Spend Management Solutions for the Healthcare Industry

Assessing "Best of Breed"

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Executive Summary

The concept of strategic sourcing as a core tool for IDN's to achieve its clinical mission while managing risk and reducing cost has been well touted in the industry. One of the most fundamental components of a strategic sourcing program is the ability to carry out a category analysis for their consolidated spend data at the hospital, as well as at the buyer level. This requires aggregating 100 percent of the data into a single consolidated view of the spend to enable a precise analysis of spending with each supplier for each category of spend in the system. In this study, we surveyed the landscape of different providers of spend management in the healthcare landscape. This included Group Purchasing Organizations (GPO's), ERP system providers, specialized software providers, and distributors. The five major categories of spend management assessed at each of these organizations includes data cleansing, spend analytics, contract management, technology enablement, and customer service/responsiveness. Of these, data cleansing was identified as the most challenging component that is fundamental to creating true visibility of spend. Unfortunately, **data cleansing is also the component that was typically overlooked by the majority of the organizations reviewed in this analysis.** While each of these organizations provides a different and unique set of capabilities in the area of contract management, technology, analytics, and support, only two of the providers truly have a demonstrated capability in capturing, cleansing, coding, and uploading 100% of the spend data for hospitals and IDN's. Further, many of the organizations perform data cleansing only as a requirement for entering the data into their proprietary databases, without providing the cleansed dataset to the client. Without capturing and providing visibility to 100% of the spend (including not just EDI data, but non-EDI spending, paper contracts, off-system spending, etc.), the true benefits of a strategic sourcing exercise cannot be achieved, and the result is a self-defeating exercise in futility. Only two providers of specific software targeted at data cleansing were identified in the study. This was made more complicated by the fact that up to 20% of manufacturer data that is used as input into healthcare data analysis is "dirty" or incorrect.

In today's environment, hospitals continue to outsource their sourcing capabilities to a national or regional group of GPO's, who nevertheless are able to obtain leveraged savings for groups of large commodities. To truly become more strategic, however, healthcare providers need to adopt a strategic intent to insist on visibility and cleanliness of all data, not just what is easily accessible. Further, the data needs to be captured into an analytical environment that allows the flexibility to drill deeply into different types of data sets to unearth opportunities through benchmarking, analysis of non-traditional spending areas, and engagement of key stakeholders to review the results of these analyses. Data is the only true enabler for change in the healthcare supply chain. Our research points to the need for strategic sourcing groups across the country to begin to take the issue of spend management into their own hands, control the data, and use it as a leveraged tool for driving change and improving performance. Healthcare supply chain executives need to select providers who are aligned with a spend management strategy that relies on centralization of spending, but also engagement of stake-

holders for decision-making. It's time to regain internal control of spend data, and begin to truly manage third party spending as a strategic capability. While strategic sourcing has grown in leaps and bounds in most industries, healthcare has a long way to go. The time for change has never been better.

Introduction

Healthcare providers are facing continued lower operating margins, increased risks and potentially once-in-a-lifetime health care reform. With this backdrop, there is an increasing focus on Supply Chain Management as a means to minimize risk, optimize operating costs, improve revenue, improve operating margin and hence enable the hospital to better serve the patient. Executives are now recognizing that health providers have relatively immature supply chains, and that development of strategic management of supply chains is generally in a nascent level1. Healthcare organizations typically proceed through an evolution of basic processes in supply management.[1,2] Initially, many providers are not focused on managing the supply chain, but rely on an external Group Purchasing Organization to negotiate all of their contracts, and focus on driving compliance in the physician community. Organizations seeking to drive change must first begin by establishing a charter to do so with their executive team, and make a commitment to moving away from a transaction-price-based focus. Another critical element at this stage of development is the ability to isolate and measure where and how third party spending is occurring in healthcare systems, through improved spend management.

The healthcare industry is in the early stages of deploying spend management solutions, and executives are faced with many challenges in this regard. As we approach a new era in the healthcare industry with increasing network complexity and stringent budgets, the need to better control costs is a direct function of healthcare management's ability to isolate, track, and manage third party spending (Byrnes J., 2004).

According to Gendron and D'Onofrio (2001), Improving the integrity of spend across a complex value chain of the healthcare industry is a fundamental element in building a strong foundation for supply management.

Although these facts are widely recognized by executives, the spend management landscape is not well defined in healthcare. Many different database and procurement systems exist. The development of standardized item masters, coding structures, and nomenclatures are in a nascent form. Finally, multiple providers of spend management technologies are claiming to offer the best solutions, ranging from software providers, Group Purchasing Organizations (GPO's), and third party providers. In an effort to better assess this landscape and identify appropriate governance structures, technology requirements, industry trends, and contracting guidelines, the NC State University Supply Chain Resource Cooperative (http://scrc.ncsu.edu) engaged industry leaders and subject matter experts in an industry assessment of Spend Management Healthcare Solutions. The methodology used to carry out this study is next described.

[1,2] Schneller E, Smeltzer LR. *Strategic Management of the Health Care Supply Chain*. San Francisco, CA: John Wiley,;2006.

Methodology

Why is it important to capture spending transaction-level data associated with third party purchasing processes? Because from time to time the healthcare supply chain system must identify opportunities for savings through a process known as a spend analysis. A spend analysis becomes a critical input into building category strategies, but spend management involves the on-going maintenance, update, and refinement of the spend data to make it useful for decision-making. Category strategy development is a process applied to general families of purchased products or services that seek to optimize spending while meeting or exceeding stakeholder requirements. (Stakeholders may include physicians, clinical and non-clinical staff and administrators, facilities management, etc.).

A spend analysis was often viewed as a one-time annual event to derive budgeting estimates, and develop insights into annual contract negotiations. Today, spend analysis is evolving into spend management, which is a much more dynamic and on-going assessment and tracking of spending patterns, matched to other cost drivers and activities. Spend analysis does not need to occur only on an annual basis, but can be applied also to reviews of a category or sub-category of spend that occurs when a contract is being negotiated, or when a strategic sourcing project is initiated for a particular category group. Spend analysis is also a critical component of effective budget planning, and setting key performance indicators for sourcing teams to consider in their assigned duties. An on-going spend management capability provides answers to the following questions:

- What did the provider spend its money on over the past year? This value is an important component in calculating the cost of goods sold in the financial statement. Purchased goods and materials are often more than 40% of the total cost of goods sold in healthcare. Many systems fail to include indirect and nonclinical spending in their analysis, which is missing an important piece of the pie.

- Did the healthcare system receive the contracted level of products and services based on payments made to third parties? Although many providers outsource their pur chasing to GPO's, there is nevertheless a need to audit and verify that services and products delivered met not only contracted pricing, but also service level agreements, statements of work, and appropriate levels of support services. A thorough spend analysis will often reveal areas where products and services are being paid for, but the goods or services are not even being received or being used by the system.

- What suppliers received the majority of the business, and did they charge an accurate price across all the units in comparison to the requirements in the POs, contracts, and statements of work? (This is an important component to ensure contract compliance.)

- Which divisions of the business spent their money on products and services that were correctly budgeted for? (This is an important component for planning annual budgets for spending in the coming year.)

- Are there opportunities to combine volumes of spending from different parts of the healthcare system, and standardize product requirements, reduce the number of suppliers providing these products, or exploit market conditions to receive better pricing? (This is an important input into strategic sourcing).

Moreover, spend management provides insights and clarity into these questions and yields an important planning document for senior executives in healthcare operations, supply management, and finance. Despite the importance of this capability, many healthcare systems struggle to develop a comprehensive and accurate spend analysis report. This is because purchasing was for many years a paper-based system, and figures were not entered correctly into accounting systems. Even with the evolution of sophisticated enterprise systems such as SAP and Oracle, purchasing transactions are often entered incorrectly, which elicits the old phrase "garbage in, garbage out." Another problem is that many enterprises have grown through mergers and acquisitions. When a new division is acquired, they may be using a different system from the acquiring system, and so the data is not easily translatable. For this reason, many healthcare systems are undergoing major initiatives to streamline procurement through electronic procurement systems that will revamp the purchase to pay process and automate different portions to capture transactions more effectively. Indeed, research suggests that "best in class" firms are more likely to have a higher proportion of their spend under management, which has led to important improvements such as cost reductions, reduction of noncompliant purchases, supply base reduction, and electronically enabled suppliers.

Assessing the Spend Management Landscape

A research team was assembled which performed a thorough analysis of spend analysis best practices. A number of industry subject matter experts were consulted, including academics, spend management industry experts, healthcare consultants, and healthcare executives. Based on these views, a taxonomy of capabilities was developed around the core elements of a spend management program, which include the following:

- Data Cleansing (Acquisition, Cleansing, Preparation, and Database Population)
- Analytics
- Contract Management
- Technology Management
- Customer Service

A capability assessment was defined for each category based on user input that provided guidelines for assessing the level of maturity (Basic, Typical, or Advanced) of different providers in each of these five areas, with a scoring mechanism determined. This scorecard was used as the basis for assessing the capabilities of each provider.

The spend management landscape includes a number of different providers of spend management services. It quickly became apparent that a significant variance in capabilities claimed in marketing materials did not always align with demonstrated experience of these same providers.

