What Every CFO Needs to Know About Supply Chains

A research study into how supply chain events and digitization can dramatically improve cash flow, profitability, and revenue.

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FOREWORD

As a leading cloud-integration provider, DiCentral is uniquely positioned to help thousands of global clients across numerous vertical industries. The complex integration of diverse applications and systems, such as electronic storefronts, transportation management, warehouse management, cash management applications, and enterprise resource planning systems, is typically cross-functional and involves senior executives from various segments of the organization. Nearly all of these projects involve the finance department, but in many cases, they are not the primary sponsor.

Over time, we have realized that our consultative approach has helped bridge knowledge gaps between business executives — especially when these integration projects involve both supply chain and finance executives. The origination of supply chain signals are often the same documents that rule the world of finance (orders, invoices, payments, and remittance information). The accuracy of these business documents, along with the timing of when they are sent and received, is essential to how they are treated in financial statements. The ability for organizations to improve cash flow and financial performance is often tied to the choreography of these documents. In this study, we specifically focused on these documents and their impact on revenue recognition, invoicing, payments (with the associated reconciliation information), and cash management-related activities.

This study would not have been possible without the survey data from more than 125 CEOs and CFOs and the numerous one-on-one interviews. We thank all of the survey and interview participants, with special thanks to Eric Huddleston, Partner at ABIP, P.C., for his insightful advice on this project. We would like to also thank Dr. Zacharia for managing this research project and the countless hours to collect the data, analyze it, and write this study. Last, but not least, we would like to thank the Center for Supply Chain Research at Lehigh University for its continued support to help fund and promote education and research to optimize supply chain knowledge.

DiCentral Corporation is thus pleased to present **What Every CFO Needs to Know About Supply Chains** by Zach Zacharia, Ph.D.

EXECUTIVE SUMMARY

In 2020, DiCentral and the Center for Supply Chain Research at Lehigh University conducted a survey of more than 125 CFOs and CEOs of North American-based manufacturing companies to gain insight into the impact of supply chain collaboration and digitization on financial performance. We frequently only think about a physical item and the delivery of this item when we consider the "supply chain." However, a supply chain encompasses all the individuals, organizations, resources, operations, and technology involved in supplying a product or service to a customer. In this research, we looked at not only the physical supply chain, but also the financial supply chain, and the interaction between the two. The importance of understanding this interrelationship is underscored by the frequency by which investors and external appraisers base company valuations on the financial performance of key metrics and ratios, including Days Sales Outstanding (DSO), revenue growth, profitability, and cash flow.

Leadership teams often face financial trade-offs about where capital should be invested. Such decisions often lead to the discussion of risk versus return. The objective of this research study was to better understand the areas in which CEOs and CFOs believe supply chain investments would have the greatest impact on the company's financial performance.

Our research probed five key areas of supply chain collaboration and its potential to improve financial performance:

1. **Revenue Recognition.** In May 2014, new revenue recognition rules (ASC 606 and IFRS 15) were announced to ensure greater consistency between and within the U.S. Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS) guidelines. This update led to significant internal process changes, which impacted financial statements in many companies worldwide. Our research highlights how peer companies have adopted different supply chain methodologies to support their revenue recognition policies and the relative risks associated with the different procedures.
2. **Digitization and Collaboration with Customers.** Customer-facing supply chain activity can directly affect when revenue can be recorded, when the customer can be invoiced, and how quickly cash can be collected.
3. **Digitization and Collaboration with Suppliers.** Supplier-facing supply chain activity can directly affect inventory, inventory visibility, and costs associated with processing supplier-provided documents. Unlike customer-facing supply chains, as a buyer, there is often a greater ability to dictate digitization and collaboration with suppliers.
4. **Electronic Payments.** Payments utilizing a digital process have a different impact on a company's bottom line than payments using a manual check writing process.

5. **Corporate to Bank Integration.** Banks provide numerous services to their corporate clients, including check-writing, electronic payments, lockbox services, and issuing interest on idle cash. Visibility into bank account activity is historically provided via a web portal interface. In this study, we investigated the migration from a web portal interface to a digital integration between banks and their Clients' ERP systems to synchronize large amounts of information.

While ERP software companies tout the vision of digitizing an order-to-cash-based process, it is evident to most supply chain professionals and CFOs that collaboration and integration with customers and suppliers are critical to executing this digital vision. Many of the processes that require digitization are directly linked to financial performance indicators, as these processes often impact inventory, sales, cost of sales, or the ability to view information that would influence critical financial decisions.

The conclusions drawn from this study offer value to all companies, including those at the early stages of their supply chain digital journey and those near the end of the journey with fully digitized processes.

