



Center for Innovation in Healthcare Logistics

The State of Healthcare Logistics

Cost and Quality Improvement Opportunities

Heather Nachtmann, Ph.D. and Edward A. Pohl, Ph.D.

Contents

4	Executive Summary
6	The Healthcare Supply Chain
14	Data Standardization
20	Efficient Healthcare Consumer Response Update
24	Cost and Quality
29	Conclusions: The Path Ahead
30	Participants and Methodology
31	Contacts and Acknowledgements

Foreword

What we know

We know healthcare costs are rising at an alarming rate. A significant cost driver is the universal complexity of the healthcare supply chain. It is believed that healthcare logistics is an area in which costs can be reduced and efficiencies gained in order to provide healthcare delivery at a reasonable cost. In 1996, a group of healthcare manufacturers, suppliers, and providers met to analyze opportunities for reducing costs in the healthcare supply chain. The resulting Efficient Healthcare Consumer Response (EHCR) report continues to be the benchmark for assessing the role that supply chain functions play in healthcare expenditures. The EHCR report identifies significant opportunities and formulates strategies for reducing healthcare supply chain costs. Despite this effort, a lack of clear and measurable cost and quality improvements is evident within the industry. High quality is expected by all parties that interact with the healthcare system, yet there remain significant opportunities to improve supply chain quality as well as patient safety.

What we don't know

We do not know where the fundamental inefficiencies and associated costs subsist within this complex supply chain. We also do not know where the opportunities for the greatest increases in quality exist within the healthcare supply chain. This lack of knowledge contributes to healthcare supply chain inefficiency. The fundamental question remains, "Can we meet the demand for short-term cost containment yet create a sustainable and efficient healthcare logistics system that enables significant and measurable improvements in the quality of healthcare delivery?"

What we're doing about it

In November 2008, the Center for Innovation in Healthcare Logistics at the University of Arkansas in conjunction with the Association for Healthcare Resource & Materials Management (AHRMM) administered an industry wide survey to assess the current state of the healthcare supply chain from a cost and quality perspective. The survey was motivated by the need for current information on the healthcare supply chain industry and interest in the industry's progress since the EHCR report. Survey development was guided by the EHCR and other industry surveys along with expert interviews with twelve healthcare supply chain professionals. The goal of the survey is to describe the current state of the healthcare supply chain and identify existing inefficiencies while simultaneously investigating opportunities for quality improvements within healthcare logistics.

The path ahead

The purpose of this report is to make the healthcare supply chain community aware of the current state of the healthcare supply chain. We hope this knowledge will facilitate working with healthcare supply chain practitioners to develop and implement logistic cost efficiency and quality improvement tools. As part of this ongoing effort, focus groups will be conducted to develop a set of quality indicators for the healthcare logistics as well as opportunities for continuous process improvement in the design and operation of the healthcare supply chain.

About this survey

In this November 2008 survey, involving 1381 healthcare supply chain professionals from all major sectors of the supply chain, respondents were asked to provide their perceptions of cost and quality efficiencies and improvement opportunities within their organization.

The major topics covered are:

- The Healthcare Supply Chain
- Data Standardization
- Efficient Healthcare Consumer Response Update
- Cost and Quality

The results, coupled with an industry response, provide current information on the state of the healthcare supply chain and identify opportunities for improvement across its sectors. We believe this information will facilitate future successes within the healthcare logistics industry.

We would like to thank all of the healthcare supply chain professionals who generously contributed their time to take part in this survey. This report would not exist without their participation. We are grateful for the generous support of the Center for Innovation in Healthcare Logistics and the Association for Healthcare Resource & Materials Management.



Heather Nachtmann, Ph.D.

Associate Professor
Center for Innovation in Healthcare Logistics
Department of Industrial Engineering
University of Arkansas



Edward A. Pohl, Ph.D.

Associate Professor
Center for Innovation in Healthcare Logistics
Department of Industrial Engineering
University of Arkansas

Executive Summary

The State of Healthcare Logistics: Cost and Quality Improvement Opportunities report provides an industry-wide look into the current state of the healthcare supply chain. We hope this insight will serve as a catalyst to further collaboration among healthcare supply chain practitioners and stakeholders for the purpose of logistic cost efficiency and quality improvement.

The Healthcare Supply Chain is...

Immature

The healthcare supply chain is in its infancy stages according to the survey participants. Almost one out of two respondents indicate that their organization's supply chain is at a low level of maturity with very few respondents indicating their organization has a mature supply chain in place. Healthcare supply chain managers should focus on fundamental improvements in order to increase the maturity of their supply chain. This, in turn, will facilitate next step improvements in supply chain performance.

Collaborative

Our findings show high collaboration among healthcare supply chain partners. The vast majority of healthcare provider respondents indicate active collaboration with their supply chain partners in order to improve their own supply chain performance. We suggest that healthcare providers could benefit from more collaboration with other providers through joint benchmarking and lessons-learned studies. Supply chain participants are also collaborating with stakeholders outside of the healthcare supply chain.

Strategic

The survey respondents indicate active participation in strategic supply chain improvement initiatives. Similar to other industries, healthcare supply chain professionals are attempting to better collect and manage their data, improve visibility, reduce inventory, and streamline processes. There is strong evidence of implementing the strategies recommended by 1996 Efficient Healthcare Consumer Response across all sectors of the healthcare supply chain.

“Supply chain in healthcare is talent rich, but it remains talent disconnected. We have to learn how to communicate best practice and failed efforts enough so that the impact of supply chain on organizations continues to improve to a higher national standard. To accomplish this, healthcare supply chain professionals all must learn to a higher and broader standard of knowledge that extends far beyond what we knew five years ago.”

Howard G. Mann, Senior Director, Corporate Materials Management, Saint Luke's Health System

Expensive

The average healthcare provider organization in our survey is spending more than \$100 million each year on supply chain functions, nearly one-third of their annual operating budget. Manufacturers, GPOs, and distributors are spending even greater percentages of their annual budgets to operate their supply chains. Much of this expense is being driven by inventory and order management functions.

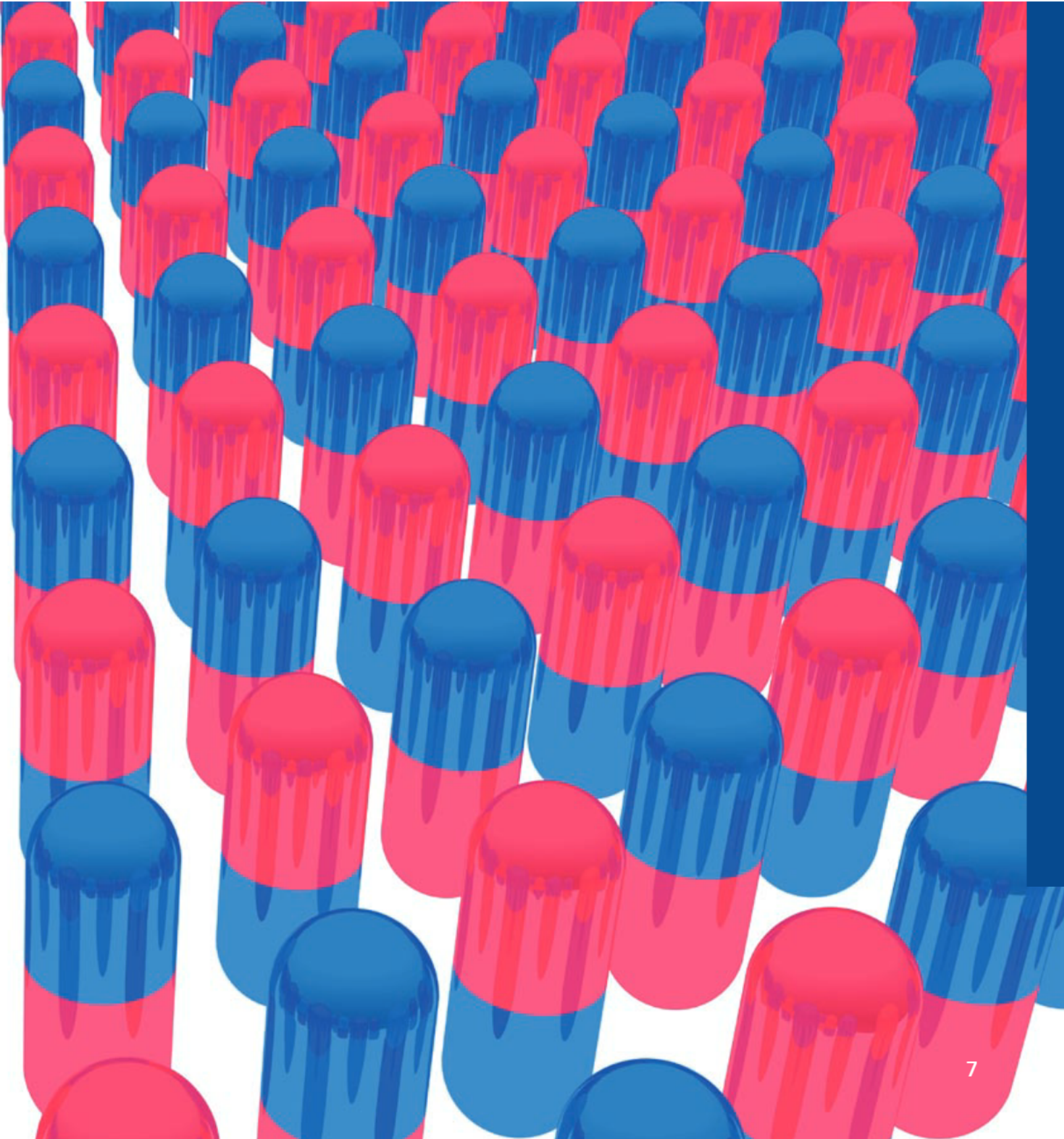
Information poor

The healthcare supply chain is starved for accurate and accessible data. Access to the desired quantity and quality of data is indicated as the primary barriers to supply chain excellence, collaboration, and data standards adoption. There is a clear movement towards data standards adoption across the healthcare supply chain. However, the readiness of healthcare organizations to implement data standard systems in the near future is not obvious.