The population of firms sampled for this study included the following:

Group Purchasing Organizations* (4) – labeled as **GPO1, GPO2, GPO3, and GPO4** – these providers covered some but not all of the capabilities in the study.

* *At the time of publication the following GPOs gave permission to publish results with their name: GPO1 - Premier; GPO4 - Novation.*

Distributors (3) – labeled as **D1, D2, D3, and D4** - two of these distributors did not provide significant spend management capabilities, but for the most part outsourced capabilities to a third party.

Specialized Software Providers (4) – labeled as **SS1, SS2, SS3, and SS4** – these are companies that focused on different aspects of spend management capabilities, including data acquisition, cleansing, preparation, and database upload. They also provided different forms of services for contract management, spend analytics, technology and customer service. These firms were either operating as "software as a service" providers or providers with specialized assets.

* *At the time of publication the following Specialized Software Providers gave permission to publish results with their name:*
SS2 - DataPros for Healthcare.

Other Software Providers (3) – these organizations provide benchmarking and database support that allows providers to compare their current pricing and spend patterns to other healthcare companies. They possessed limited capabilities in data cleansing.

ERP Providers (2) – these organizations supported large ERP platforms used in healthcare, and provided varying levels of support around spend management.

All of these organizations claim to provide spend management support services in one form or another. Because of the diversity of actual services provided, there was a need for a rigorous scoring system that would provide a means to identify each firms' true capabilities.

Identifying capabilities was not as easy as it might sound. Moreover, while many providers had marketing materials or generic demonstrations on their websites alleging certain capabilities around data cleansing, spend analysis, contract management, and services, further research by our team revealed that these capabilities could not be effectively validated. Validation of capabilities was performed through several means. First, we conducted interviews with healthcare executives, software providers, and subject matter experts familiar with provider capabilities. Second, we reviewed recent studies conducted by the DoD on data quality in the industry, and reviewed other publications and industry

presentations at recent healthcare supply chain conferences that we attended. Finally, we contacted each of the providers and emphasized to them that this study was forthcoming, and that we would welcome the opportunity to review their stated capabilities through client references, demonstrations, or other mechanisms. Unfortunately, our repeated requests for interviews often went unanswered, suggesting that these providers were indeed reluctant to provide validation of their spend management solutions. It also became apparent through the validation process that many of the capabilities alleged in marketing materials did not meet even the "Basic" level of performance identified in our scoring mechanism In fact, it was not even apparent that there a single customer existed who had successfully implemented some of these services! As such, we provided a lower score to providers that refused an interview or who were unable to ascertain actual capabilities based on a demonstration or client references or testimonials.

In the following sections, we assess each vendor's capabilities along each of the five dimensions, and provide a summary score using the following scorecard.

Defining Components of Spend Management

Understanding the components of spend management was an important first task before assessing the landscape of different solutions. Jason Busch, widely recognized as the leading expert on spend management based on his blog SpendMatters.com, wrote in a recent article about the roots of spend management technology.[3] He noted that the initial goals of spend analysis software were to build a toolset that would include the following capabilities:

- The ability to collect and analyze data across multiple operating units, systems, instances, and versions, included but not limited to ERP (e.g., A/P data)
- Advanced data cleansing and analysis
- Common commodity classification and structure (e.g. UNSPSC)
- Item level visibility (especially in the case of direct materials)
- The need to build repeatability and sustainability into a process versus taking on spend analysis as a one-time effort

Busch also notes that initial efforts by his firm, FreeMarkets, in the 1990's essentially amounted to a largely manual driven ETL (extract, transform, load) data management process that loaded information into a relational database on top of which sat a Cognos platform (i.e., business intelligence) with a number of canned reports. The FreeMarkets approach, like many others at the time, was not elegant, but it worked in helping answer a number of basic questions that could be used execute on a cost reduction strategy.

Some of the basic questions that spend visibility can answer for a buying organization included:

1. What is my total spend?
2. Who are my largest suppliers (parts, spend, categories)?

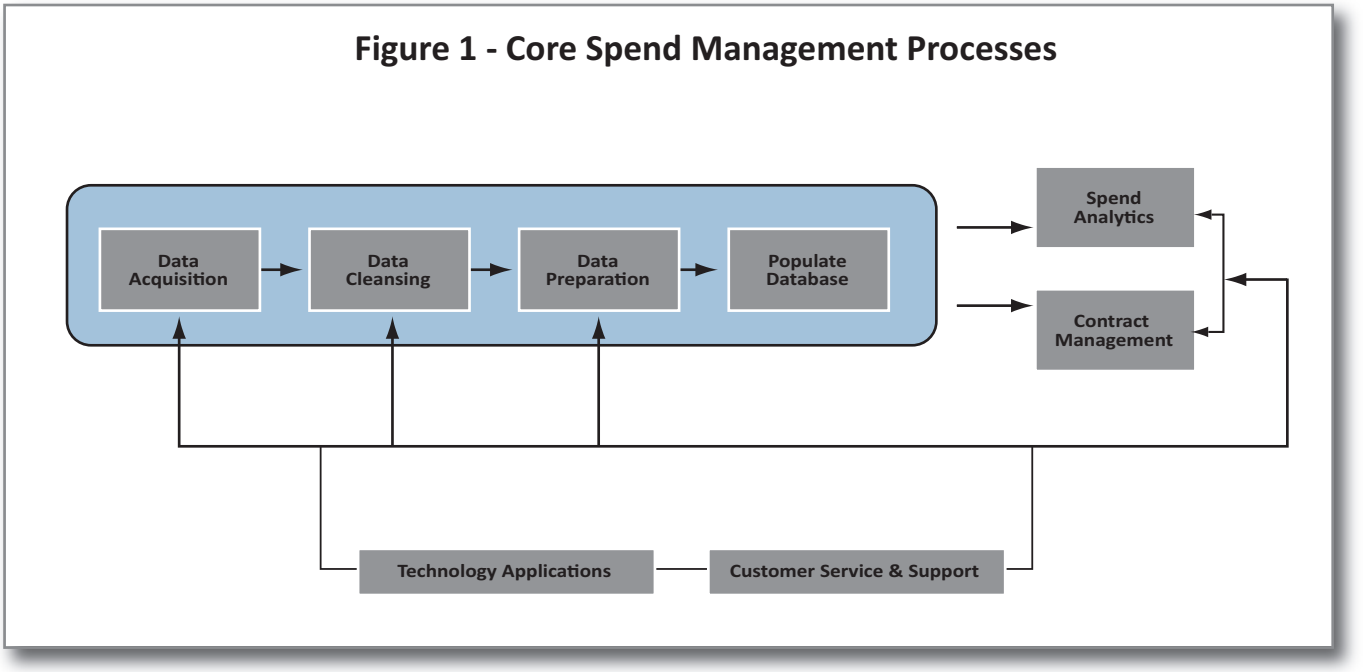
[3] Busch, Jason, "Beyond the Basics: Using Spend Visibility to Drive More Than Category Sourcing Strategies and Spend Reporting", Spend Matters Compass Series, 2010, Volume 2.

3. What are my largest spend segments?
4. What parts are growing in total spend? Shrinking?
5. What parts have the largest price inflation (over a given period of time)?
6. Am I paying more from one supplier than another for part X?
7. Where can I quickly cut costs by taking action?

Other more advanced questions that spend visibility tools could answer included the following areas:

1. Contract Management
    a. Am I paying the contract price?
    b. How much am I buying off contract?
    c. Why? (e.g., non-compliance, expediting, etc.)
2. Buyer Management
    a. Who is managing the most items/spend?
    b. Who is managing this contract?
3. Spend Disbursement
    a. Percent of spend from Low Cost Countries?
    b. Percent of spend from MWE?
4. Time Variance
    a. What has changed over the past year?
    b. Why has the variance occurred (e.g., restocking vs. demand-driven replenishment based on a pull model)?
5. Management, Leverage and Planning
    a. Who should own commodity X?
    b. How can we best leverage similar items (but potentially with different SKU/ part numbers and suppliers) across operating

For purposes of this report, **Spend Management is defined by five distinct processes that span both software systems, process management, and decision support, as shown in Figure 1 on the next page: (1) Data Cleansing (which includes Data Acquisition, Cleansing, Preparation, and Database Population), (2) Spend Analytics, (3) Contract Management, (4) Technology Applications and (5) Customer Service.** While we acknowledge that different providers have varying perceptions on the different forms of spend data management approaches, we have selected these categories based on common best practices not just in healthcare, but other industries as well. The report assesses current solutions in the marketplace based on these five core processes. These categories were selected based on the factors that were identified with healthcare and data solutions providers as being the most critical in selecting spend management solutions. Other factors that were not considered in this report include the spend management vendor's prior experience in providing solutions, customer credibility, and alignment with customer requirements. These elements were deemed as specific to a given healthcare provider's situation and context.



Next, we describe each of the elements shown in Figure 1, define the components of each element, and provide the scoring mechanism. The assessment score for each provider reviewed in this study is provided, and observations and key trends discussed.

Data Cleansing

Access to the right data is essential, as accurate and properly coded data provides the foundation for category management strategies, including leveraging, pricing agreements, quantity discounts, value analysis, supply base optimization and other important cost management activities. Data Cleansing is actually a process that involves four stages, as shown in Figure 1.