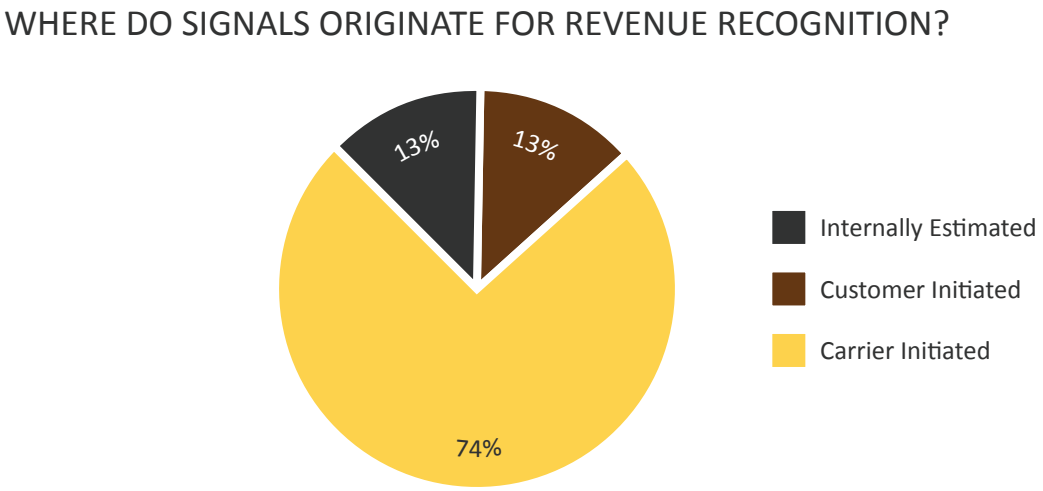
KEY TAKEAWAYS FROM THE RESEARCH:

- Data collected and analyzed suggests that digital, physical, and financial supply chains directly benefit corporate performance and that nearly all study participants had completed some level of digital integration with either a customer, supplier, or financial institution. Every participant believed that the investment in digital integration would be of benefit and 85% of the participants felt that the additional investment in digitization was needed.
- Most companies that undertook these digital integration efforts tended to share a relatively fixed investment in integration infrastructure. This suggests that the first initiative bore the brunt of the expense and each incremental initiative leveraged this initial investment. The expansion to further digitization didn’t appear hampered by technology needs or the expenditure in integration tools, but rather by the burden of managing the investment in people, time, and resources to initiate both intra- and inter-organizational change.
- Companies had more influence and success in driving digitization adoption with suppliers than with customers, with one respondent saying that pushing for digitization initiatives with customers was like “pushing a rope.”
- There is a strong desire for more digitization with both customers and suppliers. None of the survey respondents were completely satisfied with their level of digitization. Even companies with multiple digital processes still felt they had additional processes they were seeking to digitize.
- Companies have significant labor expense when relying on the manual entry of data into their ERP and back-end systems. This study captured annual data entry costs for bank-related information and customer and supplier transactions. On average, the companies in our study had over $1M in annual labor expenses tied to these activities.

REVENUE RECOGNITION

The research participants were North American manufacturing companies of various sizes whose primary revenue recognition policy was based on Free on Board (FOB)[1] destination terms in their customer agreements. We focused on identifying the triggering mechanism that companies used to signify a sale was completed for revenue recognition purposes. Companies have largely adopted one of three supply chain events to trigger revenue recognition in the company's ERP system: Internally Estimated, Customer Initiated, or Carrier Initiated.

Figure 1: Supply Chain Signal for Revenue Recognition



The vast majority of companies (74%) use supply chain signals digitally received from transportation carriers to trigger revenue recognition. This is referred to as Carrier Initiated. These transportation carriers represent a mix of truckload, less than truckload, and parcel post carriers. As goods are transported, scanners are used to track pickups and drop-offs and consolidate shipments for more efficient utilization of trucking assets. Information from the scanners is collected, consolidated, and analyzed for various purposes, and a subset of the information is made available to clients via web portals and direct integrations using Electronic Data Interchange (EDI). These direct integrations, which require no human interaction once established, facilitate the triggers that communicate that the item sold has been picked up and dropped off at a client's facility, enabling revenue recognition.

The second method used by respondents was to utilize an internal supply chain event, referred to as the Internally Estimated method. Thirteen percent of the respondents used the actual date and time of when the product was shipped from their facility, plus some added time to cover the estimated transport time. Using an internal signal avoids the cost and expense of integrating with transportation carriers, but it does not provide high certainty regarding when the goods are actually delivered. Respondents indicated they tended to use historical data to arrive at the added transport time.

The respondents' third method, also coming in at thirteen percent, was to incorporate an electronic signal directly from the customer before recognizing revenue, also known as Customer Initiated.

Research participants were asked about the relative risks associated with adopting the above methodologies in conjunction with GAAP compliance rules. Those using the Internally Estimated method registered the highest level of compliance risk, while those who used the Customer Initiated method registered the lowest level of compliance risk. This point was further supported by data that suggested that companies using the Internally Estimated method had more manual revenue adjustments to their financial statements (due to revised product delivery dates) than those using the other methods, and these companies registered a more pressing desire to seek changes to their revenue recognition process. This again confirms the view that the Internally Estimated method was the least desirable of the three options.

AT WHAT COST?