Talent rich

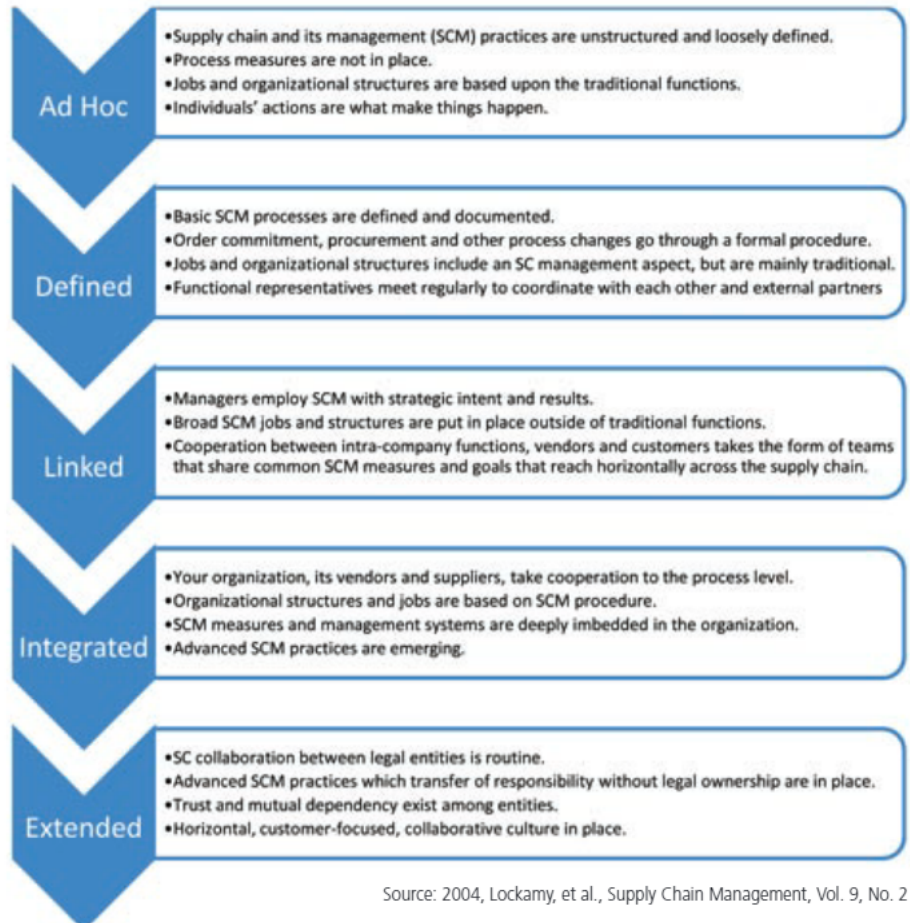
As reflected in the experience levels and job titles of our survey respondents, the healthcare supply chain is rich in work-force talent. The majority of our survey respondents have more than twenty years of experience within the healthcare supply chain industry. This rich talent base is well positioned to move the healthcare supply chain to the next level.

The Healthcare Supply Chain

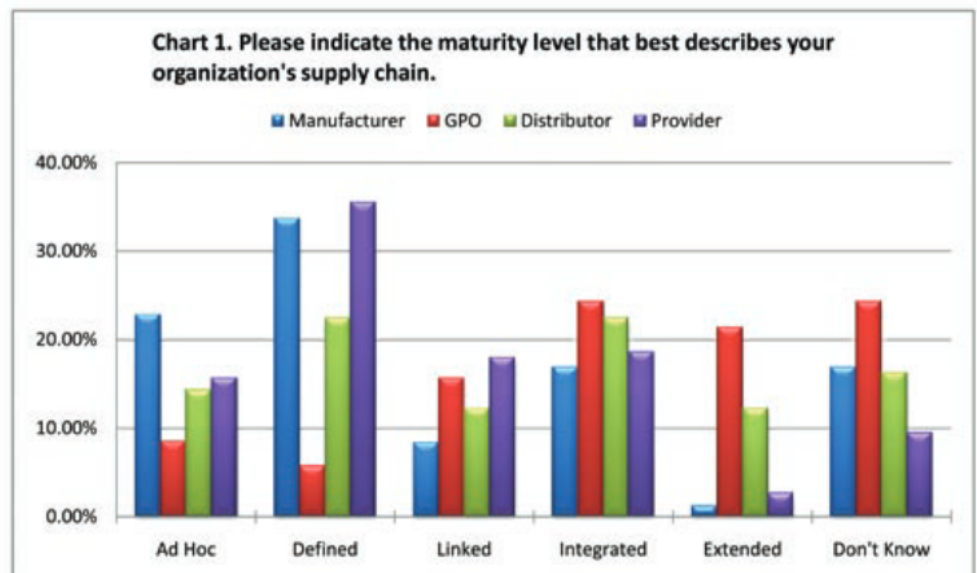


The Healthcare Supply Chain

Nearly half of the healthcare supply chain professionals taking part in the survey indicate that their organization's supply chain is immature (described as Ad Hoc or Defined). Specifically, more than half of the respondents working for manufacturers or healthcare providers indicate working in an immature supply chain. In fact, fewer than one in twenty respondents indicate that their organization has a mature or "extended" supply chain with the majority of these being GPOs.



Source: 2004, Lockamy, et al., Supply Chain Management, Vol. 9, No. 2

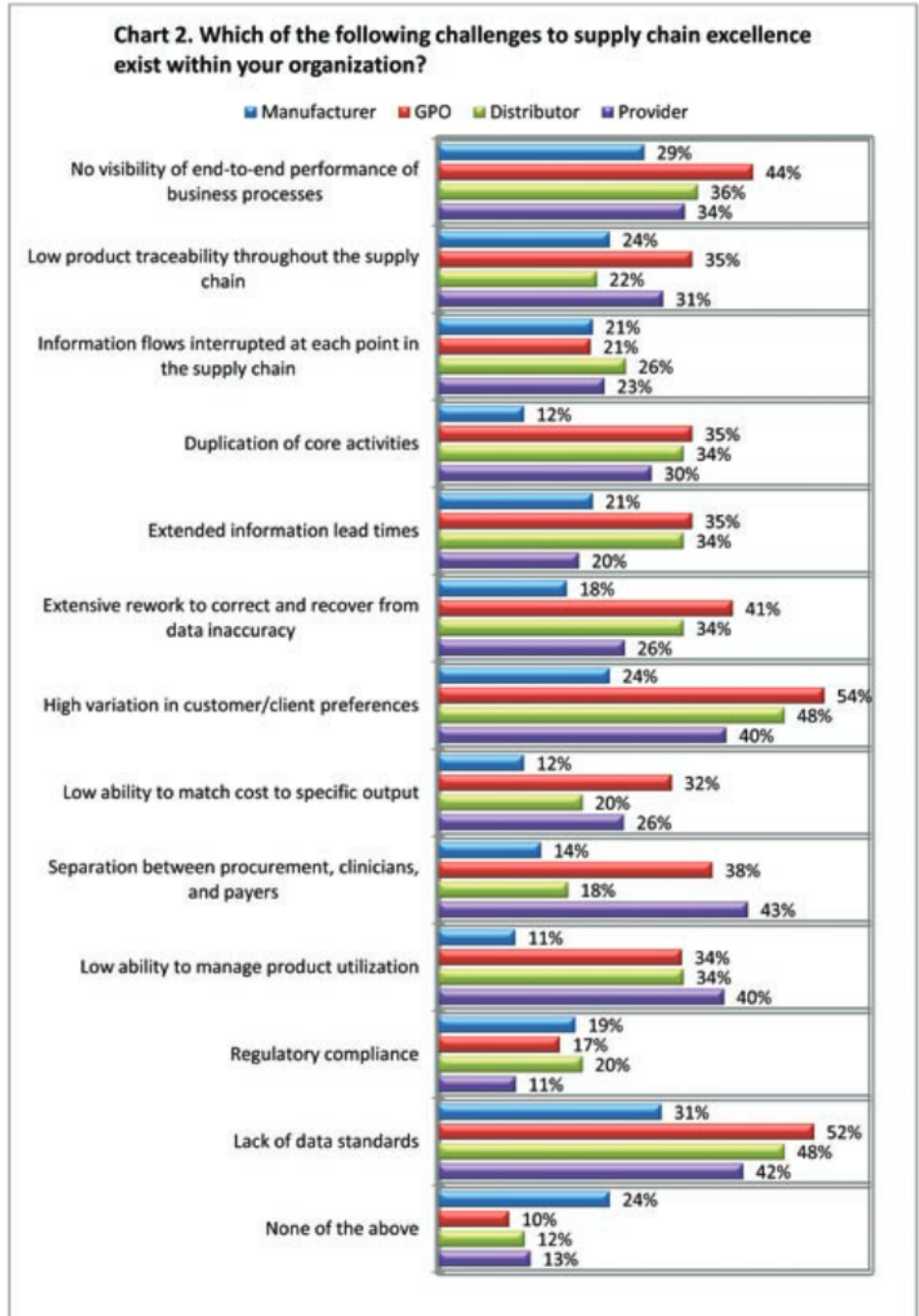


Sample size = 1120; Source: 2009, Nachtmann and Pohl

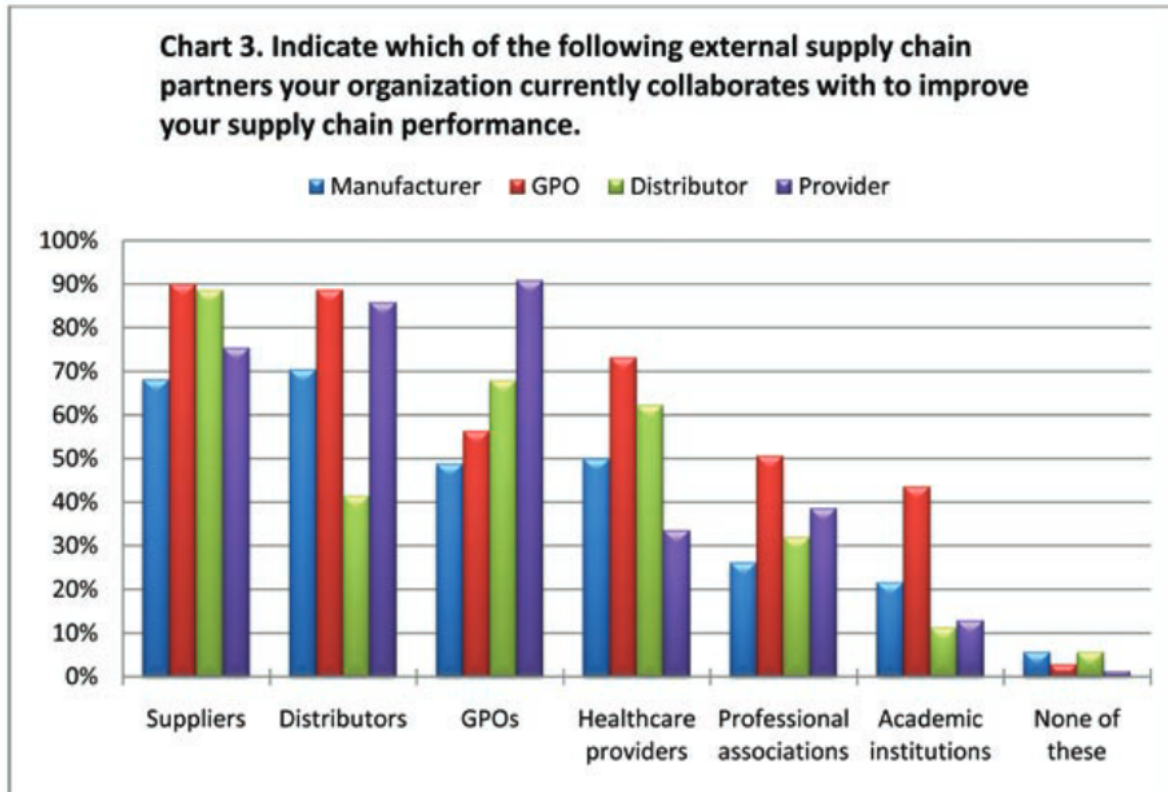
42%

of respondents see the lack of data standards as a challenge to achieving supply chain excellence

The lack of data standardization was the most common challenge to achieving supply chain excellence faced by the survey respondents regardless of their organization. The most frequent challenge faced by healthcare providers is the current separation between procurement, clinicians, and payers. The high variation in their customer and client preferences is given as a dominant challenge for respondents employed by GPOs, distributors, and providers. Manufacturer, GPO, and distributor respondents indicate that having no visibility into the end-to-end performance of their business processes is one of their top three challenges.



