



Hospitals Embrace E-Procurement for Supply Chain Management – Enterprise Integration Is the Next Challenge

In November 2008 and January 2009, HIMSS Analytics conducted telephone-based research with 199 hospital purchasing officers to understand the extent to which hospitals are automating various aspects of the purchasing process and the percent of medical and surgical purchasing that is handled electronically, both in terms of dollars and purchase orders. This paper summarizes the results of the research, outlining the current state of the industry, the barriers hospitals believe limit increased use of electronic transactions, and where hospitals believe supply chain automation delivers the greatest value.

To ensure a valid comparison, medical and surgical purchasing was defined to include: disposables, instruments (including diagnostic instruments) and physician preference items, including implantables. Respondents were asked to exclude pharmaceuticals, capital equipment and service agreements.

The sample population in this research was limited to those hospitals with 150 or more licensed beds.

Demographics of the respondents are as follows:

- 60 percent held director level positions
- The average hospital sample bed size - 507; median size - 343
- Materials management information system (MMIS)/enterprise resource planning (ERP) system:
 - Lawson – 34 percent
 - MEDITECH - 17 percent
 - McKesson - 14 percent

Among these respondents, the median annual amount of money spent on medical-surgical purchases per hospital is \$15 million; the median number of purchase orders processed monthly per hospital is 1,350. Based on these responses, the total median annual amount spent by US acute care hospitals is estimated to be \$53.3 billion, with the median number of purchase orders processed monthly is estimated at 3.4 million.

AN HISTORICAL PERSPECTIVE

In the absence of a direct comparison to this study, HIMSS Analytics relied on some key industry studies conducted in the past to provide context to the results identified in this research. A study conducted by Andersen in 2001, "The Value of eCommerce in the

Healthcare Supply Chain,”¹ found “that 70 to 80 percent of outbound purchase order lines are transmitted via EDI, but less than 30 percent of provider transactions use purchase order confirmations, advance ship notice or catalog and uniform pricing applications.” While this study had some marked differences from the study that HIMSS Analytics conducted—including the fact that the Andersen study included pharmaceutical purchases, while our study did not—it provides a baseline for industry conversation.

The Andersen study found that several electronic data interchange (EDI) transactions to enhance the purchasing process were not widely used by providers, as follows:

- Invoices (810) – 31 percent;
- PO Confirmation (855) – 11 percent;
- Advance Ship Notices (856) – 0 percent;

CURRENT STATE OF THE INDUSTRY

The 2008-2009 HIMSS Analytics study found that there is widespread use of EDI transactions by hospitals in the purchasing process, but that there is still room for growth. Based on the definition outlined above, 95 percent of respondents indicated that at least some portion of their hospitals’ medical-surgical supplies are purchased electronically. Among these organizations, the median percentage of purchase orders handled electronically was 65 percent, with nearly 40 percent of respondents reporting that their organizations purchase at least three-quarters of their medical-surgical supplies electronically. Only one-quarter reported that their organizations purchase less than half of their supplies electronically.

Respondents reported that they send and receive the majority of their purchase orders (850) and purchase order confirmations (855) via EDI— 70 percent and 60 percent (median numbers) of their total purchase orders, respectively. The median percent of invoices received via EDI as 810 transactions was considerably lower, only 10 percent. That percentage is also lower than what the 2001 Andersen study reported. On the other hand, slightly more than one-third of respondents said they receive advance ship notices as 856 transactions, compared to none in the 2001 Andersen study. Those that receive them as 856 transactions reported that they receive them for a median 40 percent of their purchase orders.

Nearly 70 percent of respondents noted that they use an exchange for at least some of their electronic purchases, and 34 percent reported using an exchange as the only means by which they purchase supplies electronically. Fifteen percent reported that their organizations rely solely on using EDI through direct connections to conduct business electronically with suppliers, while just two percent reported that their organizations rely only on manufacturer and/or distributor websites for electronic purchases. Twelve percent use a combination of all three methodologies (exchange, direct EDI, and supplier websites).