Data Acquisition

First, the user is contacted and the "raw" data is collected from different sources. Common sources of data can be the customers' MMIS, GPO and local suppliers. It is important at this stage that all relevant spend data, including indirect spend, is included in the analysis. Note that many providers restrict their data acquisition to only electronic EDI data, or inventory data that is readily available, thereby missing a significant "chunk" of the total spend. The net impact of this oversight is that it provides an inaccurate representation of what the healthcare system is truly spending on third party goods and services.

Data Cleansing

Busch notes that from a technical perspective, first generation-spend analysis approaches were limited by the underlying architecture, development, analytical and visualization capabilities available to providers at the time. This is still a major problem for healthcare

providers. The limits of relational database technology based on disk storage and traditional data warehousing approaches to storing, querying and accessing information and reports are one example of the constraints that are often encountered, due to old technology platforms. A few healthcare systems are now beginning to invest in the usage of in-memory databases that rely on main memory (or RAM, as it's better known) storage approaches that can materially increase query speeds as well as workarounds to traditional storage and query models that greatly increase both the speed with which we can search and access information as well as the ability to search information sets in the context of each other.

One of the most important challenges in healthcare is that the data coming from manufacturers /suppliers of healthcare supplies is flawed even before it reaches the hospital's analytics team! A recent study by the Department of Defense[4] conducted significant analyses of item data collected from various DoD suppliers, and found significant data disconnects between Healthcare industry trading partners. This poor connectivity included poor data accuracy between manufacturers, distributors and DoD's own internal pricing/contract management applications. Further, the study found that the process of requesting "one-off" data feeds from partners was a significant resource burden on all parties involved. As shown in Figure 2 below, up to 20% of manufacturer data has errors that are transmitted to distributors and other third parties, with further data errors occurring in other parts of the channel as well. What this means is that much of the data that is already assumed to be "clean" that is imported into databases for spend analysis is already rife with error!!

Figure 2 - The DOD Data Synchronization Study
Quantified Industry Wide Data Problems

	Manufacturer	Distributor	GPO	Customer
Missing Middle Levels of Packaging	15-20%	1-4%	20-25%	15-25%
Hard "Packaging Quantity" Errors	1%	1%	2%	2-5%
Unit of Measure Confusion/Misuse	2-6%	1-3%	2-5%	Unknown
Missing Packaging—not Middle Level	3-8%	3-8%	3-7%	5%
Manufacturer Name Problems	NA	2-5%	1-4%	30%
Obsolete Products	1-4%	2-5%	1-8%	5-15%
Missing Product Brand Names	2-5%	5-10%	5-10%	20-25%
Incomplete Item Descriptions	5-15%	3-12%	5-15%	10-20%
Wrong Customer Unit Prices	Unknown	1-2%	NA	1-2%
Customer Paid More Than Lowest Contract Price	NA	Unknown	NA	3-6%

"Creating a Source of Truth in Healthcare: Testing the GDSN as a Platform for the Healthcare Product Data Utility Results from DoD Healthcare GDSN Pilot Phase IIA", DoD/VA Data Synchronization Study, September 2007.

[4]"Creating a Source of Truth in Healthcare: Testing the GDSN as a Platform for the Healthcare Product Data Utility Results from DoD Healthcare GDSN Pilot Phase IIA", DoD/VA Data Synchronization Study, September 2007.

Data Classification/ Preparation

One of the most important foundational shifts in spend analysis technology in the past 18 months has been an interest in greater flexibility and visibility into the classification process. Increasingly, more advanced organizations are starting to look for the ability to classify spend to one or more taxonomies at the same time (e.g., customized UNSPSC and ERP materials code) as well as having the ability to reclassify spend to analyze differ views and cuts of the data based on functional roles and objectives. Moreover, some organizations are looking to exert greater control over the spend visibility process; these individuals are often becoming distrustful of "black box" approaches to gathering and analyzing spend data. Coding of data is essential when conducting category analyses and clinical effectiveness studies. For example, a hospital wanting to gain strategic advantage through public reporting on clinical excellence will require an understanding of the impact of products on reducing hospital-acquired infections and contributing to the total episode of care and a preference for "smart products".[5] An example is pumps that provide feedback on accuracy of dosage delivery. Category analysis using data classification codes can also identify areas where "system internal co-sourcing" is taking place. This refers to situations where decisions regarding commodity items as well as physician preference items and actual determination of vendors where there continues to be a duplication of purchasing efforts at both hospital and system levels. This is an expensive proposition, which includes duplication of effort for identifying products and suppliers, developing and managing requests for proposal and information, optimizing proposals and obtaining offers, finalizing awards, and implementing and monitoring contracts. As systems migrate from being holding companies to operating companies, reduction of internal co-sourcing is an important strategic opportunity, but will rely on effective data cleansing and coding as the basis for analysis and action.

It is important to note here that some providers we spoke with believed that data cleansing is not as valuable as data normalization. The point was made that "normalization does not have to cleans the data to make effective use of the resulting analysis. We disagree with this point for several reasons. First, if data normalization was acceptable without cleansing, healthcare would not be adopting GS1 standards, to address the issue of manufacturers publishing data with a "warranty" of accuracy. Accurate and clean data is critical for any type of analytics or normalization effort. In this case, if the "garbage" goes in, than the resulting output is more likely to be "garbage" as well!

Database Population

Finally, the coded dataset is uploaded into the requisite application. Once uploaded, the real power of the data can be leveraged through merging with other data forms for benchmarking and cross-reference analyses. Application and data integration paradigms have already shifted in a number of non-healthcare applications from one of batch uploads from multiple source systems to real-time data queries that can search hundreds (or more) disparate sources while normalizing, classifying and cleansing information at the point of query. In the coming years, Oracle, IBM and D&B, all of which have purchased customer data integration (CDI) vendors, could begin to apply these techniques to spend and supplier information as

[5] Schneller, Eugene, "A guide to successful Strategic Sourcing", *Materials Management in Healthcare*, June 2010, pp. 22-25

well. Incidentally, Oracle is the first to market in the procurement space with a supply-focused product that leverages CDI technology (gained from its Siebel acquisition), although at the time of publication, this technology is not currently available from a procurement use case perspective. CDI technology actually improves the integrity of the data from individual sources, allowing users to match and link disparate information sources with varying levels of accuracy. CDI tools can correct for data-entry mistakes, such as misspellings, across different data sources to provide an accurate picture. Here again, the ability to accurately match UNSPSC codes to items is dependent on the accuracy and transparency of the original dataset!

One of the important questions to note in this four stage process is "who owns the cleansed and coded data?" ***It is important to note that not all providers will share the results of a cleansing activity with the customer.*** In some cases, they may elect to clean it only as input into their particular application (e.g. contracting, GPO services, etc.). Without direct access and ownership of the cleansed dataset, performing in-depth category analysis is not possible, which is the equivalent of restricting internal access to one's own books! Trusting that a GPO or third party will conduct their due diligence and perform spend analyses on your behalf is a naïve assumption that merits further consideration.

Some of the providers we reviewed had systems that should recognize a product and enrich it with the correct manufacturer name and item number, UNSPSC code, and descriptions, before uploading it into an ERP. However, these providers acknowledged that not every product code was matched, leaving an unknown number of items with no match that was not uploaded into the contract database. Here again, the importance of cleansed data is critical.

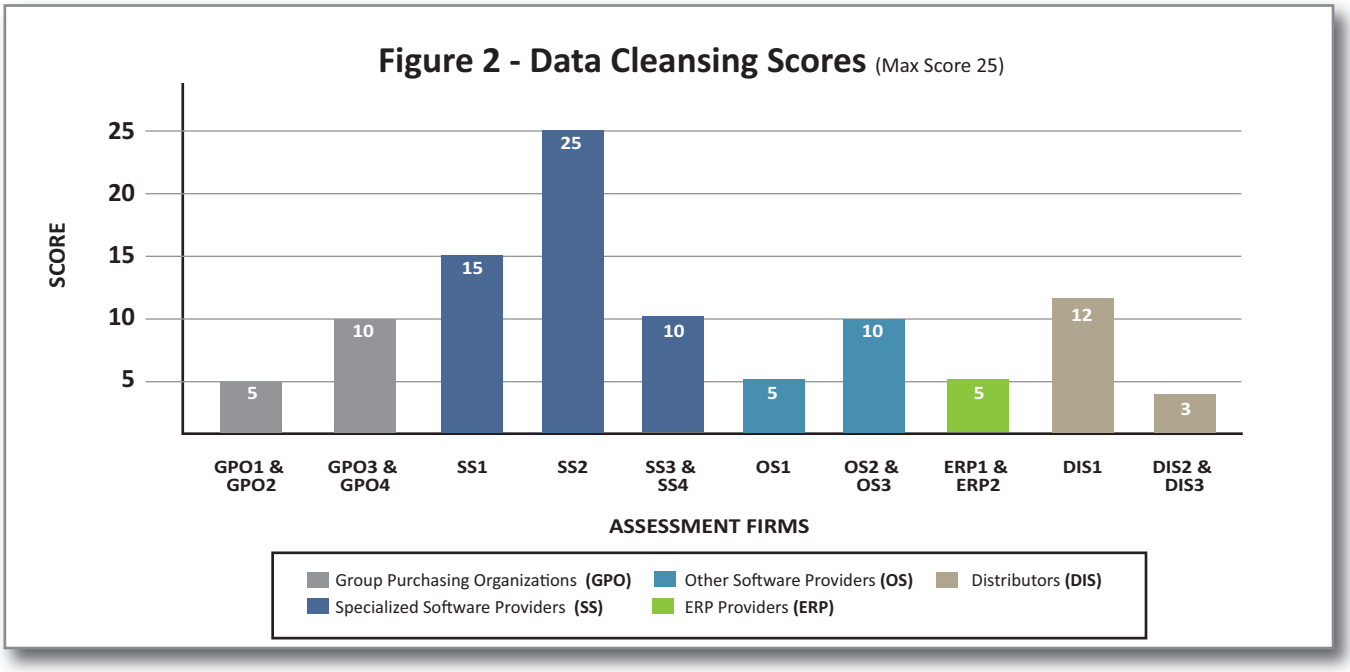
An automated process augmented with a manual process is the current standard in the healthcare industry that increases efficiency and accuracy. Customer service is important in this stage, as involving personnel with the expertise, such as clinicians to manage data is one of the key check-points for customers while choosing the vendors. Further, proper coding of the data will require engaging clinical experts, as well as other functional groups such as facilities, logistics, IT, legal, marketing, and finance to truly make sense of the data is critical to arrive at strategic sourcing decisions that will be effective. In this regard, a third party should be willing to provide the level of consulting and coordination that is consistent with the level of effort required to perform a thorough spend management project.