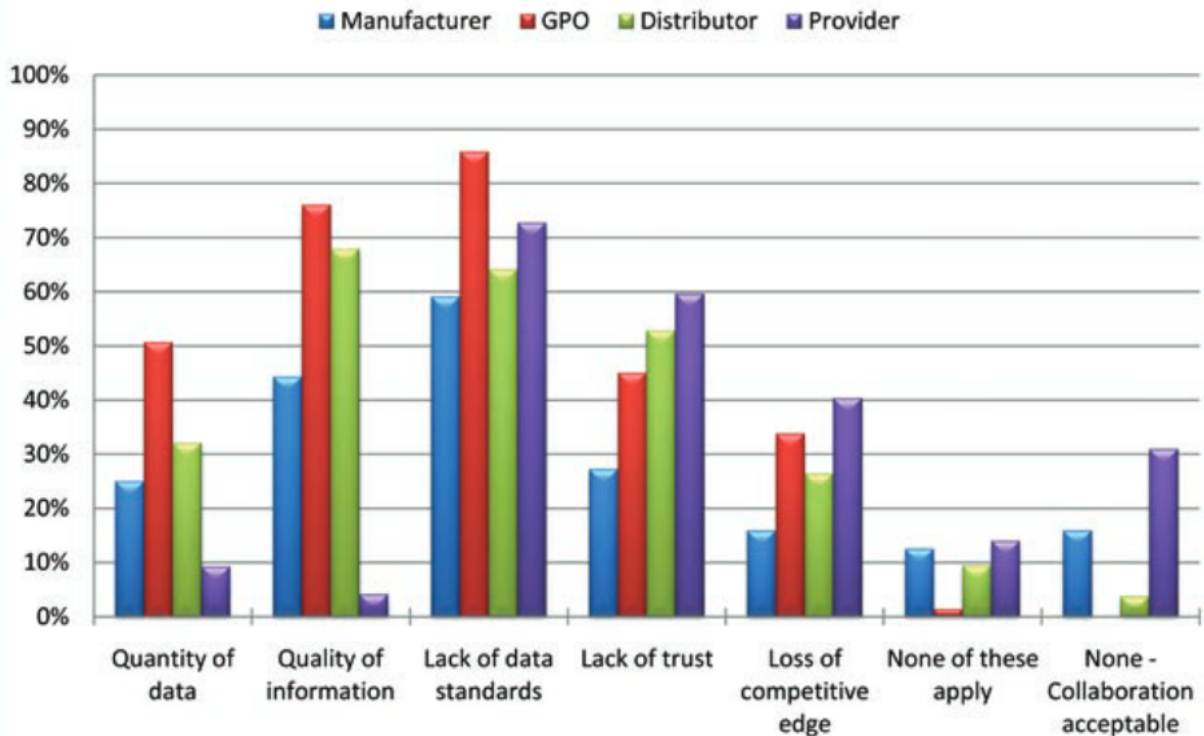
The Healthcare Supply Chain, continued



Sample size = 1267; Source: 2009, Nachtmann and Pohl

The collaboration among healthcare supply chain participants is evident in our findings. While consumer behavior is a key driver to supply chain performance, healthcare providers are indicated as the second lowest collaboration partner for each of the other supply chain sectors. The providers themselves indicate that they heavily collaborate with GPOs, distributors, and manufacturers to improve their own supply chain performance but indicate a low collaboration with other healthcare providers. There is also evidence that healthcare organizations are working with outside partners, such as professional associations and academic institutions, to improve their performance.

Chart 4. Indicate which of the following barriers exist to reaching an acceptable level of collaboration among healthcare supply chain organizations.

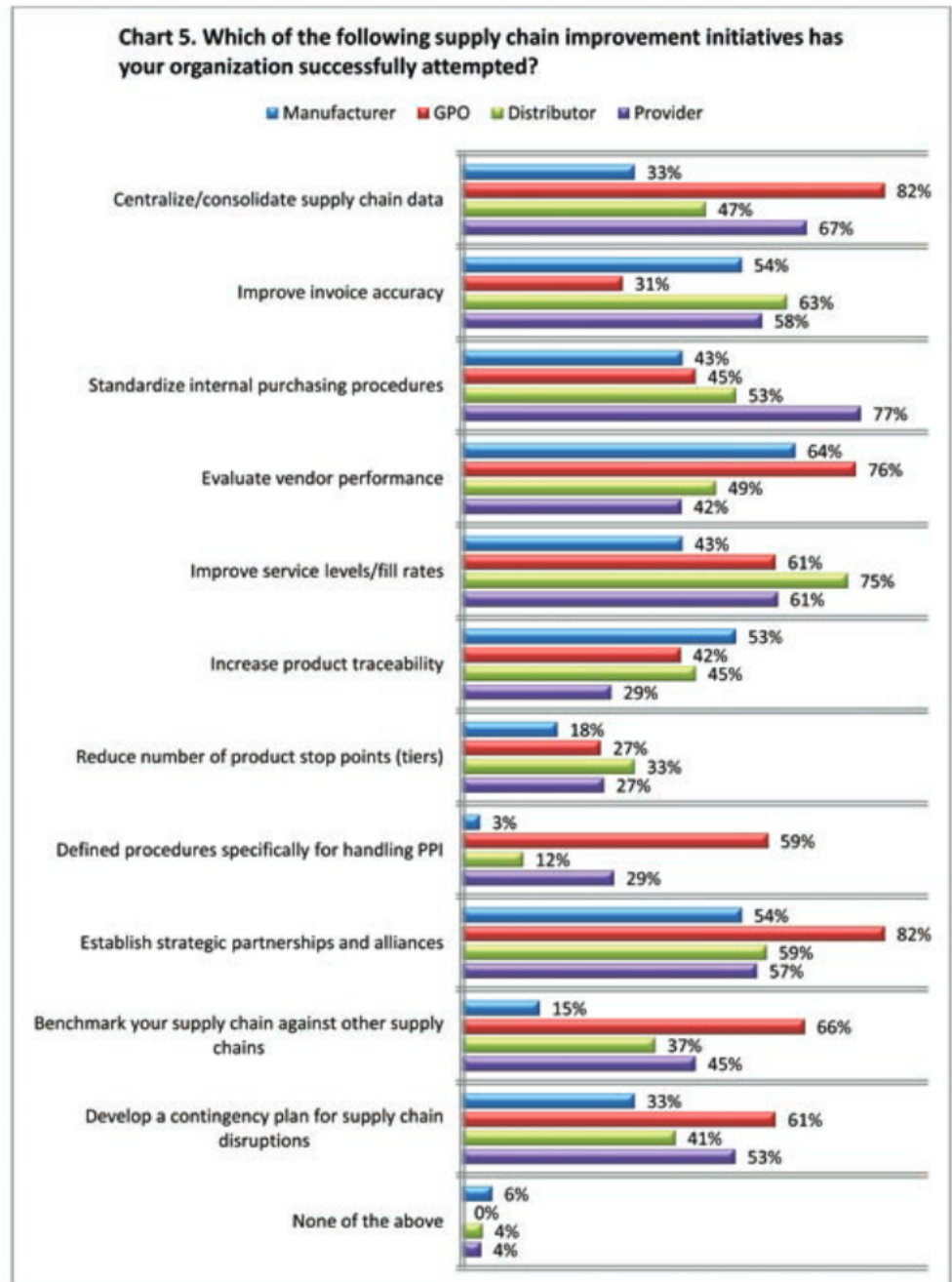


Sample size = 1267; Source: 2009, Nachtmann and Pohl

Nearly three out of four (72 percent) survey participants indicate that the lack of data standards is a barrier for their organization to reach an acceptable level of collaboration among healthcare supply chain organizations. More than half of the respondents believe that a lack of trust exists as a barrier to collaboration. Unlike their supply chain partners, a fair number of healthcare providers (31 percent) indicate that an acceptable level of collaboration exists among healthcare supply chain organizations. Interestingly, the quality of available information is indicated as the highest or second highest barrier for manufacturers, GPOs, and distributors but the lowest barrier for healthcare providers. Healthcare providers (40 percent) also see a loss of competitive edge as a barrier to reaching an acceptable level of collaboration, while fewer manufacturers see this as a barrier.

The Healthcare Supply Chain, continued

Our findings indicate that group purchasing organizations are leading the way in successfully attempting supply chain improvement initiatives. More so than the other three organization types, healthcare providers (77 percent) are working to standardize their internal purchasing procedures. The majority of healthcare provider respondents have also worked to centralize/consolidate supply chain data, improve their service levels and fill rates, and improve their invoice accuracy. Our findings indicate that all four organization types have successfully established strategic partnerships and alliances to improve their supply chain performance.



Sample size = 1250; Source: 2009, Nachtmann and Pohl

Industry Reactions

The healthcare supply chain is vast, complex, essential, and purportedly effective but inefficient. Thousands of dedicated individuals interact every day to get the right medical products to the right customer at the right time. Partners within this supply chain such as healthcare manufacturers, distributors, GPOs, and providers strive for excellence inside and outside of their organizations amidst daily challenges including volatile customer demand, low visibility, diverse processes, and a complex payment structure. Their actions impact the lives of millions of stakeholders including patients, clinicians, and payers. To supplement our description of key characteristics and challenges of this industry which impacts us all, we provide reactions from industry experts whose professional lives are dedicated to the betterment of healthcare logistics.

"The healthcare supply chain is not what it used to be. The landscape of supply chain management has matured over the years while the processes that make up traditional materials management have not kept up. Purchasing, receiving, inventory management, distribution, and other hospital based functions are being replaced out of necessity with sourcing, acquisition, logistics, collaborative contracting, cost management, relationship building with key partners such as physicians, suppliers and the community. On the one hand the change and expansion of expectations out of the supply chain leader is energizing and exhilarating, trying to accomplish the makeover with the same old processes is difficult."