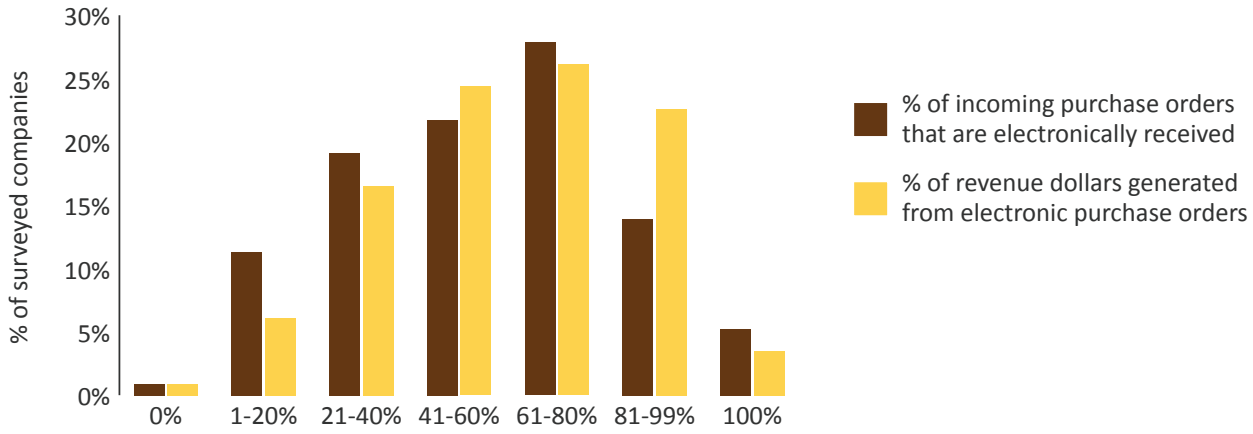
Even though Internally Estimated triggers avoid the expense of integrating systems, survey participants viewed this method as "high risk," given that it led to concerns over GAAP compliance, invited more manual adjustments, and was high on the list of processes that organizations were seeking to change.

DIGITIZATION & COLLABORATION WITH CUSTOMERS

REDUCING THE MANUAL EXPENSE OF PAPER

Nearly all of the manufacturing companies surveyed had initiated a process to digitize inbound purchase order activity with customers, with 5% stating they digitized 100% of their order activity.

Figure 2: Percentage of inbound purchase order activity digitized

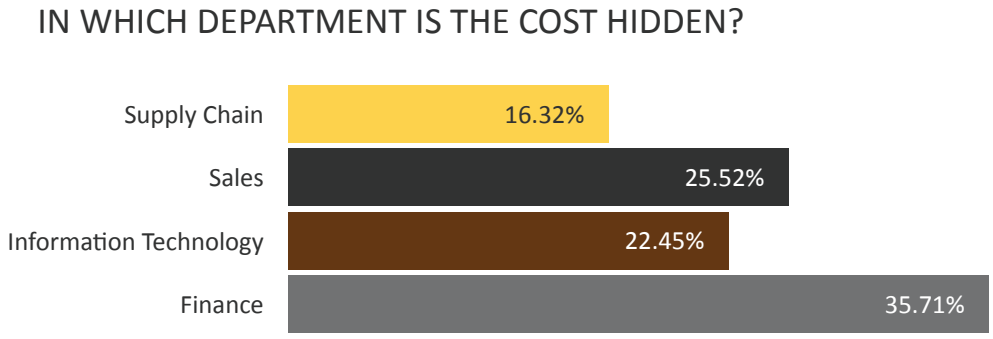


Purchase orders not sent digitally are processed manually, with respondents suggesting this manual data entry activity resides in numerous departments throughout the organization, such as sales, information technology, finance, and supply chain, with finance being the most common area where this work effort resides. Very few companies had a true understanding of the actual cost associated with this manual data entry, but suggested it had been moved to functional areas where labor costs were lowest.

Every survey participant seeking to expand their digitization efforts and reduce manual entry spoke of the challenges of adoption by customers and the level of influence needed to change customer behavior. It was clear that respondents had more leverage in changing a supplier's digitization behavior than that of their customer.

Many of the companies in the survey talked about a Pareto Principle[2] in which a small percentage of the customers made up a disproportionate share of the overall revenue. As such, companies were able to get large reductions in manual order processing costs by simply digitizing a relatively small subset of customers.