As shown in Table 1, Data Cleansing was assessed across four major categories.

1. What is the vendor's capability for acquiring data in multiple formats from multiple sources in building the master data file?
2. What is the ability of the vendor to verify and normalize data, and to capture all existing data including unmatched data?
3. What is the ability of the vendor to create item descriptions that meets the client's needs and the breadth of this capability?
4. Does the vendor provide a universal item classification scheme (e.g. UNSPSC) to allow data to be classified into industry standards and provide clinical equivalency?

Table 1 - Data Cleansing Assessment Score			
	Basic	**Typcial**	**Advanced**
Item Master Build (7)	Accepts current item master file "as is"	Collects MMIS purchase order and item master file analyzes by spend, and delivers result to hospital	Collects core files from all supply chain departments, analyzes by spend, and consults with hospital on final item master file
Verification of distributor catalog number, manufacturer, manufacturer catalog number, catalog description, and packaging data (7)	Data is normalized in its current state without reference to an existing database	Matches pre-cleansed data to an existing database. Unmatched has no action taken. Packaging accepted at Purchase UOM.	Matches pre-cleansed data to an existing database. Unmatched manually verified at product source. Packaging researched to Low UOM.
Description Standardization (6)	Reorganization of current client description to follow vendor decided naming convention.	Rules and abbreviations are provided by vendor with standard schema for use with every client.	Rules and abbreviations are customizable as per client needs. Vendor has clinicians write descriptions.
Item Classification (5)	Applies a proprietary classification schema not based on an external standard	Applies UNSPSC codes to items	Applies UNSPSC codes to items and provides clinical equivalency

The results of the assessment of data cleansing capabilities are shown in Figure 2 below.



As shown in the chart, there are only really two specialized software firms and one distributor that provide the capability to perform a thorough data cleansing process. There are several reasons for this result. (Note that the ERP provider, ERP2, uses SS1 as its data cleansing platform). First, as noted earlier, there is a fundamental problem with most providers who assume that data integrity coming from suppliers is acceptable, when in fact the DoD Study clearly indicated that the data is in most cases not only highly suspect, but highly inaccurate. Up to 20% of manufacturer data was shown to contain errors. Most providers do not take the time or the due diligence to improve the integrity of this data before it is entered into proprietary databases. In reality, SS1 and DIS1 are assuming that data coming from the manufacturer is not tainted, resulting in a lower score. Second, a key "cleansing" component is categorization. As noted in the assessment scale, classification and coding of the data using the UNSPSC or other standard code can only be associated with data that is completely clean. Third, many of the parties in this study do not perform their own data cleansing process, but outsource it to third parties in India or specialized domestic data cleansing providers (such as SS2, who was interviewed for this study!) Fourth, many of the providers do not cleanse the data and then provide it back to the client. Instead, they cleanse it solely for purposes of entering it into their database and contracts portfolio or spend analytics tool.

Only SS1 and SS2 use an automated front end to a catalog and are selling an actual data cleansing and classification service, which can be turned over to the actual client or entered into their own catalog service tool. In particular, GPO's and ERP providers cleanse the data only if there is an e agreement to use their proprietary database system. In such cases, the upload may not touch every line item, which means less than 70% of the spend data may be included. In this case, not all of the data has UNSPSC coding, and no standard descriptions are assigned for much of the spend data. For Distributors, significant discrepancies between actual item codes and database codes are believed to exist. Finally, multiple vendors refused to provide a demo or further information, leaving us to believe that many of the claims in their marketing material are invalid.

Contract Management

Contract management systems provide visibility into historical purchase order and contract data for an IDN/hospital. A good contract management tool typically stores various types of contracts such as GPO and local manufacturers. The system should allow a sourcing team to easily search and edit the contract catalog. Some vendors provide access to their catalogs which can help customers to broaden their supplier base. Customers also look out for real time updates on contract data, purchase data, at the same time taking advantage of additional contract opportunities. All this information should typically be easily accessible via dashboards, and reports that provide easy comprehension of data. Contract visibility improves compliance and can promote contract utilization and maverick spend.

The criterion for assessing contract management capabilities is shown in Table 2.

1. Are physical contracts available in the application? Can they be classified in a searchable archive that permits search and reporting capabilities?
2. Will the contract management system handle multiple forms of contracts, including GPO, local, and non-supply contracts?
3. What is the reporting capability of the system? Does it allow robust reporting of all supply contracts by type, buyer, date, and other criterion?
4. What are the search capabilities of the system? Is the data warehouse searchable using

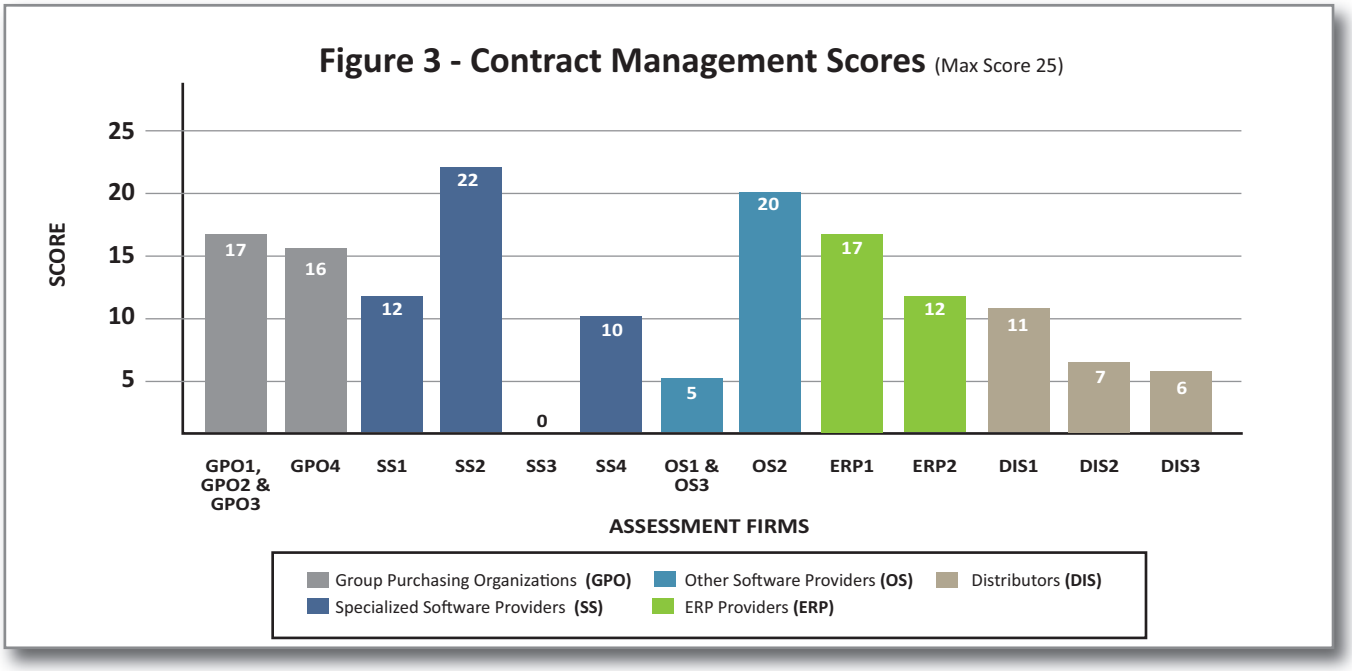
Table 2 - Contract Management Assessment

