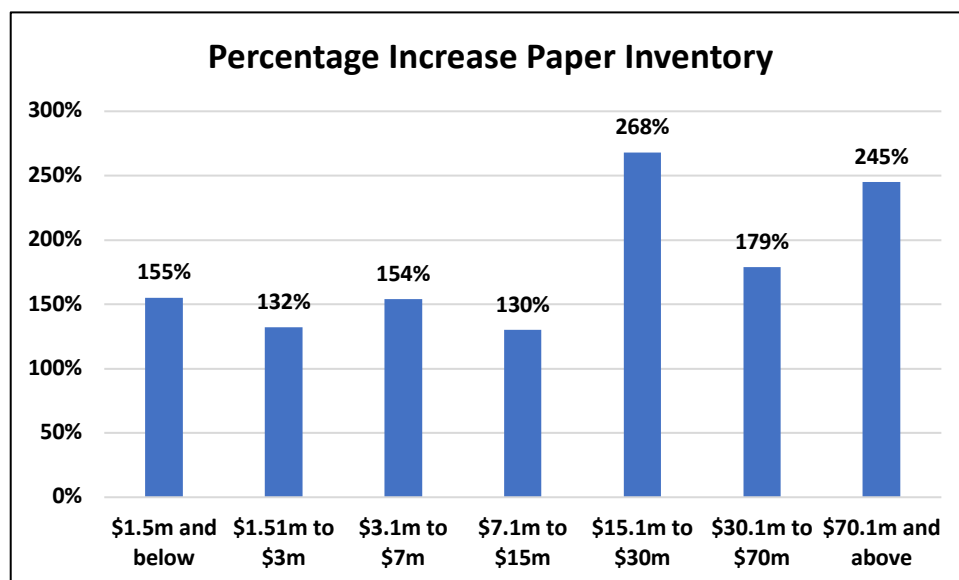


We asked printing company leaders if they had increased paper inventory to address paper supply problems, and 86% of the respondents said “yes.” We asked how much firms had increased their financial investment in paper inventory, and the average was 171%!! A 100% increase is double; a 171% increase is approaching triple! We asked how much firms had increased their physical inventory of paper, and those numbers parallel the financial increases in paper inventory...having more paper requires more space! Indeed, many printing firms have leased additional storage space to accommodate their paper inventory increase.

We analyzed the average percentage increase per firm-size category. Those averages are presented in the bar chart below. The numbers *suggest* larger firms have increased their paper inventory more, which may relate to the bar chart above, indicating that larger firms are seeing some improvement in the ability to



purchase paper. Maybe their increased inventory is lessening the buying paper pressure.



We also asked what paper you are having trouble procuring and what paper you are increasing in inventory? The responses were all over the place...every kind of paper you can imagine.

If your firm has increased its financial inventory in paper at an amount dramatically greater than the comparable percentages above, why? You might rethink that investment. Supply-chain professors propose that adding inventory is expensive and attempts to cover up, not solve, the true problem. Therefore, increasing inventory may not be the most effective use of resources. However, if your firm has not dramatically increased paper inventory, but you are having problems meeting customer needs, you consider increasing your paper inventory a bit as a short-term approach. However, if you have not dramatically increased paper inventory but you are adequately meeting customer needs... well done! But don't stop seeking to improve.

When I led printing companies, paper was a commodity – we bought paper when we needed it. Therefore, I propose that managing paper is a new task for most printing firms. In managing paper inventory, here are some suggestions you might consider:

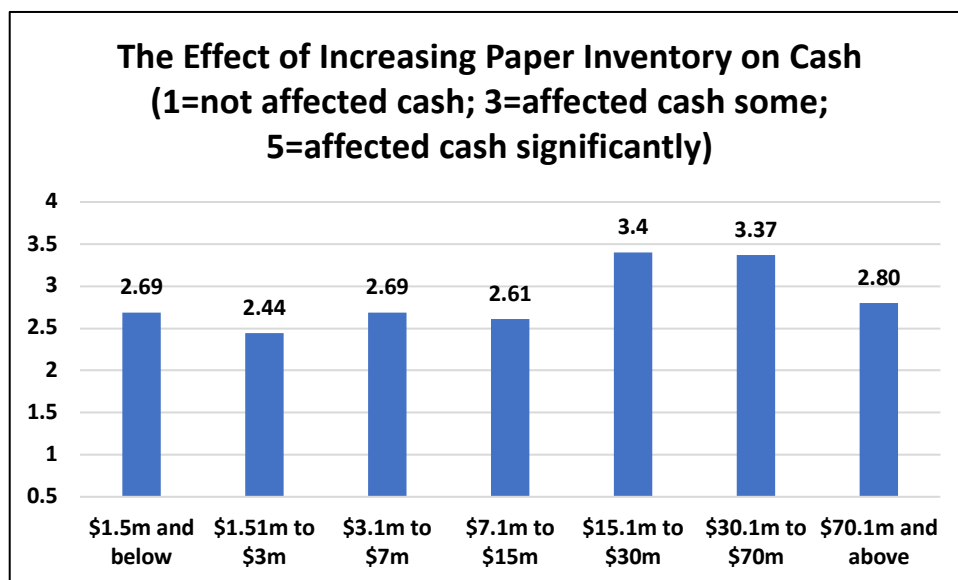
- Measure and assess the positive effects of carrying additional inventory.
  - For instance, if your goal in increasing paper inventory is to reduce or eliminate related lost orders, track the number of lost orders due to paper availability. When you stop losing orders due to paper ability, stop increasing inventory and consider reducing inventory.
- Understand inventory impact – is the additional inventory you are carrying worth it?
  - Has inventory expense (an investment) facilitated additional sales that justify the investment?
  - To store paper, has your firm added additional storage? If so, include additional storage costs in considering your inventory investment.
- Understand and address inventory management failure points.
  - Are your records of what is in inventory accurate and dependable?
  - Are your records accurately adjusted when shipments arrive, or inventory is used, and are those records accurately communicated to all relevant team members?
  - One possibility is to apply a Microsoft Excel spreadsheet with guidelines for who makes changes but is available to all team members.
  - If your paper inventory is massive and complex, you might explore inventory management software. As inventory management software is potentially expensive, we don't have any suggestions. However, it might be worth a look.
- Determine a minimum inventory amount (safety stock needs) for each paper type stored.
  - Continue to assess those minimum amounts and adjust as needed.
- Do you have an inventory management strategy? Is it formalized, documented, and communicated?
  - Write down your paper inventory guidelines and share them with your team.
- Differentiate inventory management from order management. Consider actively managing paper inventory stocks and movement, which are both different from tracking customer orders