Howard G. Mann, Senior Director, Corporate Materials Management, Saint Luke's Health System

"While routine collaboration between buyers and sellers in healthcare is not nearly as common as in other industries, today's healthcare supply chain professionals have recently shown an expanded acceptance of the philosophy that we all share the same supply chain and, thus, we all share its challenges and opportunities too. This new holistic approach is gaining traction, which is a real good sign that collaborative efforts in the future could be more frequent and bear more fruit."

Dennis P. Orthman, CMRP, Project Director, Strategic Marketplace Initiative (SMI)

"Health care GPOs play an essential role in driving collaboration among suppliers, distributors and providers – but there is room for improvement. We need greater collaboration across health care to overcome some of the obstacles we still face after more than a decade of work focused on improving the health care supply chain. It's obvious that no single player has the ability to move this ball forward alone, but GPOs are in a unique position to rally the different players and lead a team effort."

Scott Downing, Executive Vice President, Supply Chain Services, VHA Inc.

"Healthcare leaders have acknowledged that the status quo is unsustainable and that collaboration is needed to improve the system's operating effectiveness. It is encouraging to see manufacturers, healthcare providers, GPOs and collaborative groups such as AHRMM, SMI, MDISCC, and HSCSC measuring error rates, defining ideal end states and implementing changes. Every healthcare provider that BD has spoken to is interested in improving the supply chain and achieving "Perfect Order."

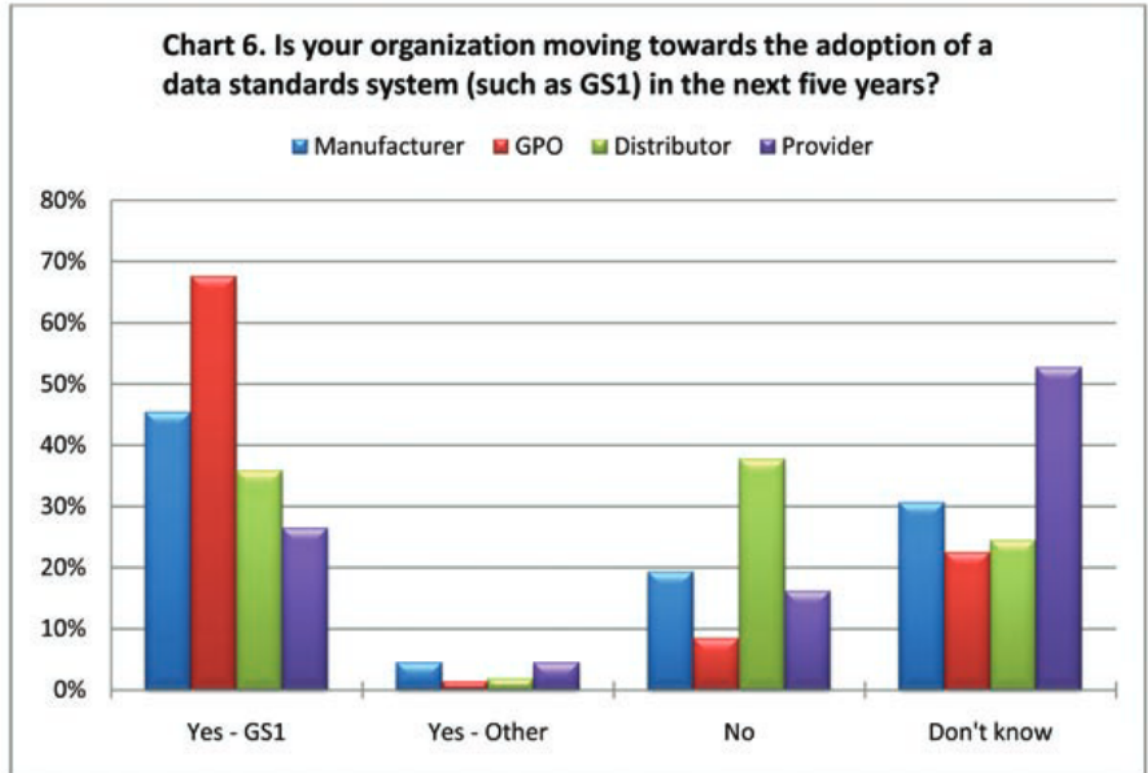
Dennis Black, Director, e-Business, BD

Data Standardization



35%

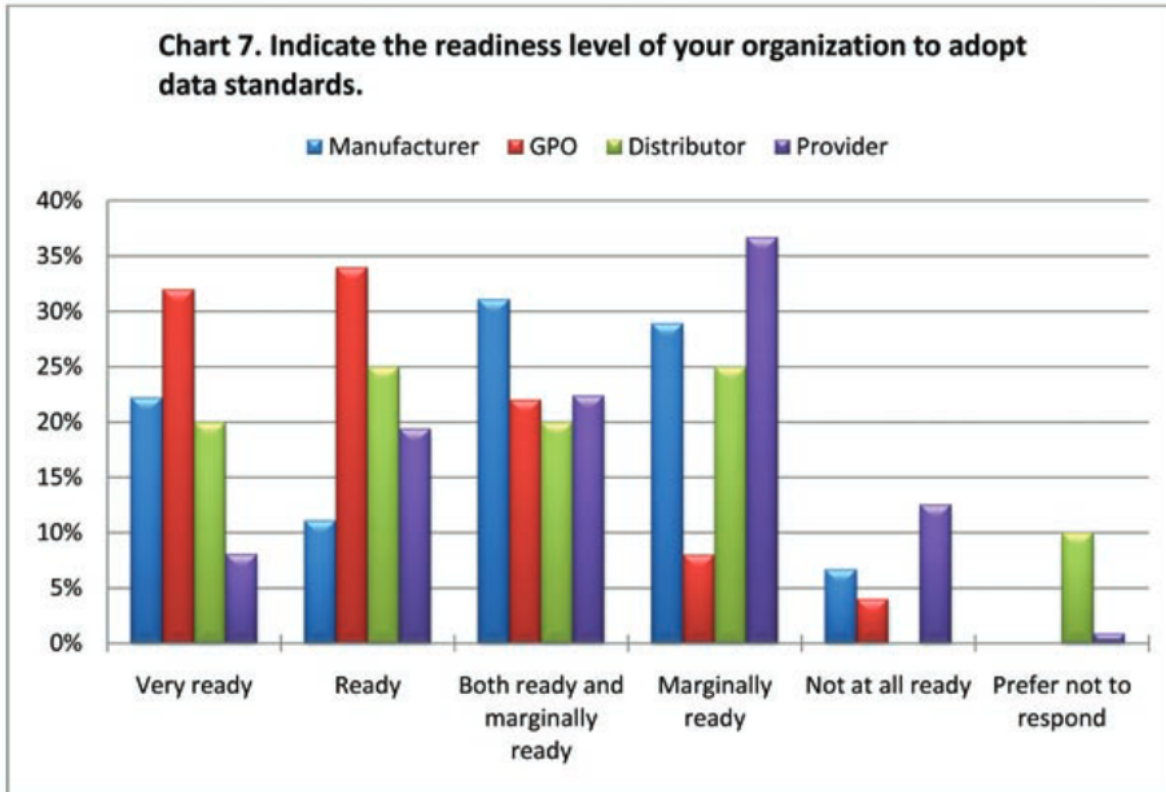
of respondents are moving towards adoption of a data standards system



Sample size = 1268; Source: 2009, Nachtmann and Pohl

Greater than one out of three healthcare professionals that participated in the survey are moving towards the adoption of a data standards system with an overwhelming majority of those (88 percent) moving towards adoption of the GS1 system. The majority of those that indicate that they are moving towards a data standards system other than GS1 do not know which system their organization is moving towards. Almost half of the respondents surveyed (48 percent) indicate that they do not know if their organization is moving towards the adoption of data standards.

Data Standardization, continued



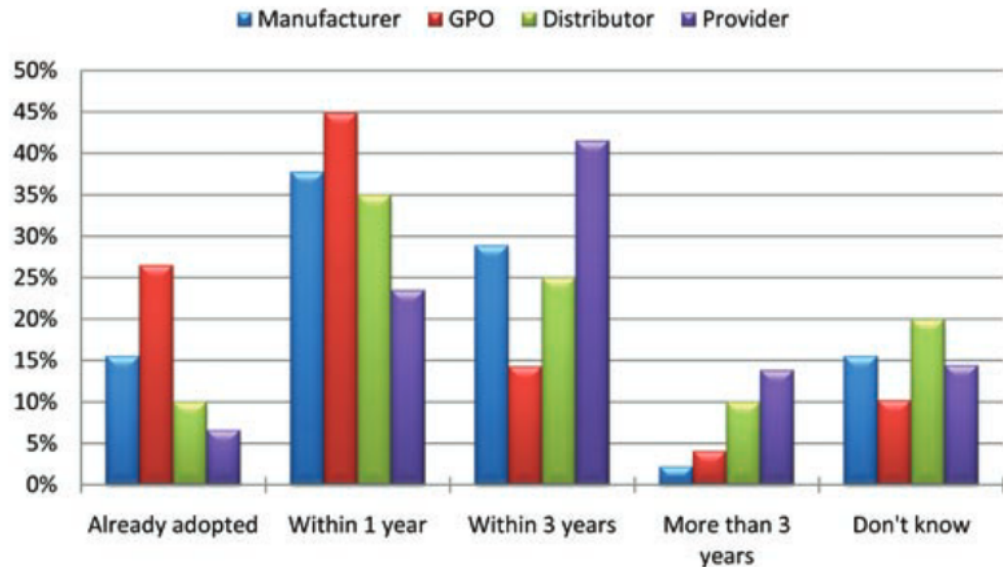
Sample size = 450; Source: 2009, Nachtmann and Pohl

One out of three survey participants that are planned adopters of data standards believe that their organization is ready or very ready to adopt a data standards system. When asked about their timeline for adoption, a small percentage of these respondents (10 percent) have already adopted a location identification standard such as the Global Location Number in the GS1 system, while even fewer have already adopted a product location identification standard such as GS1's Global Trade Item Number.

However, more than one out of four planned adopters expects to adopt both of these standards within one year. These results indicate some progress towards the 2010 GLN Sunrise goal to use standardized location identification by December 2010 and the 2012 GTIN Sunrise goal to use standardized product identification by December 2012.