	Basic	Typcial	Advanced
Physical Copies of Contracts are Available in Application	Contracts are in a searchable archive with limited vendor pre-defined search criteria.	Contracts are in a searchable archive with multiple vendor pre-define search criteria.	Contracts are in a searchable archive with multiple vendor pre-defined search criteria as well as custom hospital criteria (e.g., department and buyer codes)
Contract Types Handled	GPO only.	GPO contracts but locals manually uploaded by hospital with limited access.	Contract warehouse holds any type of contract (e.g., GPO, local, and non-supply).
Reporting Capability	User can obtain reports on a single group of GPO contracts.	Reporting available by contract class, type, and OEM on GPO contracts only.	Robust reporting of all supply contracts by type, buyer, date, OEM, class, tiers, rebates, renewal, etc.
Item Level Detail	Items are tied to contracts. Search is limited to contract header or contract name for GPO contracts only.	Items are tied to contracts. Search is limited to contract header or contract name for GPO and local contracts.	Contract warehouse is searchable by item level detail using OEM or distributor information and reports across all contracts local and GPO.

item level detail, OEM or distributor information across both local and GPO contracts? Several characteristics of contract management providers suggest that there exists significant variance in demonstrated capabilities. First, because much of the original spend data is not included in spend databases, matching contractual terms against purchase orders and invoices provide a challenge in most of the systems assessed in this study. Second, there are problems that exist from a conflict of interest perspective with utilizing GPO contract databases. Because a GPO has a vested interest to ensure that an IDN or hospital uses their sources of supply exclusively, many of these systems prevent the customer from conducting an independent spend analysis that could provide alternative outcomes. For example, if the output of a spend analysis reveals that a customer should move away from a GPO portfolio and use a local contract, the GPO would lose revenue. To prevent this from occurring, visibility into spend data is purposefully limited by GPO's. In many GPO's revenue accounts for 84% of their business, so keeping hospitals captive to their contracting systems is a paramount concern, despite the conflict of interest that might arise. The resulting situation is equivalent to letting the fox watch the henhouse!

A third issue discovered in the analysis is that even specialized software providers only allow organizations to connect to their servers via an EDI connection, which acts as a central repository to manage orders and contracts electronically. Non-EDI data is not included in contracted spend, which prevents full leveraging of an IDN's spend, due to the fact that a large portion of the item file/contracts is not included. In some cases, organizations have limited contracting capabilities, and were rated a zero. In the case of ERP providers, much of the data is not included if it is in a non-digital format, or is outsourced out to a third party. Customers also expressed frustration in using ERP contract modules, which do not always include paper contracts. Finally, demonstrations of actual capabilities were mostly unavailable.

Of the specialized software providers, only SS2 actually worked with clients to include all relevant contract data. All of the GPO's were rated lower due to the aforementioned rationale and lack of capability, while one of the ERP providers had a reasonably well-run contract management system, which however did not include all contract data. Also noteworthy was a specialized healthcare contracting company (OS2) which has a well-developed online real-time customized centralized contract database focused on healthcare. SS4 is another company with an advanced contract management tool that utilizes a web based application that makes it cheap and user friendly. A number of providers in our study use their contract and analysis software tool for contract management and bidding process. Once again, however, these providers use a data normalization process without an upfront data cleansing effort, which means that contract data quality is not validated as accurate.



Spend Analytics

As noted in the introduction to this paper, controlling costs and establishing a structure for analyzing costs has become a critical issue for healthcare providers. Organizations' spending often exceed those projected due to discrepancies and disparities that prevail within the data resource. One of the biggest challenges that exist is the silos of data in most healthcare organizations. ERP transactional data mitigates this challenge when multi-tier visibility to data is combined with the application of industry standard taxonomies that allow proper grouping of data into "buckets" often called categories. When a category of spend is defined, (e.g. IT spend, facilities, transportation, etc), it can be broken down further into subcategories (e.g. hardware, software, consulting, etc.) that permits the application of a strategic sourcing process (also called category management strategy development). The ability to create this information, enforce a taxonomy standard, and apply analysis at the back end of the sourcing process, is of paramount importance. Only then can direct and indirect spending be measured, re-negotiated, benchmarked, throttled (e.g. by reducing demand), and ultimately controlled.[6] Acquiring this capability is not simply a matter of having the right software. Spend management is in effect a leaning mechanism for healthcare organizations. It requires not just the software, but the combination of technology, consulting, and engagement of subject matter experts to define and create the operational structure for measuring and assessing third party spend. There is no single "magic bullet" that takes care of this problem. Each organization is unique, with its own set of users and requirements. In most cases, healthcare providers themselves are not aware of their needs and requirements! But our general experience in carrying out this study is that they desire to have a single package tool that can take care of all of their issues. As we explored our data, we learned that this certainly was not the case. All of the providers have different specialties and functional elements. So ultimately, there is a tradeoff that healthcare providers must make in selecting a spend management service providers.

The fundamental objective of a spend analysis is to collect historical data by commodity, relative to demand from the lines of business, with the exception of personnel expenses, occupancy, and corporate spend. The data should go into the appropriate level of unit-level detail required for analysis and commodity management, and should also be rolled up at an aggregate level on every element of what is spent. The result is a common understanding of historical spending relative to demand from each end user within an organization, based on accurate information collected through defined and automated procure-to-pay systems. Spend analysis requires that you drive all spend to a UNIT of consumption and a RATE of consumption. The output of spend analysis is used to drive demand management, commodity management, and risk management strategies. It is fundamental to communicate to the business partners to ensure understanding of where they spent their money and why it was spent.[7]

Busch also emphasizes the power of spend analytics when combined with other forms of data. He notes[8]:

[6, 7] Handfield, RB; *Supply Market Intelligence.* Boca Raton, FL: Auerbach; 2008.
[8] Busch, Jason, "Beyond the Basics: Using Spend Visibility to Drive More Than Category Sourcing Strategies and Spend Reporting", Spend Matters Compass Series, 2010, Volume 2.

Consider the current batch-based limitations and challenges of current systems, including spend visibility tools, supplier performance management systems, and supplier information management. These tools operate in an environment analogous to CRM, where information typically comes from only one or a handful of data sources that are then integrated into a single system or record (vs. CDI, which serves up information as required in true real time). Imagine the power of a CDI approach to look at supplier records from both internal systems and external content providers (even your supplier's systems) in real time vs. waiting for the next batch upload or data dump. This would provide an entirely new approach to looking at supplier information, one that paints a complete and accurate view of supplier data without creating a new system of record, providing potentially unprecedented real-time access to information that exists both within and without a company's four walls. It will also allow users to integrate new information sources in an often simple and rapid manner (vs. requiring underlying surgery, as it would in a database or data warehousing-centric approach

Unfortunately, healthcare providers we interviewed are nowhere near having even basic spend analysis capabilities established. At its most basic level, a spend analysis solution should enable the following capabilities shown in the matrix in Table 3 and answer the following questions:

1. Does the solution provide price benchmarking that is comparable not only to national pricing, but regional data, hospital size, and line item variance? Some of the solutions we examined provided benchmarking information, which was not linked with a spend management solution.

2. Does the solution provide spending analytics in a reporting format that can identify off-contract (e.g. "maverick") spending, as well as discrepancies in purchase order contract pricing?

3. Does the solution provide reporting capabilities not only by commodity group, but linked to purchase volumes and spend leakage (e.g. "maverick spend").

4. Does the solution provide reporting capabilities for charge variances linked to inaccurate master data (vs. variances in purchase volume and contract pricing)?

Table 3 – Spend Analytics Capability Assessment			
	Basic	**Typcial**	**Advanced**
Price Benchmarking	National price benchmarking database. Printed, hard copy report.	National price benchmarking database linked to hospital purchase data. Printed, hard copy report.	National price benchmarking by hospital size and region linked to hospital purchase data for line by line variance. Online report with available export to Excel, PDF, or Word.
Reports (part number based)	Letter of Commitment Opportunity.	Letter of Commitment Opportunity; Off Contract Vendor Purchases.	Letter of Commitment Opportunity; Off Contract Vendor Purchases; PO Discrepancy.
Reports (commodity based)	Data is aggregated by commodity.	Data is aggregated by commodity, linked to purchase volumes.	Data is aggregated by commodity, linked to purchase volumes and contracts and used to examine on/off contract spend.
Reports (charging based)	Charge variance report that shows hospital where charge master is set inaccurately compared to varying purchase price.	Charge variance report that shows hospital where charge master is set inaccurately compared to varying purchase price tied to purchase volume.	Charge variance report that shows hospital where charge master is set inaccurately compared to varying purchase price tied to purchase volume and contracts.

These capabilities are important to be able to not only identify the sources of spend leakage, but also to capture opportunities for improved leveraging and demand management. Demand management is the process of using UNIT and RATE consumption levels to forecast and estimate future consumption in a internal functional customer, and providing guidance and input on how to optimize usage and educating the user on the tradeoffs. Demand management activities may involve, (but are not limited to):[9]

- Optimization of sourcing strategies based on how much the team projects they will be buying
- Proactively setting policies, procedures and measurement systems that throttle the consumption and total expenditures of a unit of category of spend.
- Ensuring appropriate levels of capacity in the supply base required to minimize risk.
- Establishing a fixed set of standards to limit options, and restricting the supply base to include only preferred suppliers who comply with risk and compliance requirements.