In an open-ended question, more than half of the survey respondents identified GHX² as their e-commerce technology partner. Other companies mentioned by respondents included: Lawson, McKesson, Cardinal, Owens & Minor, Broadlane and Boston

¹ The Value of eCommerce in the Healthcare Supply Chain: Industry Study Report. June 2001; Ramona G. Lacy, Kevin J. Connor, Patrick F. Crane, Amy R Gonce, Kimberley A. Reid, and Jill R. Harter.

Scientific; however, none of these were mentioned by more than four percent of respondents.

Most respondents reported that their healthcare organizations conduct business electronically with multiple suppliers (median number 40). While 30 percent reported that they conduct business electronically with fewer than 25 suppliers, a similar percent reported that they conduct business electronically with 75 or more suppliers. The research suggests that there is a positive correlation between the number of purchase orders processed electronically on a monthly basis and the number of electronic trading partners — organizations that process more medical-surgical purchase orders on a monthly basis are more likely to have a larger number of electronic suppliers.

The sales channel—whether hospitals purchase products direct from manufacturers versus through distribution—does not appear to have an impact on the extent of purchasing handled electronically. Respondents reported an average of 63 percent of all purchase orders, including those not handled electronically, go through distributors. When only electronic purchase orders were examined, only a slightly higher percent (70 percent) of purchase orders were said to be handled through distribution.

UTILIZATION OF ELECTRONIC TRANSACTION SETS

In order to better understand the degree to which the purchasing process has been automated, respondents were asked to identify the extent to which they use various EDI transaction sets.

Purchase Orders (850 EDI Transactions)

The first area that respondents were asked to comment on was the percent of total purchase orders that are sent to suppliers electronically; respondents were instructed to only include those transactions sent as 850 EDI purchase orders and not include orders sent via e-mail, fax or autofax. Respondents indicated that 70 percent (median) of their purchase orders are sent as 850 EDI transactions. Among these respondents, 11 percent reported submitting *all* of their purchase orders as 850 EDI transactions and another 37 percent reported that at least three-quarters of their total purchase orders are sent as 850 EDI transactions.

The increase in 850 transactions points to a focus of materials management departments to improve efficiency and reduce errors. We also believe that transaction exchanges, such as GHX, have driven the wider adoption and use of these e-procurement transaction standards between all e-business parties.

Purchase Order Confirmations (855 EDI Transactions)

Respondents were also asked to identify whether or not they receive purchase order confirmations and what percent are received in the form of 855 EDI transactions. Once again, for the latter question, respondents were asked to exclude those confirmations that were received via e-mail or fax in the percentage of electronic transactions reported.

Respondents indicated that they receive confirmations (in any form) for 80 percent (median) of their purchase orders, with 60 percent (median) of those confirmations coming in the form of 855 transactions. Eleven percent of respondents indicated that they receive all of their purchase order confirmations electronically as 855 EDI transactions.

This is a significant increase from what was found in the study Andersen conducted in 2001 (11 percent). We believe this increase points to the focus by hospital materials management departments to improve efficiency in order tracking. These transactions can also be used to identify and address discrepancies between purchase orders and purchase order confirmations, which can improve accounts payable and contracting processes.

Advanced Ship Notices (856 EDI Transactions)

Roughly one-third of respondents (37 percent) reported that their organizations receive advanced ship notices (ASNs) electronically as 856 EDI transactions. While still a minority percentage, this is significantly higher than the level of use (0 percent) reported in the Andersen study. The study also found that those who do receive 856 transactions receive them for a substantial percent of their purchase orders (median 40 percent).

Again, we believe this significant increase is due to the focus of hospital materials management departments relative to efficiency. For example, advanced ship notices can alert purchasing departments to backorders and provide them with time to take necessary steps to find the best suited substitutions.