Figure 3: Where organizations place the work of entering manual purchase orders

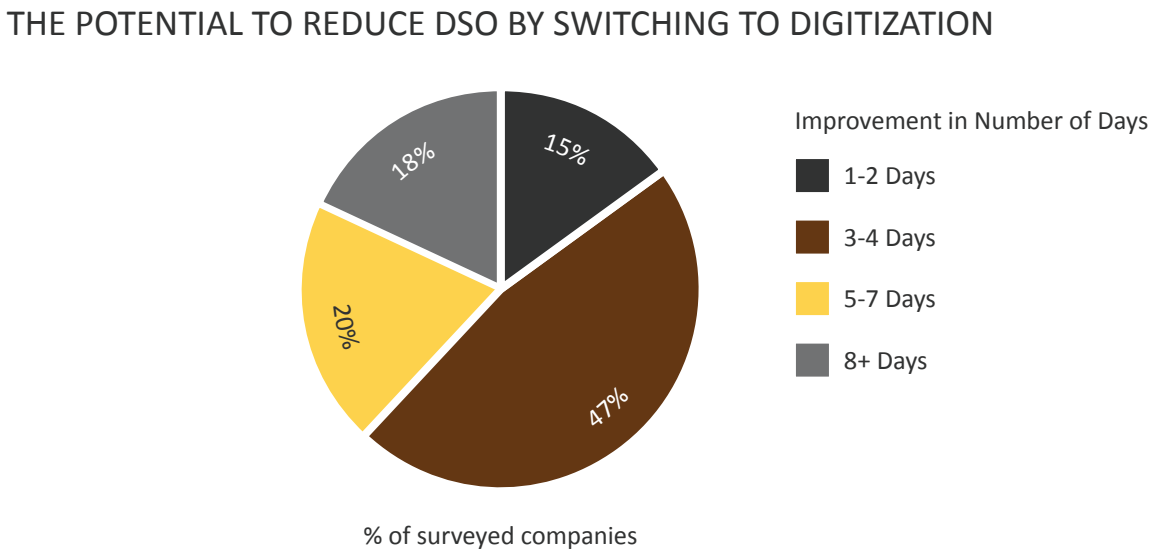


IMPROVING DSO

Research participants overwhelmingly stated that digitization could drive improvement in Days Sales Outstanding [DSO]. The relative level of improvement varied, and the urgency of driving DSO improvement differed by company size. Startups and cash-starved companies appeared very focused on improving DSO, while cash-rich mature companies appeared neutral on whether improving DSO was a high priority. Several CFOs suggested that DSO improvement was not a focus given that debt capital was inexpensive and readily available. Yet, small, fast-growing companies in our study signaled a different attitude towards DSO and took a more aggressive approach with projects that could reduce DSO. Several CFOs talked about negative cash flow from COVID-impacted customers who imposed deferred payment terms, despite existing contractual agreements, with most of the CFOs taking the position they were not large enough to push back on the request.

More than 85% of research participants suggested that at least three days of DSO improvement could be gained if collaboration activities with customers were further digitized and every CFO interviewed was well aware of their DSO numbers, suggesting DSO is a largely watched and measured value.

Figure 4: Benefit to DSO though Customer Digitization



> The best time to look for cash is when you don't need it. The best time to work on DSO reduction is when you don't need it.

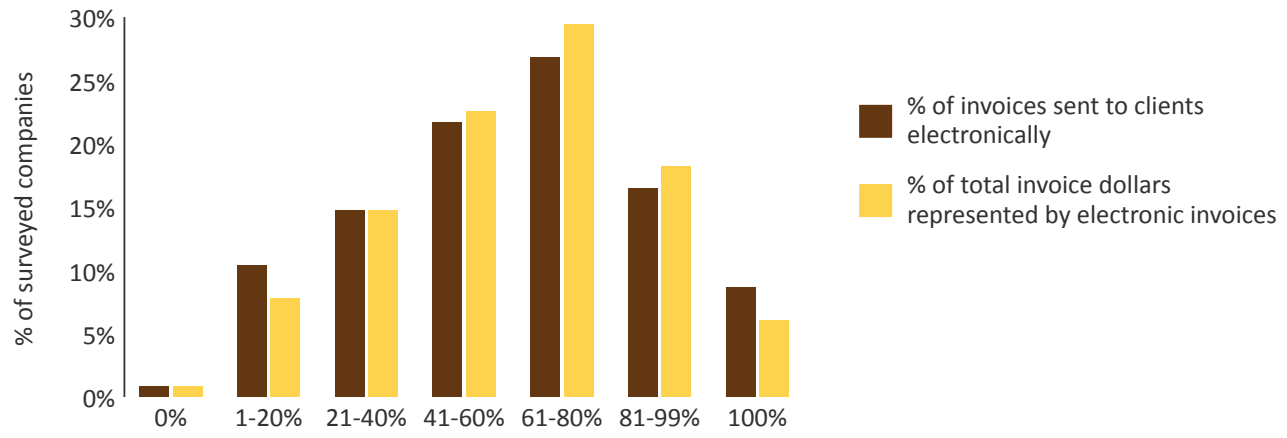
But DSO trends are not favorable, with much research showing a degradation. And while many companies will seek to offset this decline with digitization projects, many CFOs suggest that DSO trends will continue to deteriorate slowly until such time that inflation increases and/or debt capital becomes expensive. As the old saying goes, "The best time to look for cash is when you don't need it." Similarly, "The best time to work on DSO reduction is when you don't need it."

Much like the digitization of purchase orders, 95% of the participants had started their journey to digitize invoices sent to customers, with 25% of the respondents stating they had high digital penetration[3] rates and 4% stating they had digitized 100% of their invoice activity.