The authority to review material specifications (and for services, a statement of work) is also within supply management's span of control in managing demand, although internal stakeholders sometimes dispute this right. Supply management personnel work hard to develop knowledge and expertise about a wide variety of materials and services but must also make this knowledge work to an organization's benefit. The right to question allows supply management to review specifications where required. In the case of services, it also allows supply management to ensure that the work being performed is correctly documented and

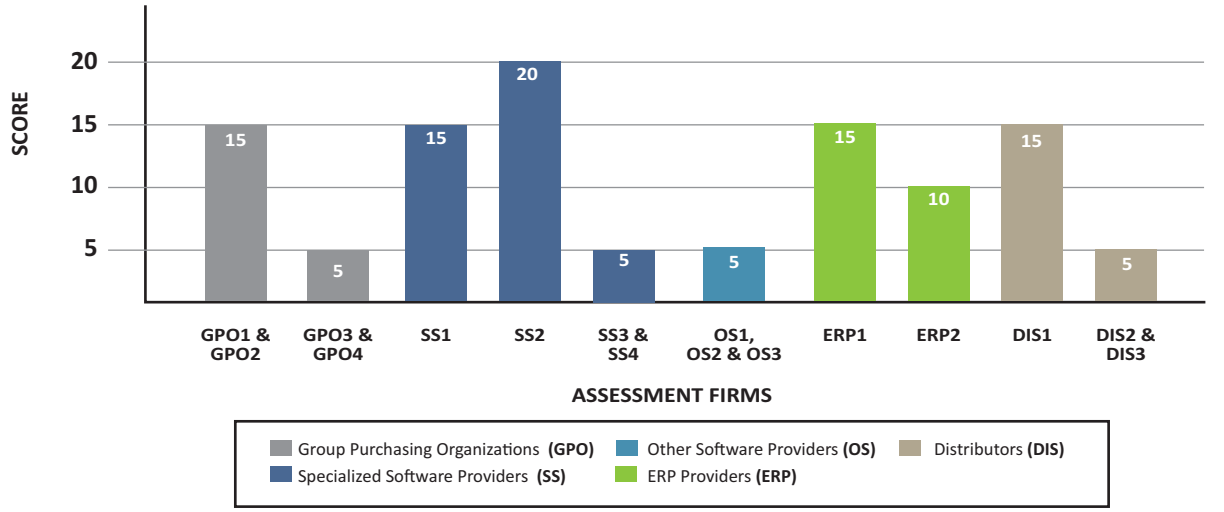
[9] Handfield, RB; Supply Market Intelligence. Boca Raton, FL: Auerbach; 2008.

performed. For example, sourcing managers may question whether a lower-cost item can still meet a physician's clinical requirement, through proactive engagement of the physician team at a category team meeting. In documented cases identified by the author, proactive engagement of physicians into critical DRG areas such as hip and joint replacement can provide incredible cost and performance improvements.[10] They may also question the rate at which a consultant or maintenance provider is charging for a specific project or activity, and revise the work statement accordingly. A review of different requisitions may also reveal that different users actually require the same material or services. By combining purchase requirements, purchasing can often achieve a lower total cost. The reports generated from spend analysis and demand management provide a foundation for category management.

As shown in Figure 4, there are relatively few providers capable of providing a robust spend analysis reporting capability that meets all of these requirements. The majority of providers are conducting data preparation activities, which does not enable clients to see the true output of the data cleansing exercise in a format that provides the reporting capabilities noted above. If these providers are indeed capable of providing this capability, it remains a mystery as to why they are not selling the information back to the clients. In other words, the data preparation is focused exclusively on enabling their proprietary technology, which also ensures that the client will buy exclusively through their system to generate the revenue they require for their buying model. One of the distributors is selling an analytic tool that is focused on ensuring that the client will buy through them and save money.

Some of the Other Software providers (OS1, OS2, OS3) provided external price benchmarking data, but did not provide true analytics capabilities to clients, just a database of information. These trends were discovered through different interviews with industry subject matter experts. Unfortunately, we were not able to validate this view as our requests for demos and interviews were turned down. Only SS1 and SS2 were truly providing data cleansing and spend analytics solutions that met most of the basic criteria shown in the assessment.

Figure 4 - Spend Analytics Scores (Max Score 20)



[10] Robert Handfield, PhD, (Bank of America Professor of SCM) Tom Faciszewski MD (Orthopedic Spine Surgeon, Marshfield Clinic and Medical Director Supply Chain, Ministry Health Care), and Thomas Nash, (Chief Supply Chain Officer, Ministry Health Care), "Assessing Health Care Supply Chain Maturity: Creating a Baseline for Cost Savings, Value Creation and a Defined Structure for Growth, Keynote presentation, World Healthcare Congress, January 25, 2010.

Technology

The technology category consists of the different features and modes of presenting/reporting/viewing spending metrics that are offered by any given solution provider. Personalized views for users, with multiple levels of analytic reports and the ability to export these reports to other tools for further analysis are important factors considered while evaluating provider technology. With Technology comes the Support function, the ability of vendors to provide a dedicated support that looks to solve Information Technology, Integration and Implementation issues.

A number of other factors can impact the relevant assessment of a provider's technology solution.

1. How easy is file maintenance? The core capability of the tool is the file maintenance dimension, the method of data extraction, and whether it is manual or automatic. The technology should enable data upload to both the customer's MMIS as well as the online portal on a regular basis, depending upon customer needs.

2. What is the technology's ease of use? How easy is it to use and interpret data? Is the technology web-enabled, with simple direct application methods? How involved does the client's internal IT function need to be?

3. What is the level of support provided by the provider? Ideally, email support should have 24 hour turnaround, with dedicated individual support during implementation of the system.

4. What is the relative level of reporting capability? Does the system allow users to easily export data that can be manipulated in Excel, in PDF, and Word format at the click of a button?

Moreover, technology support is now a given for most systems, with clinicians and staff who now have little tolerance for screens and tools that are not readily user-friendly. Ideally, a standardized or virtual platform with tight processes, category, and functional integration can provide the level of technology and functionality that users have come to expect with most modern software systems.

This technology capability will become more important as users begin to apply data to other types of data capture, which can enable risk and supply market intelligence applications. Busch[11] notes how in the future users will be want to be able to combine different data elements and sources together via a supply risk mashup (as background on this term, Wikipedia defines a mashup as "a web page or application that uses or combines data or functionality from two or many more external sources to create a new service".) Mashups can provide even more accurate insight into both overall (e.g., supplier viability) and narrowly tailored (e.g., potential for near-term disruption or material price increase) risk elements) Further, he

[11] Busch, Jason, Spend Matters Compass Series: The Intersection of Analytics and Supply Chain Risk Management, 2010, Volume 1.

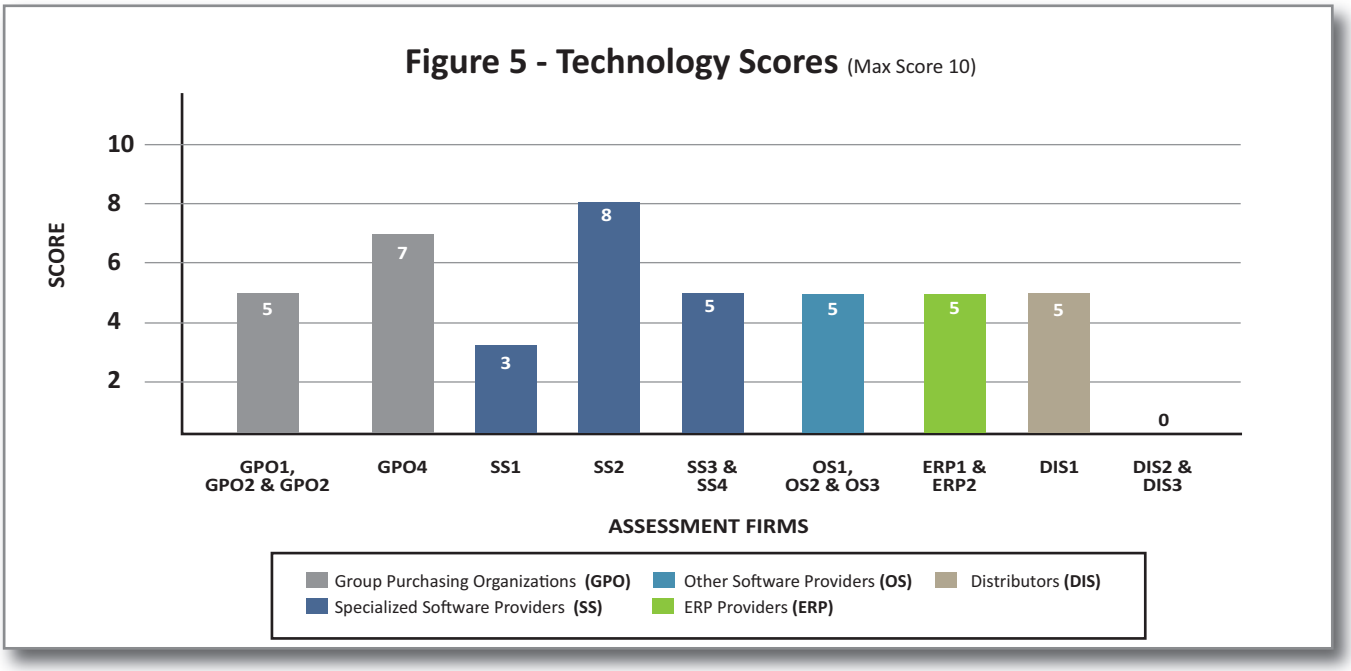
notes how data download functionality will become more important, as increasingly savvy users will wish to rapidly drill down into an analysis to understand potential root causes of risk elements (e.g., a single site supplier issue, logistical problems, underlying financial/working capital issues) This level of functionality will further enable users to bridge currently existing information silos / gaps between a variety of internal, supplier and third-party information sources which are often defined by functional bounds; for example, the ability to integrate warranty claims data into a spend cube that also considers supplier financial viability or other elements.