Invoices Received (810 EDI Transactions)

While a high percentage of respondents (92 percent) reported that their organizations receive some invoices electronically as 810 EDI transactions, the percentage of invoices received electronically was very low. More than half of respondents reported that their organizations receive less than one-quarter of their invoices as 810 EDI transactions, and only three percent reported that their organizations receive all invoices as 810 EDI transactions. The median number of invoices received as 810 EDI transactions is 10 percent.

The utilization rate of electronic invoices is actually lower in this report than what was reported in the Andersen study (31 percent). A contributing factor may be a lack of hospital adoption of ERP systems or sophisticated invoice automation tools more prevalent in other industries. The majority of materials management systems in the hospital market are legacy applications that are not well designed to accept these transactions. The challenge for greater adoption is creating the integration so these transactions can flow from materials management on to accounts payable and contract management. ERP systems are designed to provide this integrated data flow, but their history of difficult implementation in hospitals has caused adoption to stagnate over the last three years.

Recent studies have found increased interest in tools to automate invoicing. According to Paystream Advisors³, “Invoice and payment automation solutions that automate manual tasks, reduce errors and accelerate the invoice receipt-to-pay cycle are gaining popularity.”

³ Healthcare ePayables: A Buyer's Guide to Paperless AP in the Healthcare Industry, Paystream Advisors, Q1 2009.

Pricing Catalogs (832 EDI Transactions)

Approximately two-thirds of respondents (62 percent) indicated that they receive automated electronic pricing catalogs for products that are under contract at their organization. However, only half of these respondents noted that their organizations receive this information as 832 EDI transactions. Respondents were much more likely to report that pricing catalogs are received electronically in Excel spreadsheet.

The use of 832 EDI transactions has more than doubled (31 percent) since the 2001 Andersen study (12 percent). As more hospitals replace their legacy materials management environments, more of the market will be able to accept these transactions in place of spreadsheet solutions. Validating contract pricing is critical if hospitals are going to maximize the value of their relationships with group purchasing organizations, as well as self-contracting efforts.

Consignment Orders

Organizations purchase about ten (median) to 14 percent (average) of their total products on a consignment basis. Purchase of these items, however, is still a largely manual process. Nearly half of respondents indicated that they do not purchase any of their consignment orders electronically. Survey respondents reported that a median of only five percent of their consignment orders are handled electronically.

A major barrier to automating consignment orders has been that the actual product selection often does not occur until the point of use, e.g., the operating room, and is determined by the physician, as opposed to the hospital. Automation will be dependent upon broader adoption of technology to capture such data at the point of use.

VALUE OF E-COMMERCE

E-commerce in the hospital market offers many benefits, from more efficient purchasing processes, real-time order tracking, and fewer discrepancies, all of which contribute to both increased productivity and hard dollar savings. According to a recent white paper⁴ on the financial value of e-commerce, hospitals can experience a number of benefits from using e-commerce.

- Reduction in time it takes to process an order
- Reduction in time it takes to pay suppliers
- Savings as a result of early pay discounts
- Savings as a result of validation of contract pricing
- Reduction in overpayments to suppliers
- Reduction in invoice exceptions

⁴ The Financial Value of e-Commerce : A GHX White Paper for Financial Executives
<http://www.ghx.com/CaseStudies/ProviderCaseStudiesandWhitePapers/CFOWhitePaperDownload/tabid/777/Default.aspx>

In order to assess the value of automating supply chain processes, HIMSS Analytics survey respondents were asked to rate six areas on a one-to-seven⁵ scale. The results of this are shown in the table below.