With high levels of digitization, we sought to understand what historical DSO benefit users had obtained. However, what we actually uncovered was that despite the capability of sending invoices being simpler and more digital, many respondents did not reduce invoice time due to contract terms with the customer having already been dictated. In fact, several CFOs made it clear that invoice digitization efforts with customers were not initiated for DSO reduction reasons but rather for operational savings.

It has become clear that while digitization can reduce the cost of invoicing a customer and also speed up the process of getting invoice data into the ERP system, any reduction in DSO of greater than seven days would typically require digitization AND a renegotiation with the customer on invoice timing. The research tended to suggest that CFOs were not prepared to undertake the significant investment in time and resources renegotiating customer contracts.

Figure 5: Percentage of outbound invoice activity digitized

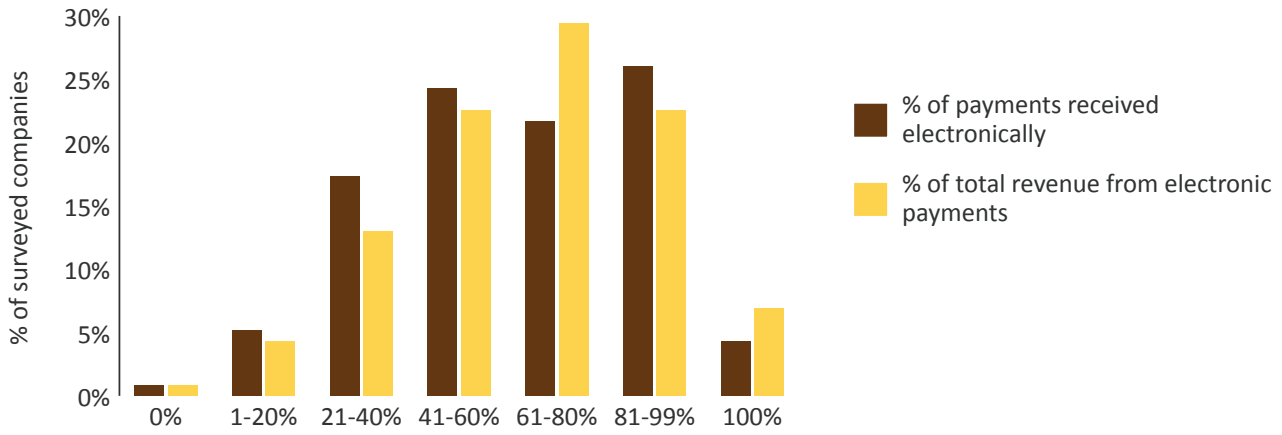


IMPROVING CASH COLLECTION

A key element of DSO improvement is collecting cash, and while payment due dates are typically defined in contractual terms, almost every organization has someone responsible for delinquent collections. As part of the research, we undertook an effort to investigate the level of adoption of digital payments.

Nearly every company surveyed had started their journey to accept electronic payments (e.g., ACH, credit card, or wire), with a few stating that they had achieved 100% digital payment receipt. Slightly more than 75% of the companies indicated that more than 40% of their clients pay them digitally. Similar to the Pareto Principle in purchase orders, invoices follow a comparable pattern. When a company's revenue is concentrated from a small population of clients, digitizing the order-to-cash process with this minority of customers can reduce a large portion of the manual processing effort and associated costs. Most of the companies in the study (73%) offered discounts for early payment, which reinforces the notion that cash is important and companies are willing to offer incentives to collect cash earlier.

Figure 6: Percentage of digital payments received



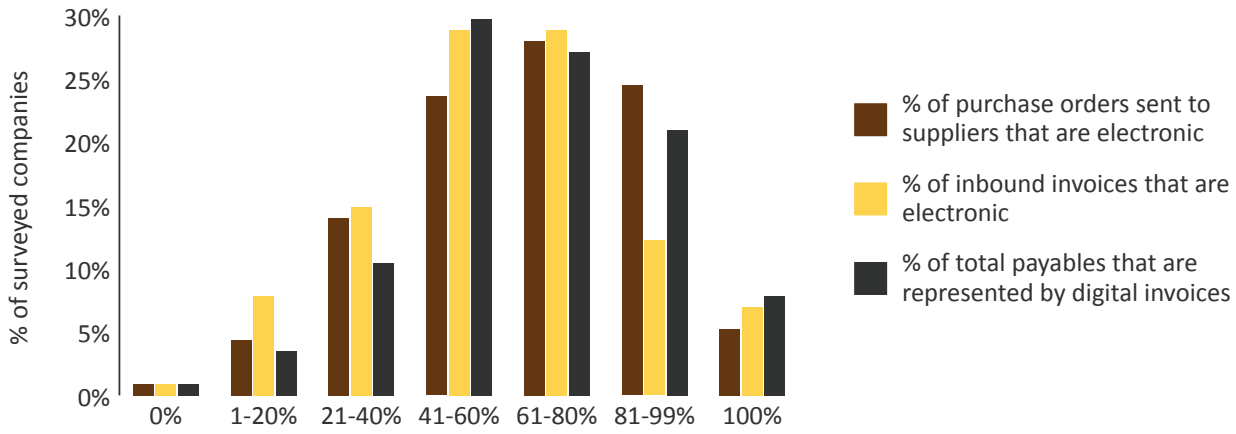
Equally important to research participants was the receipt of remittance information with the payment regardless of whether it was a digital or physical check. Several one-on-one interviews highlighted the expense of chasing customers who provided payment with no remittance detail, even if payment was in full. Given that many customers had recurring monthly invoices of similar value, there was confusion over which payment to apply to which invoice. Research participants made it clear that when moving from paper-based payments to electronic-based payments, they were focused on ensuring they received the remittance information.