Busch goes on to note that "Visualization and analytics technologies are also rapidly changing how we look at information. From emerging high-level dashboards that provide executive context and the ability to truly drill-into data that spans multiple source systems (e.g., A/P data, supplier provided data, P-Card data, VAT information, etc.) to analytical tools that allow sub-second response times when cross tabulating multiple variables (even dozens, in more extreme cases), the entire foundation with which we have looked at original spend analysis approaches will eventually give way to a new generation of system. Today's handheld computing devices including iPhones and Blackberries often have 5,000 or more times the amount of main memory than personal computers We will see an equal if not greater shift in the impact of how new technologies and query speeds will change spend analysis as we have in the power of PCs and portable devices."

Table 4 – Technology Capability Assessment

	Basic	Typcial	Advanced
File Maintenance	Data is manually sent in batches on an as needed basis. Prepared reports are sent back to hospital.	Data extracts occur manually and are sent to vendor on a scheduled basis. Vendor uploads into the application and reports are available monthly or quarterly.	Automatic data extract, transfer, and loading to vendor with data returned to both the hospital for MMIS upload and uploaded into online reporting engine for productive use. Provides continuous contract and IM maintenance.
Ease of use	Application is installed at the hospital. Software requires a high degree of training. Hospital IT must be highly involved.	Application is either web based or hospital installed. Medium degree of training required to learn navigation. Hospital IT must be somewhat involved.	Application is web based with easy to use, intuitive functionality that multiple users with varying skill levels can understand. Administered by hospital power user. Hospital IT minimally involved.
Support	Application support is limited to e-mail with one to three day turn around.	Help available via e-mail with one to three day turn around or help desk during normal work hours.	Dedicated, ongoing relationship with implementation specialist during normal working hours. E-mail support with 24 hour turn around.
Reporting Data Export Function	Limited export capability limited to printing unformatted screens.	Reports are available in Excel with limited access to data within the application.	Report on all user defined data can be exported in Excel, PDF, or Word format with icon driven button click.

As shown in Figure 5, the majority of providers have some level of capability relative to technology, but many lack the level of functionality around data export. For the same reasons as the data cleansing exercise is limited, the willingness of firms to enable users to directly view and analyze the data for their own purposes is limited by design. One of the GPO's allows data export functionality to occur, but the majority of the firms consider the data to be proprietary and unavailable for querying, benchmarking, and analysis.



Service / Customer Responsiveness

Each company provides a customized application package with varying features that we have noted in prior sections. A fundamental requirement for all of the providers is the level of support and customer responsiveness that is experienced during not only implementation of the system, but on-going technical support. The level of training and face time provided to employees who are new to the system can make the difference between a successful implementation and a failure. On-going support through email or call center support is also critical to on-going problem solving and user satisfaction with the system. In assessing this category, we considered the following questions shown in Table 5.

1. Are on-site dedicated resources provided to assist users in learning how to use reporting capability, as well as process re-design for any new spend management applications that are required in conjunction with system implementation?

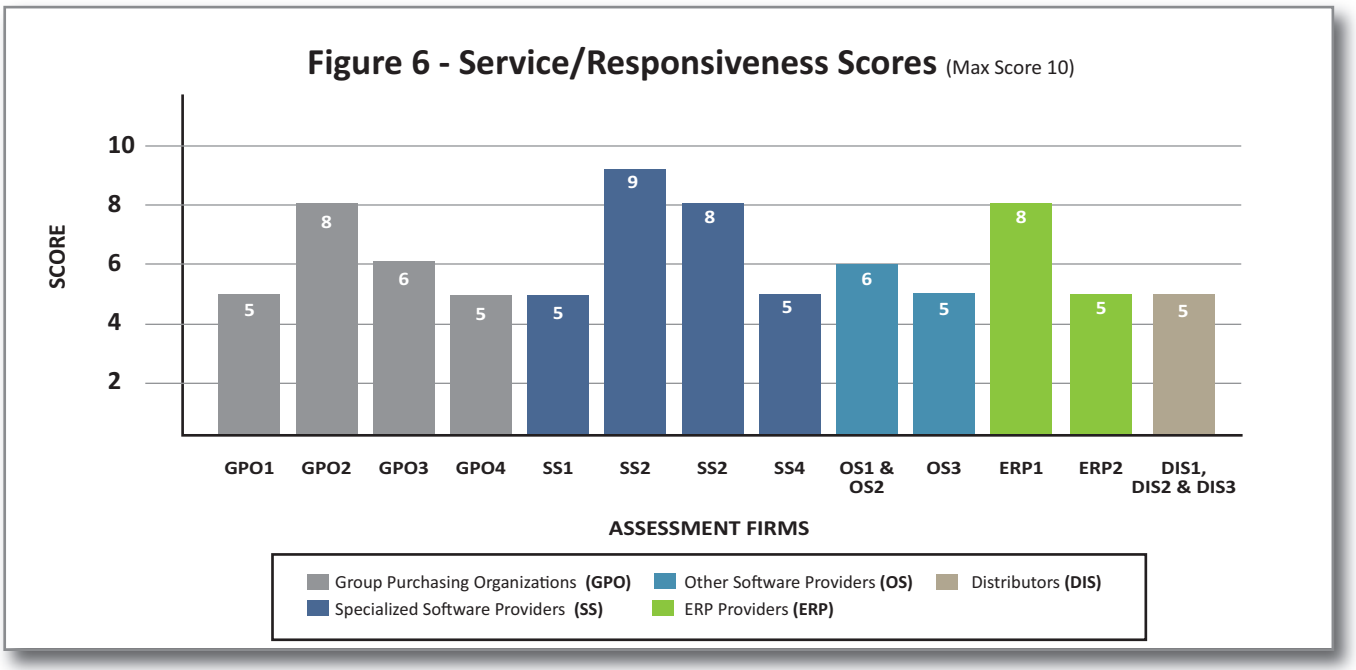
2. Does the provider have on-site dedicated resources for technical consulting. Specifically, is a full systems assessment conducted to identify impact of the technology on other supply chain technology within the impacted operating units and support on-going data uploads on a regular basis to update the MMIS?

3. Does the provider support change management and buy-in for the system? This includes establishing a multi-functional governance team, validation of results achieved, and on-going support for changes to policies and procedures?

Table 5 – Service Capability Assessment

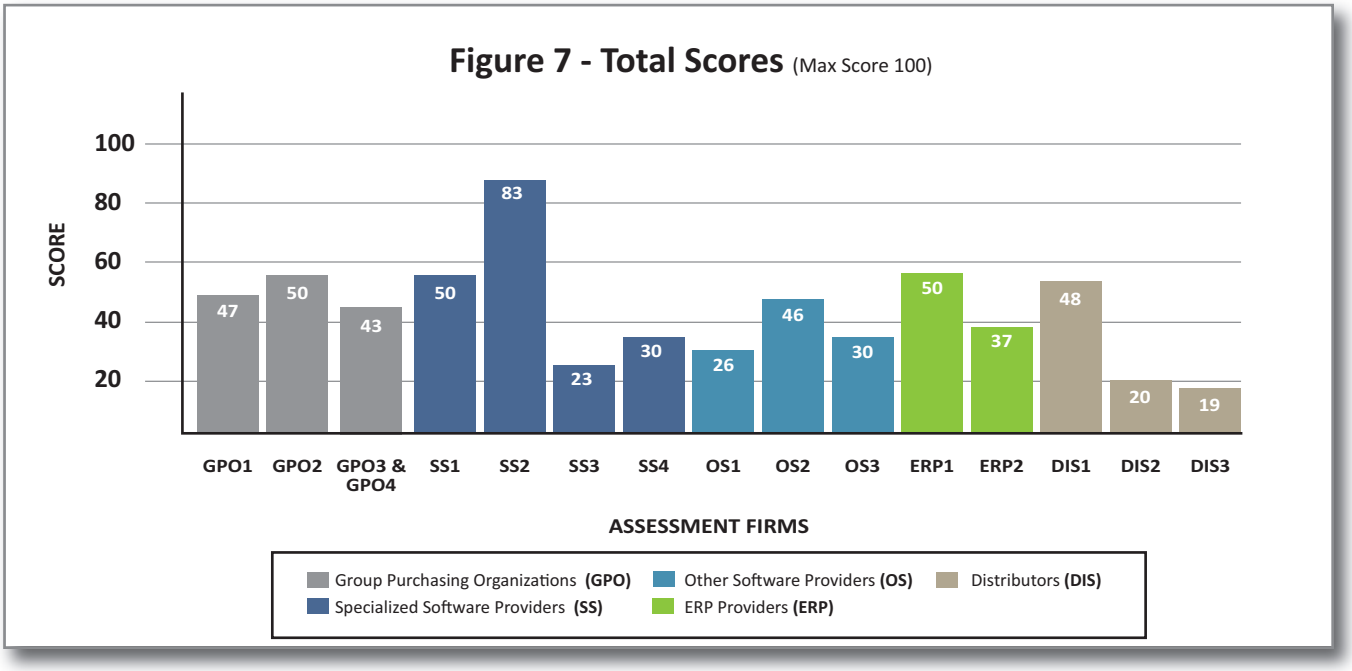
	Basic	Typcial	Advanced
Materials Consulting	Off-site non-dedicated resource to support hospital personnel who are working reports	On-site dedicated resource to work reports	On-site dedicated resource to work reports, re-align policies and procedures, and reengineer any processes resulting from the use of the technology
Technical Consulting	Expertise to implement the vendor's application	Expertise to implement the application and to review its impact on other supply chain technology used by the hospital	Expertise to implement the application and to review its impact on other supply chain technology used by the hospital and support the data upload back into the MMIS
Validation and Cultural Change	Validation of application results performed by single employee within hospital materials department	Validation of application results and impact are performed by and overseen by a hospital multi-functionalgroup	Validation of application results and impact are performed by and overseen by a hospital multi-functional group who examine associated cultural effects, processes, policies and procedures