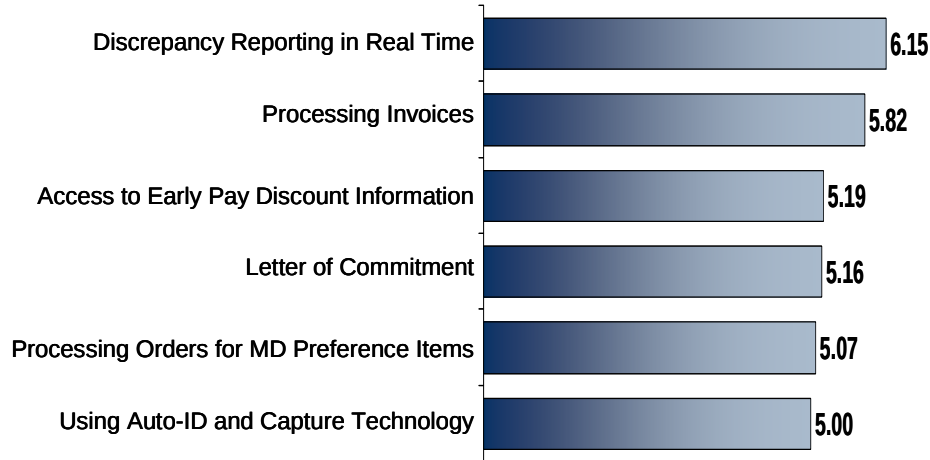


Table One.

As these results suggest, respondents reported placing high value on being able to identify discrepancies in real time. When buyers are proactively notified of exceptions, they can take steps to address discrepancies, which can help avoid costly invoice exceptions later in the process. This, along with the ability to process invoices faster, can help hospitals take greater advantage of early pay discounts.

Respondents were asked which area of the supply chain they believe has the most opportunity for improvement through automation. The most common responses to the open-ended question were the following, in order:

- Productivity/Ease/Automate all of purchasing/More vendors
- AP processes/Electronic invoicing/Early pay discounts
- Real-time monitoring/Exception management/Backorder Notification
- Accuracy
- Receiving/Barcoding

These responses, in light of the utilization of various transaction sets, suggest that there remains opportunity and interest in expanding automation of supply chain processes. This includes management of consignment orders for physician preference items (PPI) and the use of more advanced EDI transaction sets, such as advanced ship notices, which can help with backorder notification, and electronic invoices.

BARRIERS TO FUTURE ADOPTION

Despite the increase in adoption of electronic transactions, there are a number of barriers that still impact greater utilization of e-procurement technology and processes. By and large, the biggest barrier to the adoption reported by respondents was what can be described as “vendor-related” issues. The issues in this category can be summarized in two key categories: either supplier reluctance or a lack of supplier capabilities to

⁵ One to seven scale, where one is not at all valuable and seven is very valuable.

conduct business electronically via EDI. Several respondents noted that this was particularly the case for smaller vendors. Some typical responses included:

“The big barrier is vendors accepting EDI methods”

“Inability of smaller vendors to support EDI.”

“Vendor reluctance and ability”

Vendor-related issues were more commonly called out by larger hospitals (over 350 beds) and those that process higher numbers of purchase orders (more than 5,000/month).

The second most common comments, and again noted primarily by larger facilities with higher spending and purchase order activity, fell into the category of order-related issues, such as the inability to automate complex orders, e.g., consignment and rush. Sample responses in this area included:

“Time; PPI - patient info needed to transmit is difficult...”

“Implants - the big problem with serial numbers, customer numbers...”

“Critical items MUST be next morning, talk live to ensure. Also, consignment replacements are faxed to the rep”

“Multiple delivery dates based on items - overnight etc.”

The third most common barrier referenced was related to hospital resources, especially by smaller hospitals with lower purchasing levels. Responses reflected lack of finances, staff, technology or a combination thereof:

“Not enough money to purchase or repair systems.”

“Setting up EDI is hard with just one person.”

“Don’t have a system, don’t have proper tools”

“The biggest barrier is lack of human resources.”

“Time and staff to run this system is a barrier.”

“System limitations; formats not compatible.”

With hospitals reeling from the financial impact of the current recession and impending cuts for Medicare services on the horizon, barriers for improving supply chain management processes becomes low hanging fruit for hospitals to increase their operating margins. The focus on improving the delivery of patient care and reporting quality metrics will drive hospital executives to pay more attention to supply chain management. Reducing rework from order errors, maintaining high levels of contract performance, standardizing on vendor products across the enterprise, and managing inventory costs and turnover will become more critical to the hospital’s bottom line.