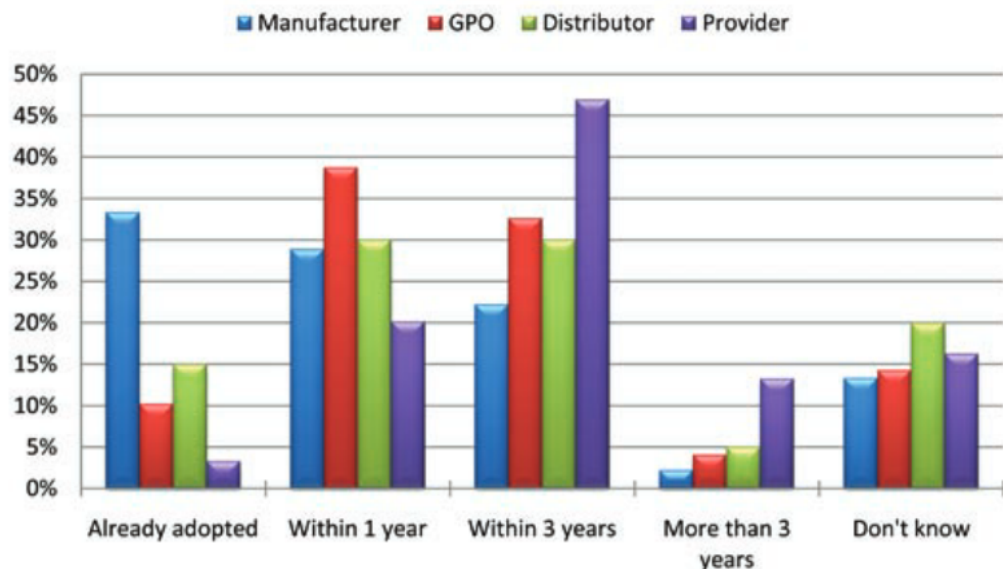
There is also an indication of unreadiness among planned adopters where many survey participants (43 percent) indicate that their organizations are only marginally ready or not ready at all to adopt data standards.

Chart 8. What is your earliest timeline for adopting location identification standards such as Global Location Numbers (GLNs)?



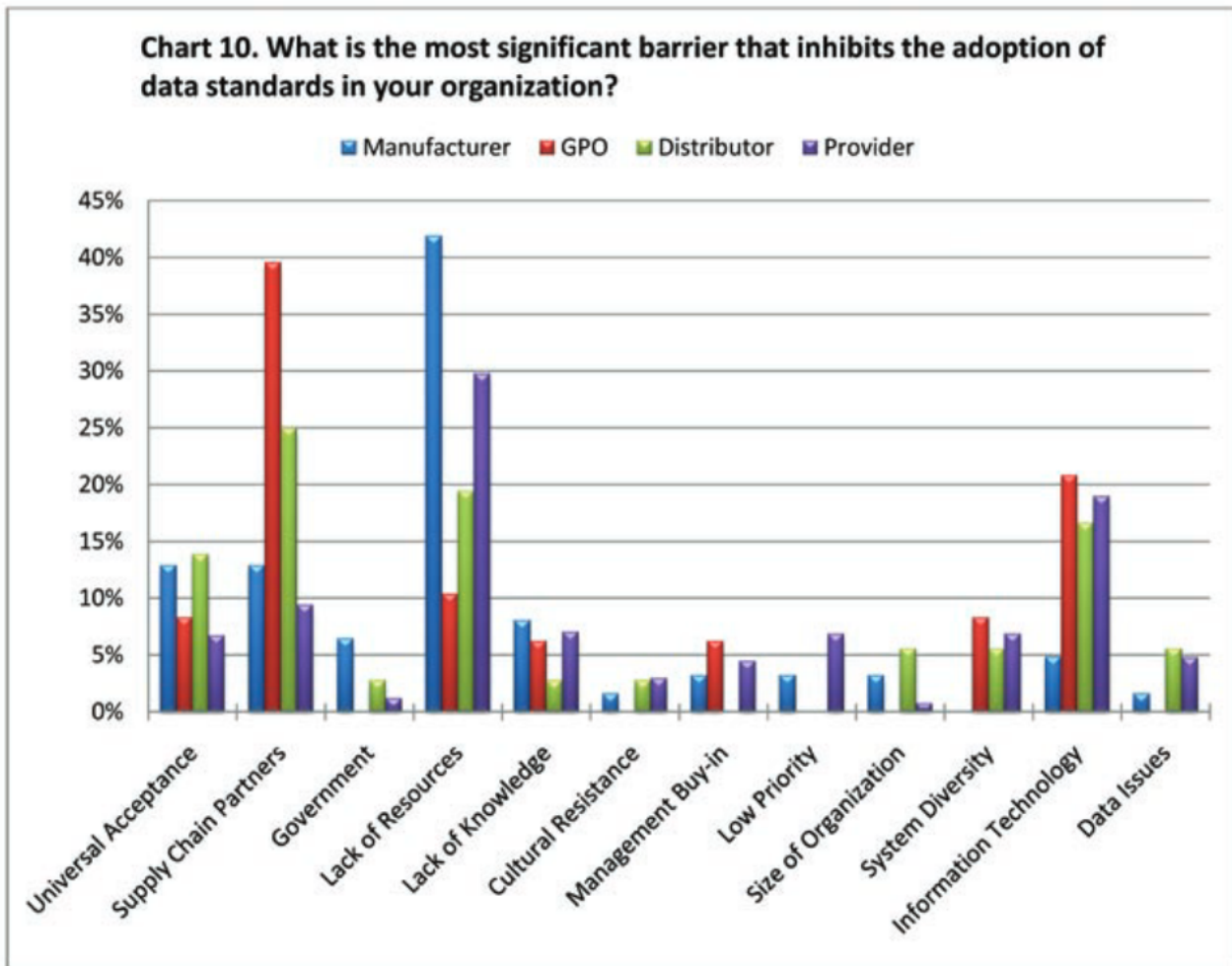
Sample size = 446; Source: 2009, Nachtmann and Pohl

Chart 9. What is your earliest timeline for adopting product identification standards such as Global Trade Item Numbers (GTINs)?



Sample size = 446; Source: 2009, Nachtmann and Pohl

Data Standardization, continued



Source: 2009, Nachtmann and Pohl

All in all, the healthcare professionals participating in the survey listed 814 distinct items as the most significant barrier that inhibits the adoption of data standards in their organization. A lack of resources is most frequently cited as the most significant barrier for survey participants from manufacturer and provider organizations who are the primary implementers of data standard systems. GPOs and distributors see their supply chain partners as the most significant barrier to adoption of data standards within their own organizations. The second most frequently cited barrier to adoption is information technology.

Industry Reactions

Every healthcare logistics expert we spoke with during the development of this survey mentioned data standardization within the healthcare industry as an important issue, both as a challenge (the current lack thereof) and as a solution (future adoption). A data standard is a universally agreed upon and accepted representation, format, and definition for common data. Data standards increase compatibility, reduce redundancy, and improve exchange and collection efficiency. Data standardization is the process by which all data elements related to a data standard conform to achieve common presentation and exchange. For those engaged, this process will be as valuable as the end result of achieving data standardization as processes are defined, tools are developed, and improvement opportunities are identified. There is clear evidence that the healthcare industry is initiating the data standardization process.

"It is encouraging to see the large percentage of survey participants that responded that their organizations have already adopted GS1 standards (GLN and GTIN) or will be adopting these standards within the next 1 to 3 years. Adoption of these standards will be a huge step in standardizing healthcare supply chain data. The survey results validate the movement that we have seen, over the past year, in the interest in implementing GS1 standards in U.S. healthcare. This progress represents the hard work of the industry members that have been leading this initiative and their commitment to improving patient safety and supply chain efficiency."

Dennis W. Harrison, Sr. VP GS1 US and President of GS1 Healthcare US

"Our experience validates that "Perfect Data" and the adoption of data standards are necessary for many supply chain initiatives. We won't achieve "Perfect Order" without "Perfect Data". We are collaborating with trading partners to adopt data standards globally. GS1 GLNs and GTINs are the data standards most often requested by our customers around the world. Current pilots and implementation efforts using GS1 standards are quite promising."

Dennis Black, Director, e-Business, BD

"Supply chain professionals have been decrying the lack of standards among supply chain data for more than 25 years. The GS1 standards are becoming available but alignment across the healthcare provider's materials management information system (MMIS), the manufacturer and distributor systems have not effectively been adopted yet...Once supply chain data has been standardized, integrating that data across clinical databases becomes the next logical step to support cost reduction through utilization management."

Howard G. Mann, Senior Director, Corporate Materials Management, Saint Luke's Health System

"The adoption of the GS1 data standards could revolutionize the entire healthcare supply chain. However, adoption must be widespread and rapid in order for the benefits to be felt on a national scale. Industry awareness of data standards is growing, but awareness is not the same as adoption. Providers must continue to lead the marketplace down the data standards adoption pathway despite the current constraints on resources. Only when the majority of supply chain participants have adopted standards will the real benefits – patient safety, operational, financial, etc. – be evident and obvious."

Dennis P. Orthman, CMRP, Project Director, Strategic Marketplace Initiative (SMI)

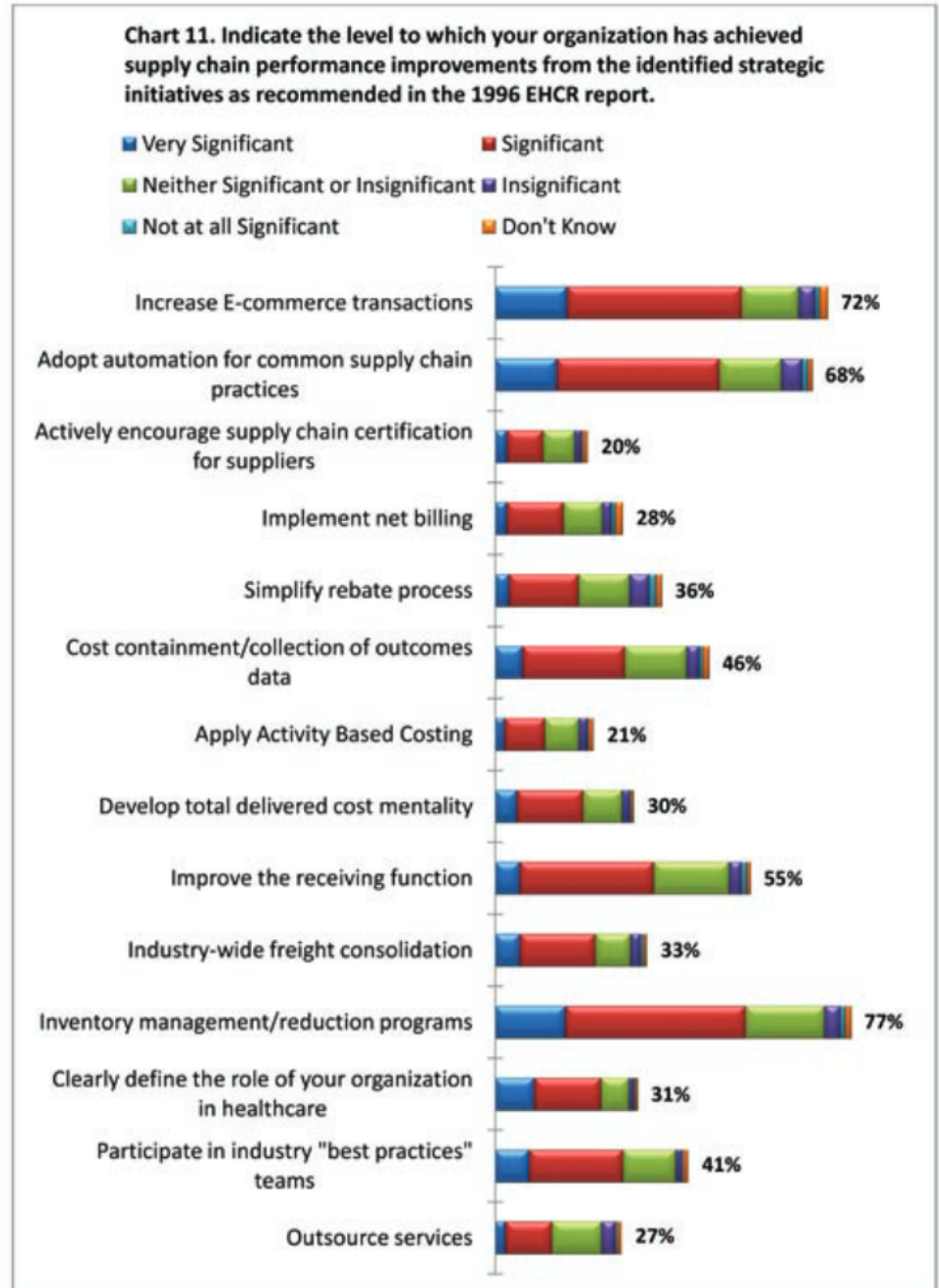
Efficient Healthcare Consumer Response Update