DIGITIZATION & COLLABORATION WITH SUPPLIERS

Research participants thought differently about the benefits of supplier integration in comparison to customer integration. Customer digitization initiatives were motivated by revenue growth, company agility, and/or the need to satisfy a customer request. Conversely, supplier-facing initiatives were motivated by increasing profitability, improving productivity, reducing inventory, supply chain visibility, and reducing expense.

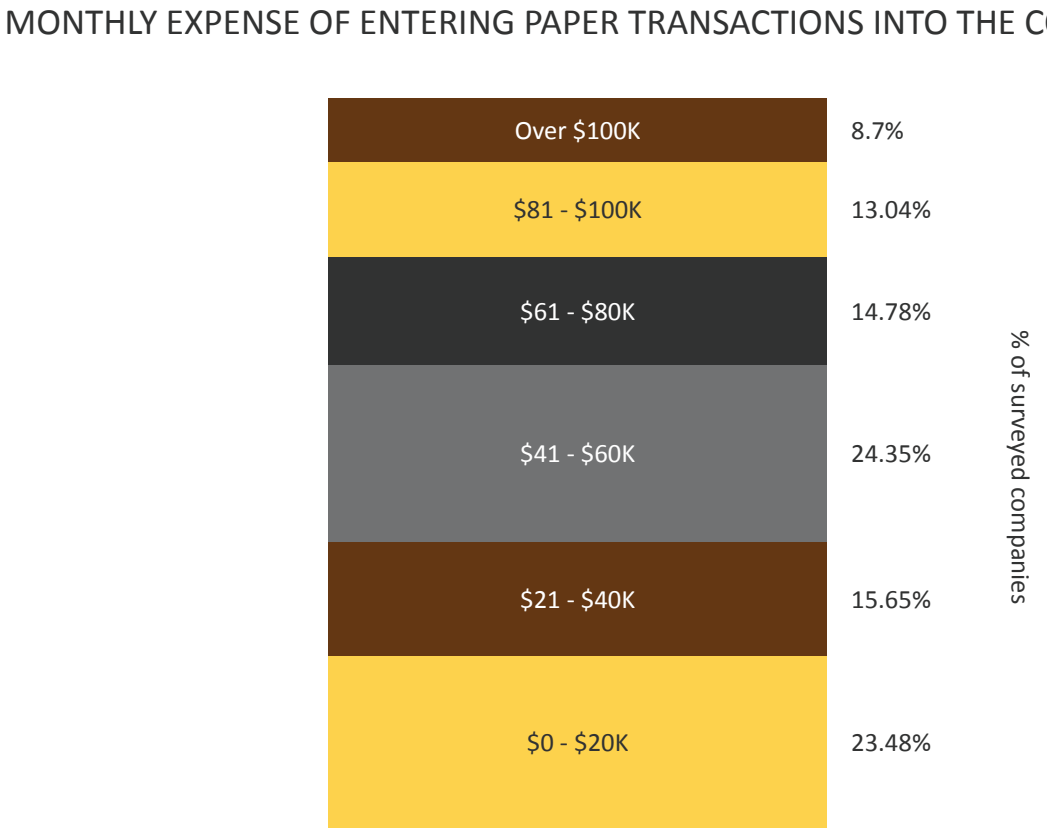
Digitization adoption initiatives with suppliers tended to show strong symmetry between orders and invoices. This suggests that manufacturers taking on digitization efforts with their suppliers tended to take a more holistic approach to digitizing the order-to-cash process, and did not only seek to optimize just a subset of the process. We did not see this same level of symmetry on the customer-facing initiatives, suggesting that in some upstream industries (such a retail and hospitals) greater emphasis was placed on the procurement process and not the invoicing and payment process.

Figure 7: Digital activity with suppliers



Processing manual document flow with suppliers, similar to the process with customers, is expensive and most often falls on the shoulders of people working in the finance organization of the business. On average, research participants spent slightly more than $600,000 per year on processing manual document flow with suppliers that could have been digitized

Figure 8: Manual expense incurred to enter paper-based transactions from customers and suppliers



ELECTRONIC PAYMENTS

According to the Association of Financial Professionals (AFP), 2019 was the first year in which fewer than half of business-to-business payments were being made by check. This number is now down to 42% from 51% in 2016, and COVID-related events in 2020-21 may drive this number down even further as companies seek to keep employees out of the office and find alternative ways to make payments while still ensuring strong control against payment fraud. Several participants mentioned that while they still write checks, they have implemented positive pay with the banks on each check written. This provides an additional layer of protection, ensuring that the bank will only release the funds for that check when the data provided by the company matches the check number, check amount, and recipient name.