WHERE DO WE GO FROM HERE?

In a market that has not yet achieved saturation, it is apparent that additional benefit can be generated by increased use of e-commerce and EDI transactions and that respondents could benefit from improving their current e-procurement environment, as well as incorporating e-procurement solutions into departments that do not presently purchase supplies using this method. In many hospitals, the materials management process is not consistent across all enterprise operations. Pharmacies, clinical laboratories, and radiology/imaging departments may have their own supplier contracts for the materials they use in their operations. This provides a great opportunity for hospitals to extend enterprise supply chain processes to all departments to increase operational efficiency, reduce costs, and improve contract management.

When specifically asked to identify those areas in which the supply process could be improved with automation, several key areas were mentioned. These included productivity and ease of placing and tracking orders, discrepancy management (including backorders and price validation), physician preference and consignment orders, accounts payable/invoicing, and contract management/price validation.

The following are direct quotes from the research to support each point.

Productivity/Ease/Automate All of Purchasing/More Vendors

“Direct ordering to the vendor without buyer review and involvement”.

“The speed of placing orders with vendors could be improved to free up time”.

“All of purchasing could be improved; too much time negotiating on phones.”

“Ordering, I’d like a higher percentage use of EDI.”

Real-Time Monitoring/Exception Management/Backorder Management

“Instantaneous notification for back order or substitution and pricing adjustment”.

“Receiving more electronic notification of automatic processing, back orders and shipping orders”.

Accounts Payable/Invoicing

“It would be to automate the invoicing and getting electronic payment.”

“More advanced features, like invoicing for accounts payable.”

“Accounts payable invoicing could be improved. It is hard getting them to go to automation”.

Contract Management

“Measuring/maximizing contract compliance.”

“... improvement on contract compliance.”

Price Validation

“Price change notification from the vendors.”

“Price gap within a hospital system; everyone should be paying the correct or same price.”

“Price maintenance could be improved; with up to date pricing where both vendors and ours match.”

“Handling pricing discrepancies when they come up”.

CONCLUSION

E-commerce is a solution that is widely used by healthcare organizations. Nearly all respondents indicated that at least some portion of their hospitals' medical-surgical supplies are purchased electronically, and only one-quarter reported that their organizations purchase less than half of their supplies electronically.

However, while the use of e-commerce is widely accepted, there are numerous areas in which utilization can be increased and process improvements made. At the most basic level, not all respondents are receiving their purchase order confirmations via 855 EDI transactions. Use of other types of EDI transactions is less widespread; only one-third of respondents reported that their organizations receive *any* advanced ship notices electronically as 856 EDI transactions. Use of electronic invoices as 810 EDI transactions and pricing categories as 832 EDI transactions is also limited. Respondents were much less likely to report that their organizations purchase consignment items electronically. While almost half of respondents reported that 10 to 24 percent of their purchases were bought on consignment, nearly half of the respondents said none of their consignment purchases are handled electronically. Although supply chain e-commerce continues to advance for healthcare organizations, there are still improvements that can be made in most organizations that would improve process efficiencies and reduce healthcare costs.

Hospitals need to create supply chain management strategies that integrate with the business strategies of the enterprise. These strategies should focus not only on improving efficiencies and reducing costs, but also on supporting improved patient care processes. Reviewing various care delivery services (e.g. emergency department, surgery, intensive care, nursing services, etc.) and how various materials are used in these services will provide significant insights into how hospitals can improve their supply chain management. Hospitals should also be extending their processes to all operational areas within the enterprise (e.g. pharmacy, clinical laboratory, radiology, cardiology).

An outstanding question generated by this research is whether legacy materials management systems can bridge the e-procurement process gaps discussed or whether hospitals will need to move to more advanced ERP systems to optimize their capabilities in the supply chain environment. Or, will hosted web-based applications allow hospitals to bridge the e-procurement process gaps with their current legacy application systems? Stay tuned.