41%

of respondents have attempted at least half of the suggested EHCR strategic initiatives

Two out of five healthcare professionals who participated in the survey indicate that their organizations have attempted at least half of the initiatives suggested by the 1996 Efficient Healthcare Consumer Response report. Our findings indicate that, for the most part, the initiatives that were most frequently attempted are also the initiatives that provided the greatest levels of supply chain performance improvement to the organizations. For example, inventory management/reduction programs, increase E-commerce transactions, and adopt automation for common supply chain practices were attempted by more than two out of three survey participants and achieved very significant or significant levels of improvement for the vast majority (more than 70 percent) who attempted these initiatives. One initiative that is contrary to this observation is clearly defining the role of your organization in healthcare which was only attempted by 31 percent of the survey participants but helped 74 percent of those who attempted this. Chart 12 shows the differences in which initiatives were attempted by each organization type.

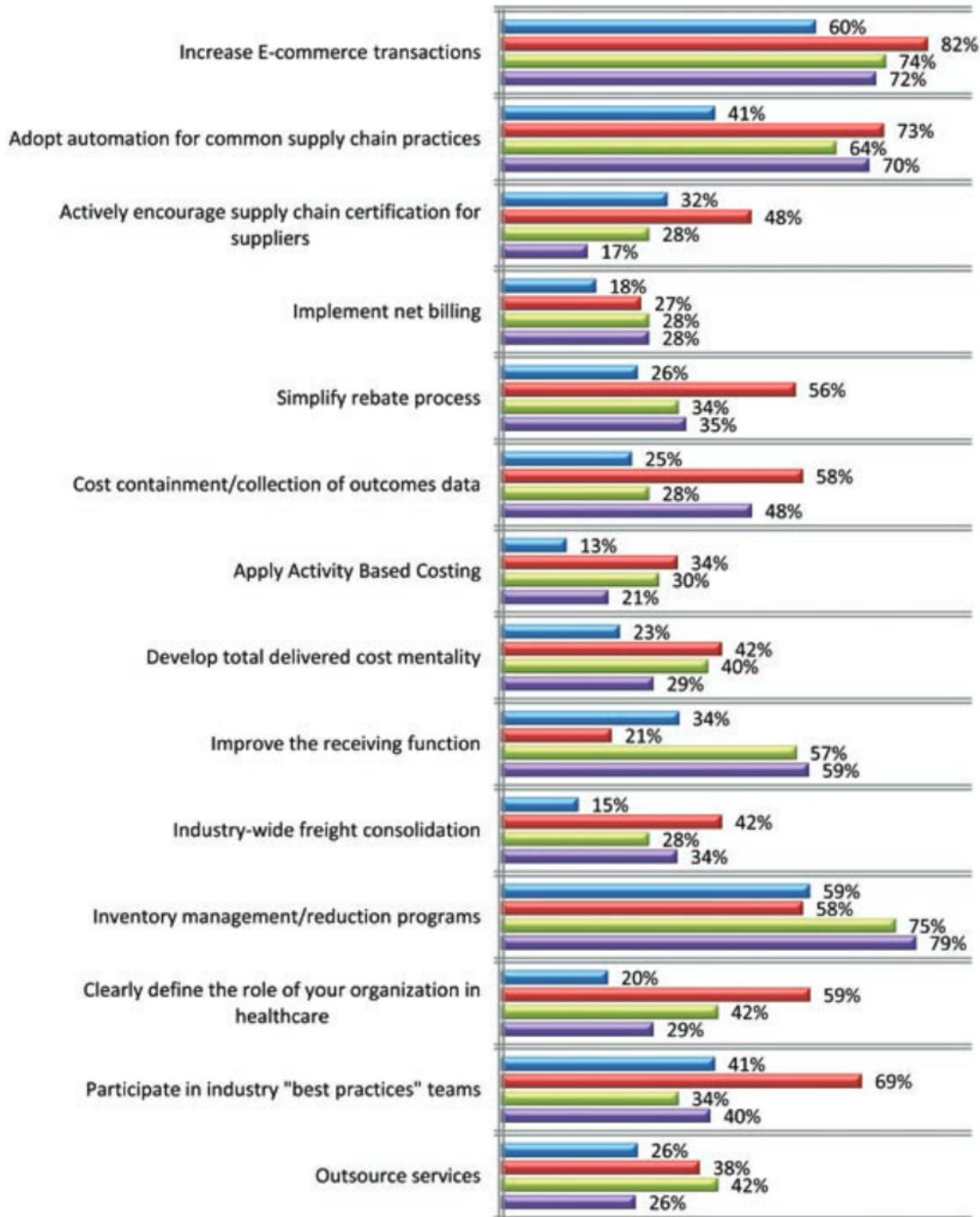


Sample size = 1268; Source: 2009, Nachtmann and Pohl

Efficient Healthcare Consumer Response Update, continued

Chart 12. Which of the following strategic initiatives as recommended by the 1996 EHCR report has your organization attempted?

■ Manufacturer ■ GPO ■ Distributor ■ Provider



Sample size = 1268; Source: 2009, Nachtmann and Pohl

Industry Reactions

It has been over a decade since the Efficient Healthcare Consumer Response (EHCR) was published in 1996. The EHCR exposed a number of existing inefficiencies in the healthcare supply chain. This was accomplished through a survey of healthcare industry experts, providing a cross-section of observations and opinions from professionals working in a variety of organizations across the healthcare supply chain. Industry-wide obstacles to cost-effective healthcare were identified, and the need for greater collaboration between supply chain partners was addressed. The EHCR suggested that a potential savings of over \$11 billion dollars could be achieved through strategic initiatives. We provide an update of how these initiatives have been integrated into today's healthcare organizations and what improvements have been achieved.

"BD is actively partnering with healthcare providers to help adopt many of the EHCR strategic initiatives – most of which require data standards. The EHCR findings from 1996 stand the test of time. Unfortunately, most EHCR strategic initiatives have yet to be implemented. As a result, the industry has not realized the potential cost savings. BD has been moving towards the use of data standards for more than a decade. For example, the Company has invested heavily in this area, printing billions of GTIN bar codes on its products. However, most of these bar codes are never scanned outside of BD. Barcodes and data standards are of little value without broad adoption."

Dennis Black, Director, e-Business, BD

"The lack of role and function clarity of supply chain services in provider organizations comes as little surprise given the seeming lack of appreciation of many provider organization's C-Suites for the capacity of the supply chain services to play key roles in "margin mending". In a recent HFMA survey of CFOs (November, 2008), designed to query CFOs on tactics and strategies they would deploy in response to the economic downturn, not one CFO cited any tactics or strategies which would engage their supply chain service."

James M. Smoker, MPA, CMRP, Director, Materiel Resource Services, WellSpan Health

"It is exciting to see the number of respondents that have attempted implementation of the strategic initiatives listed in the EHCR report and the reported positive results achieved. All healthcare organizations could benefit from implementing the strategies and the supporting GS1 standards."