Jim Kaitz, president and chief executive officer of the Association of Financial Professionals (AFP), noted that "Treasury and finance professionals tend to stick with what works for them and their vendors." Kaitz said it was "encouraging" that check usage is on the decline due to improved efficiency and lower risk of fraud with electronic payments. Currently, the average organization makes 38% of its payments to major suppliers via checks. The gap between the use of paper and electronic payments has narrowed to only two percentage points for ACH credits in 2019, whereas in 2016, the gap was seven percentage points.[4]

Managing a payment becomes easier using an electronic medium. Typically there is more control, as it is often more difficult to hijack or manipulate a digital payment transaction than it is to steal or manipulate a physical check. Electronic transactions can be encrypted, and authorized access can be controlled via internal and external I.T. systems. Research participants communicated that the same infrastructure used to digitize customer and supplier supply chain initiatives was then used to digitize electronic payments to suppliers by simply enabling their respective banks to accept a digital transaction that authorized an electronic payment.

42%

of business-to-business payments today are being made by check, down from 51% in 2016.

"Treasury and finance professionals tend to stick with what works for them and their vendors"

Research participants communicated that using a digital transaction for payments allowed them to hold on to cash longer and better control the timing of the release of funds, something more difficult to control when mailing a physical check. Check fraud remains rampant across many industries. According to an AFP payment fraud and control survey, 70% of U.S. organizations reported check fraud in 2019, responsible for more than $18 billion in losses. Check fraud tactics, bolstered by access to new technologies and software, have made fake checks cheaper and easier to produce than ever before.[5]

Most of the published standards on digital payment transactions enable both transactional details for remittance-related information and payment instruction. As we stated earlier in the research, CFOs apply a strong value on the receipt of remittance information.

70%

of U.S. organizations reported check fraud in 2019, which was responsible for more than $18 billion in losses.

CORPORATE TO BANK INTEGRATION

Digital integration with corporate banks plays a critical role as companies think about digitizing their order-to-cash process and managing cash. As we have already discussed, making an electronic payment often requires a digital integration with your corporate bank. Given that banks offer many different services, this digital link can be used for other purposes and benefits.

Banks have increasingly taken on more service activity for companies, thus creating the impetus for conversations about how the bank's activity is "visible" to the organization's back-end systems, such as an ERP. Historically, receipt of physical checks from customers came to the accounts receivable department within the company's finance department, where they were recorded and physically transported and deposited. Today, many companies have outsourced this activity to their corporate bank using a lockbox service. As a result, the information about the payment is now captured by the bank to transfer this information about the payment to the corporate client. This data transfer can be implemented in one of two ways:

1. **Bank Portals.** Banks routinely give clients web access to bank portals that provide the status of transactions, payments, receipts, and idle cash. Using the portal to mirror the bank's data into the company ERP system can be time-consuming, expensive, and error-prone as it relies on a person to manually input the data shown on one screen into another screen. The effort and expense are multiplied as the number of banking relationships grows or the frequency of updating the company ERP increases.
2. **Corporate to Bank (C2B) Integration.** Banks have defined APIs (application programming interfaces) for payments and other data-related transactional activity. APIs for payments are often provided in industry-standard formats, yet non-payment information is typically in propriety formats defined by the bank. C2B integration can make sense for companies with many banking relationships and/or if large amounts of information need to be transferred between the bank and the company.

WHY INTEGRATE?

Research participants averaged **$648,000** a year in manual data entry expense. Companies can significantly reduce this expense and gain accuracy if they digitize processes with their banks.

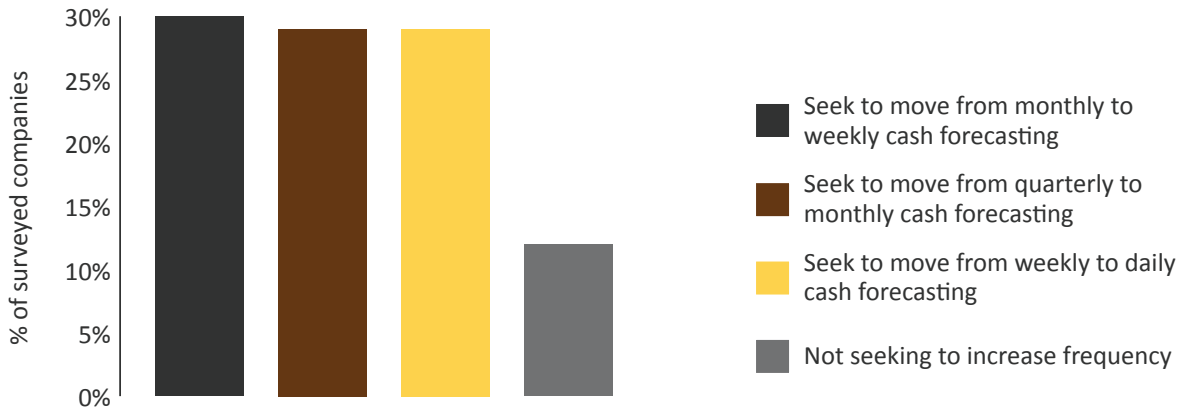
The majority of respondents in the study had a cash management relationship with at least three different banks and had undertaken a C2B integration with at least one of them. Survey respondents reported spending an average of $648,000 per year in labor expense to manually enter data from bank portals into their ERP systems via a relatively error-prone process. The study suggests that companies can significantly reduce this expense and gain greater data accuracy by simply improving their internal processes and data integration with corporate banks.