We explored two potential outcomes of increasing paper inventory. We asked, “Has increasing inventory helped address your paper problems?” Respondents had these options: 1 = not helped at all; 3 = has helped some; 5 = has addressed all our problems. The average response was 3.42, which indicates some benefits from increasing inventory. We analyzed those responses by firm-size categories and found no significant differences between different-sized printing firms.

We asked, “If you have increased inventory to address the paper shortage, is that negatively affecting your available cash?” Respondents had these options: 1 = has not negatively affected our available cash; 3 = has negatively affected our available cash some; 5 = is causing significant cash problems. The average response was 2.82, a bit below “negatively affecting our cash some.” Given the paper inventory increases we see in this data and our connections with printing firms, we expected reports of a more significant effect on cash.

We looked at increasing paper inventory’s effect on cash by firm category size. Those averages are shown in the bar chart below, and they *suggest* that larger printing firms are experiencing a bit more effect on cash from increasing paper inventory. This aligns with the numbers presented above showing that larger firms are expanding paper inventory more.



## Ways to Respond to the Paper Supply Issues

Previous supply-chain research has explored the benefits of applying a proactive and systematic approach to supply-chain issues versus a reactive and emotional approach. We included questions exploring this approach in our October 2022 PIPI study.

From our first data analysis, higher-performing firms tend to apply a more proactive/systematic supply-chain approach. Also, firms applying a proactive/systematic supply chain approach are more likely to see an improvement in their ability to procure paper as needed.

So, what might a proactive/systematic supply chain approach entail? The proactive/systematic supply chain tactics we drew from previous research, adjusted to fit our industry, and applied in our October 2022 PIPI survey, are listed below. Related suggestions are included under each tactic.

- Contact customers and ask about their future projects to maintain adequate paper inventory.
  - Regularly and frequently communicate with customers to understand future orders and communicate with suppliers to understand potential supply chain constraints.
  - Given the difficulties of sourcing paper, communicate to your customers that lead times have increased.
  - Also share with customers your specific strategies to address paper issues.
- Continually analyze past trends and customer demand to determine adequate paper inventory for each item.
  - Track and document your use of each paper item per month over recent years.
- Establish goals for the amount of each paper item in inventory based on customers' future projects and analysis of past trends.
  - Continually analyze those goals.
- As opposed to reacting, apply a rational process in managing paper inventory and supply chain.

- Develop and communicate an allocation plan for when your customers' orders exceed your production capabilities. Some possible strategies include: serving the most profitable customers first, providing each customer with a percentage of their ordered quantity, or filling orders partially in each time period.

## **Summary**

More than half of respondents indicate paper issues are affecting their ability to satisfy customer needs greatly, and the largest firms indicate they are experiencing the greatest effect. However, we saw reports of improvement in paper supply issues since the beginning of 2022. Printing firms, on average, report significant increases in paper inventory, which they say has helped mitigate paper problems a bit. We saw in our data some effect on cash from increasing paper inventory, but given the inventory size increases, we expected more impact on cash. Higher-performing firms are applying a more proactive/systematic approach to managing paper supply chain issues, which appears to produce improvement in the ability to procure paper as needed.

I am working with supply-chain professors to interview folks from paper mills, merchants, and printing companies to provide a big-picture view of what's going on in the paper industry. Hopefully, we will soon share what we find.

Please email Ralph Williams ([ralph.williams@mtsu.edu](mailto:ralph.williams@mtsu.edu)) with questions, comments, or suggestions related to this report or the PIPI studies.

***Participating Regional Printing Associations***

FGA – Florida Graphic Alliance

GAA – Graphic Arts Association

GLGA – Great Lakes Graphics Association

GMA – Graphic Media Alliance

PGAMA – Printing and Graphics Association Mid-Atlantic

PIA – Printing Industries Alliance

PIAMA – Printing and Imaging Association MidAmerica

PIAS – Printing Industry Association of the South

PIASC – Printing Industry Association of Southern California

PIASD – Printing Industry Association of San Diego

PICA – Printing Industry of the Carolinas

PIMW – Printing Industry MidWest

PINE – Printing Industries of New England

PMA – Print Media Assoc.

VMA – Visual Media Alliance