Dennis W. Harrison, Sr. VP GS1 US and President of GS1 Healthcare US

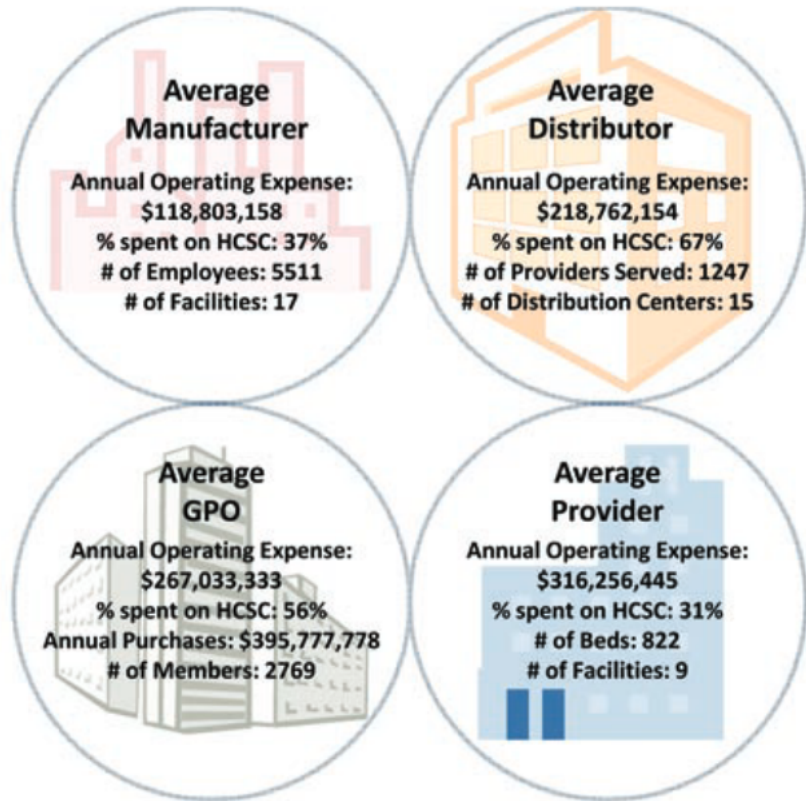
Cost and Quality



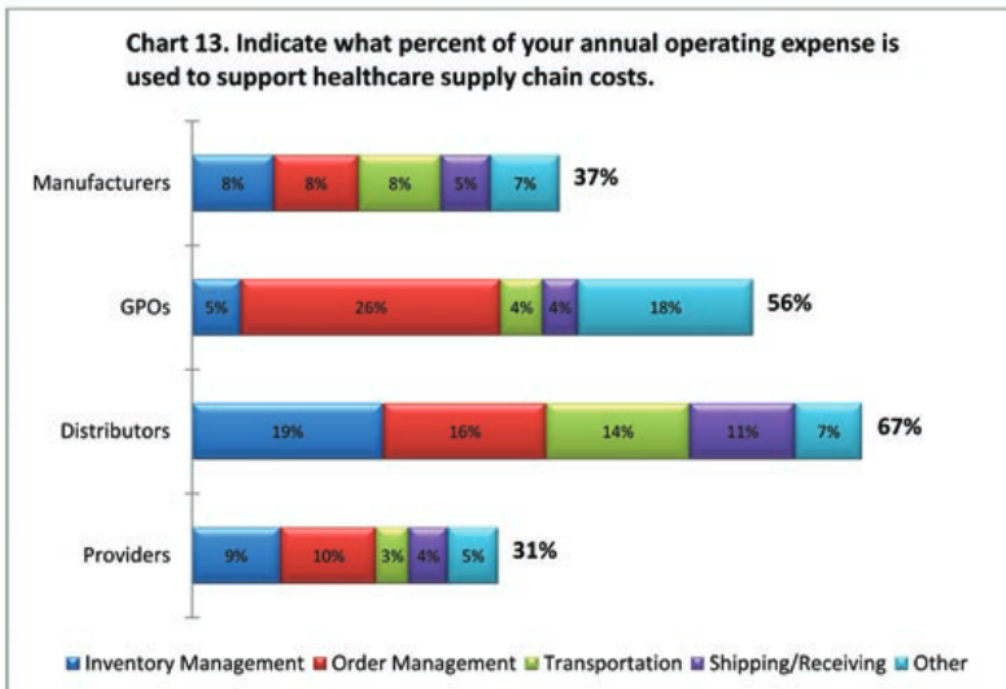
31%

of annual operating costs is being spent to support the supply chain of the average healthcare provider

On average, survey participants from GPOs and distributor organizations incur the majority of their annual operating expenses to support the healthcare supply chain (HCSC) functions. Interestingly, healthcare providers are using almost a third of their annual operating funds to support the supply chain. Within group purchasing, distribution, and provider organizations, healthcare supply cost are incurred primarily to support inventory and order management. On average, survey participants from manufacturing organizations spend their funds more evenly across the supply chain functions.



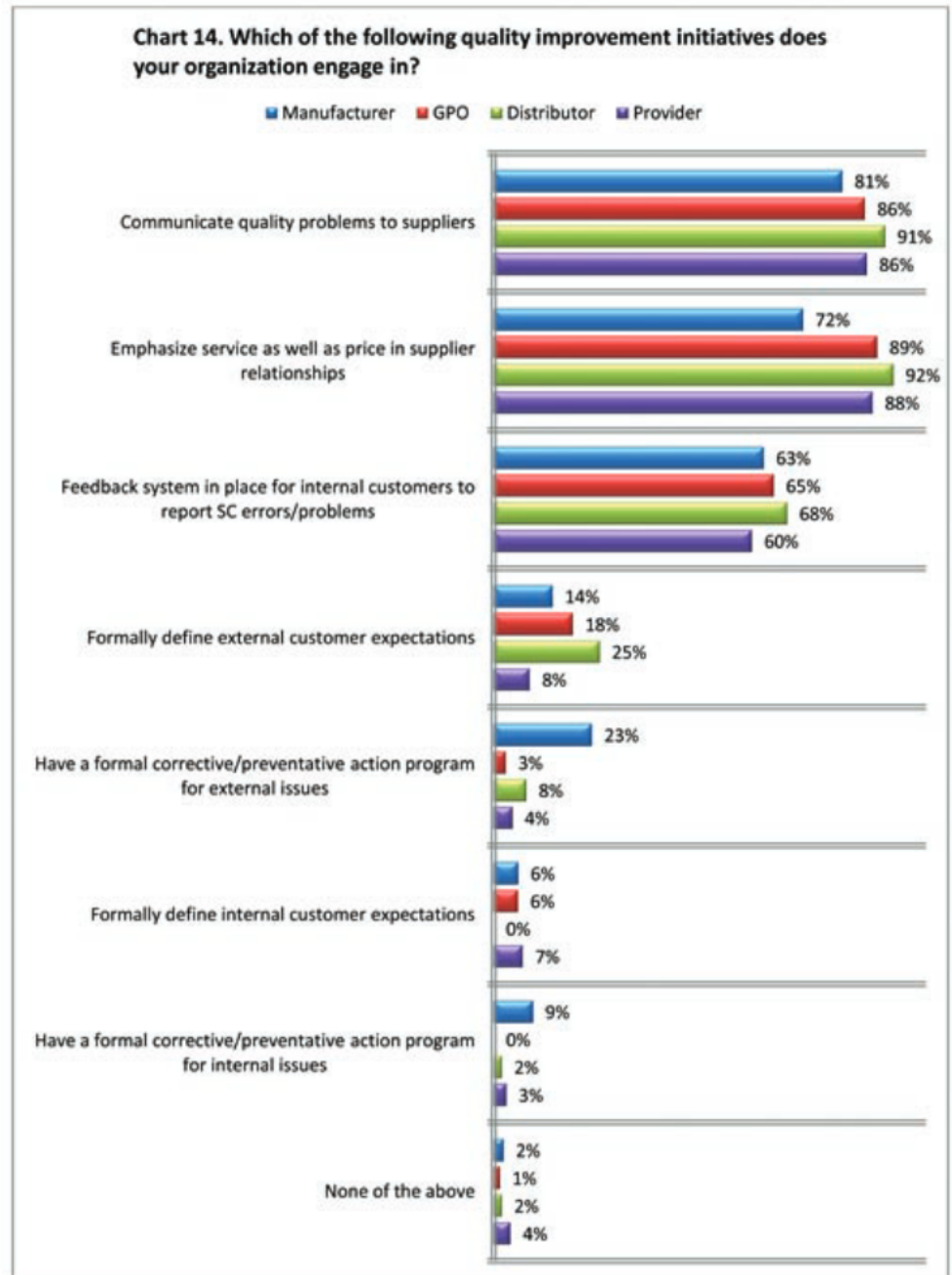
Sample size = 204; Source: 2009, Nachtmann and Pohl



Sample size = 204; Source: 2009, Nachtmann and Pohl

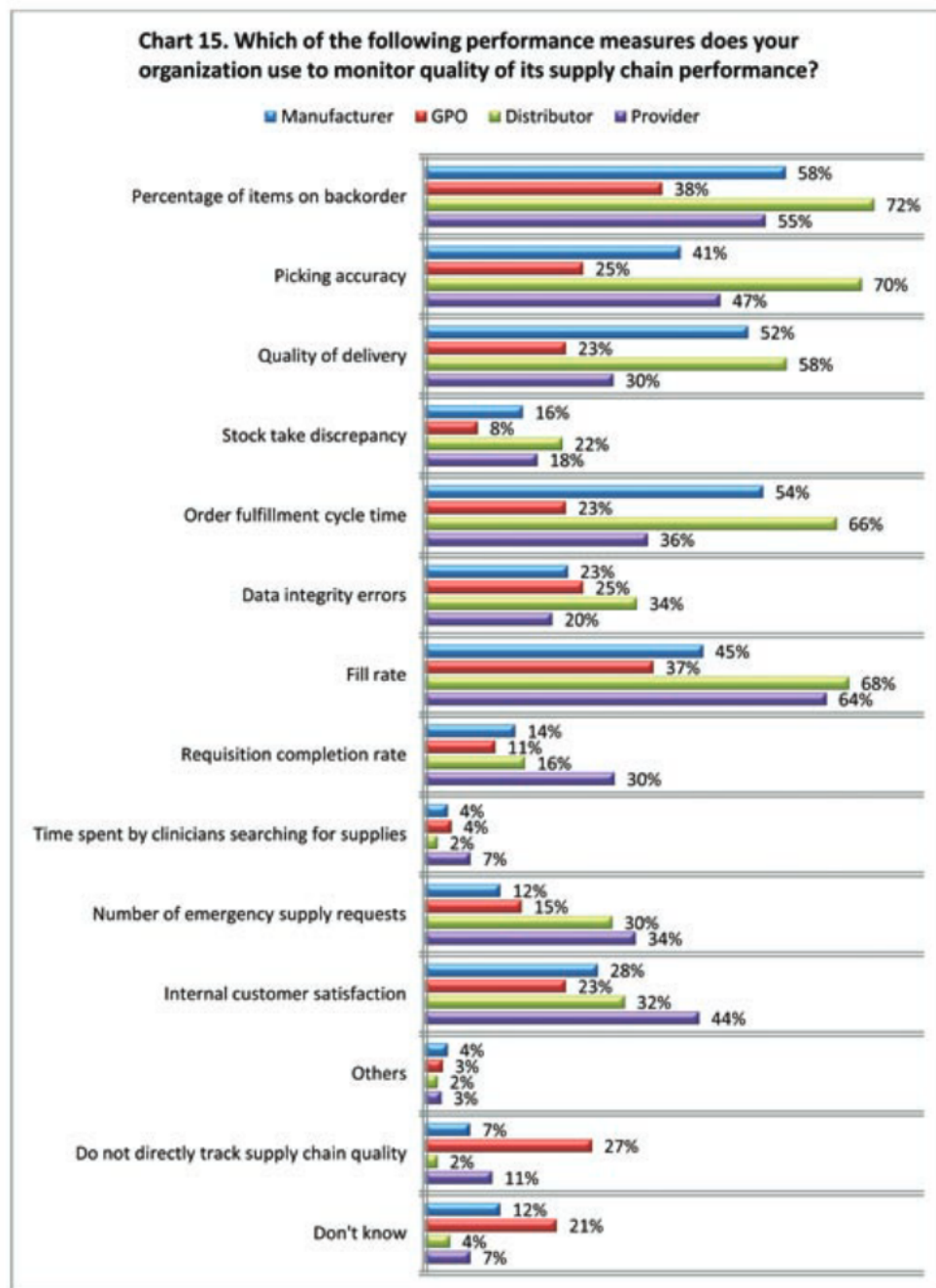
Cost and Quality, continued

The survey participants have feedback systems in place for their internal supply chain customers and are actively engaged in communicating quality problems to suppliers and emphasizing service as well as price in supplier relationships. Survey participants have not actively engaged in defining customer expectations or developing formal corrective/preventive action programs.



Sample size = 1268; Source: 2009, Nachtmann and Pohl

Manufacturers, distributors and provider are similar in the most frequently used measures to track their supply chain quality. Survey participants from these organizations indicate that they are using traditional quality measures such as percentage of items on backorder, order fulfillment cycle time, fill rate and picking accuracy to measure their supply chain performance. Tracking the internal customer satisfaction is more common among healthcare providers, indicating a heavy emphasis on supply chain performance within their own organizations.