IMPROVING CASH FORECASTS

One of the drivers for C2B integration is the need to manage cash and provide cash forecasts. Internal corporate treasury groups use models that must be loaded with historical data and current balance information. The frequency of a cash forecast varies greatly from one company to another, ranging from quarterly to daily. Companies with more frequent cash forecasts tend to incur more manual expense with updating models.

80% of the companies in the study said they would increase their cash forecast frequency if they could more easily reconcile internal data with external data maintained by the bank.

Figure 9: Cash Forecasting Frequency Change



CONCLUSION

While many companies have made great strides in digitizing processes that lead to financial improvement, no single participant indicated that they had reached the end of their journey to digitize all aspects of the order-to-cash cycle. Although, it was evident that all participants of the survey had begun this journey.

Respondents believe that further digitization is needed, and the investment in these projects provides significant benefit to corporate performance.

Survey respondents also acknowledge that bringing inter-organizational change was difficult and, at times, slower than expected. To digitize physical and financial supply chains requires multiple parties to buy into the vision of change, including the party sending transactions and the party receiving them. Respondents indicated that if they were to do it all over again, they would invest more upfront to get buy-in from customers and suppliers to generate organizational change and achieve greater digitization.

Endnotes

1. Free On Board (FOB) is a shipment term used to indicate whether the seller or the buyer is liable for goods that are damaged or destroyed during shipping." "FOB origin" means the buyer is at risk and takes ownership of goods once the seller ships the product. Source: Investopedia
2. The Pareto principle states that for many outcomes roughly 80% of consequences come from 20% of the causes (the “vital few”).[1] Other names for this principle are the 80/20 rule, the law of the vital few, or the principle of factor sparsity.[2][3]
3. Defined as having greater than 80% of all invoices sent digital
4. https://www.nacha.org/news/report-finds-b2b-check-payments-down-sharply
5. https://www.cutimes.com/2019/11/22/check-fraud-remains-pervasive-with-new-scam-channels-evolving/?slreturn=20210001145254

ABOUT US

ABOUT DR. ZACH G. ZACHARIA

Dr. Zach G. Zacharia is an Associate Professor of Supply Chain Management and Director of the Center for Supply Chain Research in the College of Business at Lehigh University, where he teaches graduate and undergraduate courses in Supply Chain Operations Management and Logistics and Transportation. He received a B.S. in Mechanical Engineering from the University of Calgary, an MBA from the University of Alberta, and a Ph.D. in Logistics with a minor in Marketing from the University of Tennessee. His current research interests include Collaboration/Competition within the Supply Chain, Buyer Supplier Relationships and the Physical Internet.

Dr. Zacharia has over 26 refereed publications, including two articles in the *Journal of Operations Management*, nine articles in the *Journal of Business Logistics*, and articles in *Decision Sciences, Journal of Supply Chain Management, International Journal of Production and Operations Management, International Journal of Logistics Management, Journal of Retailing, Journal of Business and Industrial Marketing, Marketing Management, Supply Chain Management Review, Journal of International Technology and Information Management,* and J*ournal of Vehicle Design*.

ABOUT DICENTRAL

Founded in 2000, DiCentral is a leading global provider of business-to-business integration (B2Bi) and application and system integration solutions, with over two decades of experience solving complex EDI and API challenges.

Headquartered in Houston, Texas, DiCentral has 11 offices worldwide, supporting customers in more than 35 countries. Leading organizations rely on DiCentral's cloud-based integration platform and its team of award-winning experts to integrate and leverage data across trading partners with both cloud and on-premise applications. DiCentral's services and solutions are leveraged by many Fortune 1000 companies, processing over $200 billion in transactions for over 30,000 organizations worldwide.

The company's vertical expertise is leveraged across many vertical industries, such as automotive, retail, distribution, manufacturing, pharmaceutical, healthcare, energy, and financial services. DiCentral's hybrid integration solution enables secure, end-to-end integration with any system and any enterprise partner on a unified cloud platform. Core competencies include B2Bi (Business-to-business integration), ERP, systems and application integration (API), B2B communications, data transformation, and trading partner community management. DiCentral also develops and markets a complementary suite of supply chain applications to expand the integration and automation processes across enterprises. Visit www.dicentral.com.

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