Sample size = 1125; Source: 2009, Nachtmann and Pohl

Cost and Quality, continued

Industry Reactions

The rising cost of healthcare services is a widespread concern among healthcare professionals, government officials, and the public. Although most stakeholders are quick to acknowledge that costs are too high, determining the contribution of supply chain activities to the cost of healthcare delivery is a more difficult task. Furthermore, understanding how these healthcare supply chain costs are distributed among manufacturers, distributors, GPOs, and providers is challenging. Despite the current cost explosion, there is a lack of clear and measurable quality metrics for healthcare logistics performance. “You can’t manage what you don’t measure” is a common adage among managers. This highlights the importance of quality performance measures in organizations that are often dubbed “data rich and information poor,” a challenge facing many healthcare organizations. We present our first look into the current costs attributed to healthcare supply chain activities along with reactions from industry experts.

“The savings identified in the EHCR study of yesteryear and the “Perfect Order” and “Data Standards” initiatives of today are real. All participants need to put their egos aside and come to the table to accelerate the pace of change. Inaction is our biggest threat. We need to take the waste out of the supply chain now!”

Stephen Sichak, Senior Vice President, Integrated Supply Chain, BD

“When almost one-third of a provider’s operating expense is spent on procuring, moving, and managing supplies, the strategic importance of good supply chain management should always be obvious to every single hospital employee from the storeroom to the board room.”

Dennis P. Orthman, CMRP, Project Director, Strategic Marketplace Initiative (SMI)

“Our level of sophistication for measuring health care supply chain efficiency has dramatically improved compared to even just a decade ago. However, the complexity of the supply chain presents significant challenges when we attempt to drive out the waste so we can lower costs. Remember, what is important about any investment here is how it relates to savings on the critical items and services health care providers need for patients every day. That’s the measure that matters and that’s where we need to focus our energy.”

Scott Downing, Executive Vice President, Supply Chain Services, VHA Inc.

“Expenses are not just another line on a budget variance report but may be balancing the investments made with the expected return to improve supply chain. Not only must we continue to measure improvements and justify projects, but we have to understand the true costs of manufacturing and logistics outside of our hospital walls.” Managing freight and truck capacity is no longer the realm of manufacturers or distributors but are critical to supply chain experts within the consumer hospitals...If the cost of supplies and services are integral to the overall cost of the enterprise, then understanding how they work together is key in managing the utilization of supplies and services. It is far more effective to know what is used in a surgical case and how often than to know the supply cost per case.”

Howard G. Mann, Senior Director, Corporate Materials Management, Saint Luke’s Health System

Conclusions: The Path Ahead

This report presents the current state of the healthcare supply chain related to cost and quality issues. Today, more than ever, as the country prepares for baby boomers to enter retirement, the demands on the healthcare supply chain continue to increase and play a significant role in healthcare delivery and cost. The findings identify several areas of opportunity that can help increase logistic cost efficiency and quality improvement. As our work proceeds, we need to explore how to implement change in these areas and continuously look for new opportunities to decrease cost and improve delivery of healthcare. In order to better describe the path ahead, we plan to conduct a series of focus groups with the intent of defining the next steps in achieving healthcare supply chain excellence. It is our hope that ten years from now people will look back at this study and attribute many of the new and innovative changes made in the healthcare supply chain to the opportunities identified in this report. Of course, none of this will occur without continued participation and collaboration of healthcare supply chain stakeholders. We welcome your thoughts and observations regarding the survey findings as described in this report.

"The [State of Healthcare Logistics] Report will provide the industry with valuable insights into each sector of the healthcare supply chain. The findings show how interdependent the industry is and underscores the need to continue to work together on major initiatives to improve efficiencies and decrease costs. This report provides the road map to our portion of healthcare reform."

Deborah L. Sprindzunas, Executive Director, AHRMM

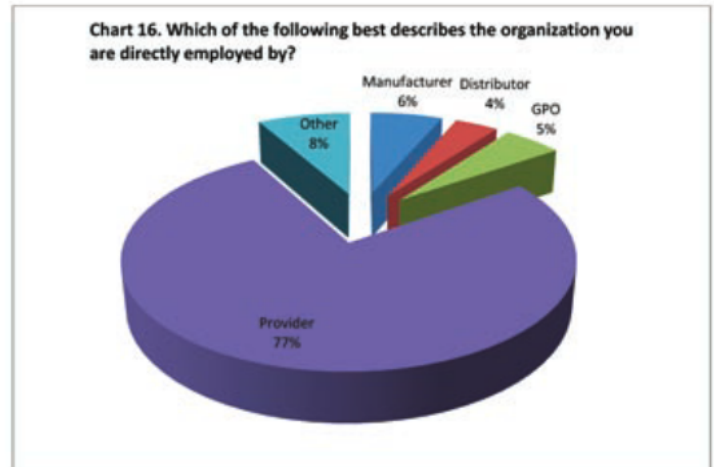
"The state of healthcare logistics is in a stage of development that is rewarding and challenging all at the same time. The feeling of being on the brink of successful change means the supply chain professional may finally see how healthcare logistics can truly make a difference in lower cost healthcare with the preservation of continuously improving clinical excellence. The challenge is being able to change with the demands of the process."

Howard G. Mann, Senior Director, Corporate Materials Management, Saint Luke's Health System

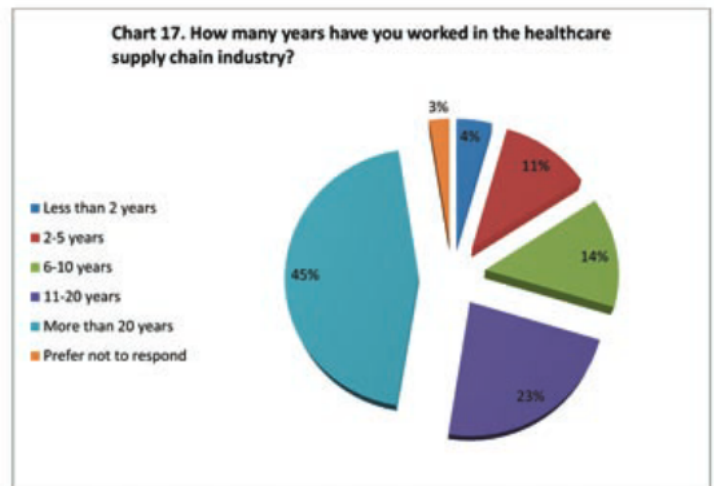
Participants and Methodology

All data presented in this report was gathered in November 2008 through an online survey completed by 1381 healthcare supply chain professionals for a response rate of twelve percent. The survey, administered by the University of Arkansas Survey Research Center, covered a range of supply chain-related topics including collaboration, strategic initiatives, expenditures, and performance.

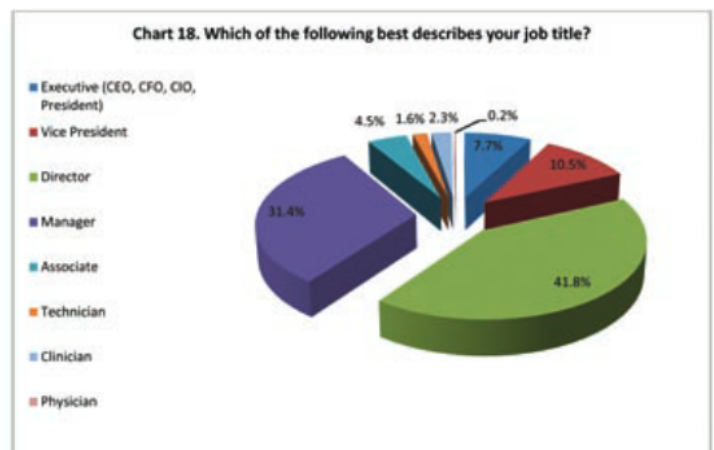
More than three out of four respondents work for a healthcare provider with the balance made up of manufacturers, group purchasing organizations, distributors and other healthcare supply chain organizations such as consulting. Tremendous expertise is represented in the participant base where two out of three respondents have more than ten years of healthcare supply chain experience and many (45 percent) have more than twenty years of experience. The vast majority of respondents hold manager-level and above positions within their organizations, with eighty of the respondents being C-suite executives.



Sample size = 1381; Source: 2009, Nachtmann and Pohl



Sample size = 1214; Source: 2009, Nachtmann and Pohl



Sample size = 1045; Source: 2009, Nachtmann and Pohl

Contacts and Acknowledgements

Sponsors

The Center for Innovation in Healthcare Logistics (CIHL) is an industry-university partnership that leads a nationwide effort to identify and foster systemwide adoption of ground-breaking healthcare supply chain and logistic innovations. CIHL facilitates collaboration among researchers at the University of Arkansas' flagship campus in Fayetteville, healthcare provider organizations, and industrial sponsors including Wal-Mart, Arkansas Blue Cross and Blue Shield, VHA Inc., the Association for Healthcare Resource & Materials Management, Procter & Gamble Co. and IBM. Additional information can be found at cihl.uark.edu.

The Association for Healthcare Resource & Materials Management (AHRMM) is the leading national association for executives in the healthcare resource and materials management profession. A professional membership group of the American Hospital Association, AHRMM serves more than 4,000 active members. Additional information can be found at www.ahrmm.org.

Acknowledgements

We would like to recognize the hard work, dedication, and participation of many individuals, without whom this research would not be possible. We are most grateful to CIHL and AHRMM for their financial support and cooperation. We sincerely thank our research assistants, Brian Smith and Jared Townsley, who actively participated in every step of this research. We also benefitted greatly from the effort and dedication put forth by Sarah Oaks, Associate Executive Director of AHRMM/AHA. We are grateful to GS1 US, the members of the Strategic Marketplace Initiative, and Materials Management in Health Care magazine for their support of our efforts. We are indebted to the healthcare supply chain organizations and professionals who contributed their time and expertise to the success of the survey.

Contact information

Heather Nachtmann, Ph.D.
Department of Industrial Engineering
4207 Bell Engineering Center
University of Arkansas
Fayetteville AR 72701
hln@uark.edu
(479) 575-3156

Edward A. Pohl, Ph.D.
Department of Industrial Engineering
4207 Bell Engineering Center
University of Arkansas
Fayetteville AR 72701
epohl@uark.edu
(479) 575-3156



This research was supported by the Center for Innovation in Healthcare Logistics at the University of Arkansas and the Association for Healthcare Resource and Materials Management of the American Hospital Association. Any opinions, findings, conclusions, or recommendations in this document are those of the authors and do not necessarily reflect views of the sponsors.

© 2009, Nachtmann and Pohl
Designed by KinneyKusek, Inc.
Publication title: *The State of Healthcare Logistics: Cost and Quality Improvement Opportunities*
Publication date: July 2009
Publication number: CIHL09CQ01

The suggested citation for this report is
Nachtmann, Heather, and Edward A. Pohl, "The State of Healthcare Logistics: Cost and Quality Improvement Opportunities," Center for Innovation in Healthcare Logistics, University of Arkansas, July 2009.