The results in figure 6 show that selected groups of GPO's, specialized software providers, and ERP providers do provide significant support. Many, however, fall short, especially with the level of on-site consulting and change management that is required to support change. The level of support needs to be identified and spelled out in detail prior to signing a contract with a provider, and specific elements of the validation deliverables need to be spelled out in detail.



Aggregate Score Across Categories

Figure 7 provides a summary of the aggregated total score assigned to each of the providers reviewed in this assessment. ***Overall, only a single provider of integrated data cleansing, contract management, spent analytics, technology, and service stood out above the rest (SS2).*** While this provider did not receive a perfect score in each category, they exceeded the scores of other providers using the measurement rubric defined in this study.



The distribution of scores shows that only SS2 is capable of providing greater than 80% of the capabilities required for a thorough and complete spend management program. None of the other providers met the 60% threshold score, suggesting that healthcare providers using these solutions are not benefiting from the power of a thorough and complete spend management program. The fundamental issue that most healthcare providers ignore when selecting a provider is 1) data quality, and 2) data ownership and analytics. Many providers claim to have a cleansing function that will ensure data quality.. In effect, data cleansing is the primary step and the most important one if a healthcare provider is seeking to automate its data management process. This step will determine the accuracy all ensuing analysis of information that will impact category strategies, contracting, and supplier relationship management. Without a proper data cleansing effort, follow-on activities are occurring in a void.

This was emphasized in an interview with one of the subject matter experts identified in this study. He noted that different providers do indeed have different capabilities related to different components of spend management. Although many healthcare providers have similar issues pertaining to supply management, they need to be able to link their strategies to other areas such as clinical professionals, finance, human resources, IT, and other functional areas. Often supply chain functionality is assumed to exist under the large system requirements provided by ERP systems, GPO solutions, or Distributor systems, believing that these packages can provide a single solution to the problem. Our results suggest that this perception is without merit, and that further engagement of alternative providers that specialize in data cleansing, coding, and capture may provider great benefits than GPO's and ERP vendors who do not have strong capabilities in this arena.

Conclusion

The concept of strategic sourcing as a core tool for hospitals IDN's to achieve their clinical mission while managing risk and reducing cost has been well touted in the industry. One of the most fundamental components of a strategic sourcing program is the ability to carry out a category analysis for their consolidated spend data at the hospital, as well as at the buyer level.[12] This requires aggregating 100 percent of the data into a single consolidated view of the spend data to enable a precise analysis of spending with each supplier for each category of spend in the system.

In this study, we surveyed the landscape of different providers of spend management in the healthcare landscape. This included Group Purchasing Organizations (GPO's), ERP system providers, specialized software providers, and distributors. The five major categories of spend management assessed at each of these organizations includes data cleansing, spend analytics, contract management, technology enablement, and customer service/responsiveness. Of these, data cleansing was identified as the most challenging component that is fundamental to creating true visibility of spend. Unfortunately, data cleansing is also the component that was typically overlooked by the majority of the organizations reviewed in this analysis. While

[12] Schneller, Eugene, "A guide to successful Strategic Sourcing", Materials Management in Healthcare, June 2010, pp. 22-25.

each of these organizations provides a different and unique set of capabilities in the area of contract management, technology, analytics, and support, only two of the providers truly have a demonstrated capability in capturing, cleansing, coding, and uploading 100% of the spend data for hospitals and IDN's. Further, many of the organizations perform data cleansing only as a requirement for entering the data into their proprietary databases, without providing the cleansed dataset to the client. Without capturing and providing visibility to 100% of the spend (including not just EDI data, but non-EDI spending, paper contracts, off-system spending, etc.), the true benefits of a strategic sourcing exercise cannot be achieved, and the result is a self-defeating exercise in futility. Only two providers of specific software targeted at data cleansing were identified in the study. This was made more complicated by the fact that up to 20% of manufacturer data that is used as input into healthcare data analysis is "dirty" or incorrect.

In today's environment, hospitals continue to outsource their sourcing capabilities to a national or regional group of GPO's, who are able to obtain leveraged savings for groups of large commodities. In this environment, many providers are not highly motivated to look for other avenues of savings beyond price, and are ignoring the power of strategies such as demand management, clinical effectiveness, and engagement of stakeholders into the sourcing process. Further, healthcare providers remain largely unaware of their needs and requirements, and rely on these third parties to perform data cleansing and analysis, trusting them to act in their best interests (which in some cases is not aligned with the third party's internal strategic revenue objectives). The general experience has been that hospitals and IDN's want one package tool that takes care of all the issues. To truly assume a strategic leadership role, however, healthcare supply chain executives need to adopt a strategic intent to insist on visibility and cleanliness of all data, not just what is easily accessible. Further, the data needs to be captured into an analytical environment that allows the flexibility to drill deeply into different types of data sets to unearth opportunities through benchmarking, analysis of non-traditional spending areas, and engagement of key stakeholders to review the results of these analyses. Data is the only true enabler for change in the healthcare supply chain. Our research points to the need for strategic sourcing groups across the country to begin to take the issue of spend management into their own hands, control the data, and use it as a leveraged tool for driving change and improving performance.

Gene Schneller, in a recent article, emphasizes that perhaps it is naïve to believe that supply chain managers in U.S. hospitals will become strategic sourcing experts.[13] Although GPOs are taking the lead in supply management to begin providing contracting solutions to the spend management challenges that exist in many healthcare environments. ***While GPO solutions are certainly a good start, the solutions offered by GPO's may not provide the full extent of leverage and performance improvements that healthcare providers could achieve through alternative solutions.*** Specifically, these opportunities can be enabled through improved visibility of spend data. This development will be further enabled through the development of standards such as GS1 which provides a more robust platform for standardization.

[13] Schneller, Eugene, "A guide to successful Strategic Sourcing", *Materials Management in Healthcare*, June 2010, pp. 22-25.

In the short term, however, our analysis suggests that specialized providers that can work closely with healthcare providers to gain more control over their spending. Data cleansing solutions that provide visibility to current spending, including paper contracts and non-EDI data can provide a holistic view of current spend, and provide a solid platform for analytics, contract management, technology enablement, and most importantly, supply and market intelligence. In viewing the full extent and nature of spending patterns, supply chain managers can begin to analyze and explore these data sets, linking them with other data in the organization, to create a powerful mechanism for opportunity identification. Busch[14] notes that when conducted thoroughly, spend management enables firms to:

- Gain directional indications of where the best opportunities may come from based on initial benchmarking exercises and potentially third-party category analysis.
- Create a spend visibility toolset that enables the ability to look at both PO and non-PO information.
- Develop strategies to integrate non-traditional data sets into a spend analysis environment (e.g. legal, marketing, T&E, and related systems data).
- Perform more sophisticated analyses using local tools and methods, including what-if scenarios, risk analyses, and budget forecasts based on market intelligence studies.
- Engage executive champions in the system (e.g. CFO, COO, Clinician Counsels), that will submit their own information for analysis and review, including tax, audit, financial and clinical performance, and DRG cost analysis (more than 50 DRG groups have costs of supplies plus operating room time exceeding half the total cost of admission).

When sourcing begins to drive strategies based on data, not just opinion, they will be surprised at the power of this data as a strong component for change. Clinicians and CFO's are by their very nature convinced to change when confronted with validated data that cannot be refuted. A strong spend management program will not only elevate the strategic position of sourcing executives in healthcare, but create opportunities for sourcing executives to:

- Contribute to budgets and business plans based on overall business impact, not just category cost savings or labor efficiency gains.
- Leverage the data to radically alter clinical processes, DRG procedures, and other processes that may be broken or inconsistently performed, thereby increasing clinical effectiveness.
- Provide technologies and solutions to users throughout the system that will increase efficiencies, reducing internal co-sourcing efforts, and reduce not just labor costs but working capital.

[14] Busch, Jason, "Beyond the Basics: Using Spend Visibility to Drive More Than Category Sourcing Strategies and Spend Reporting", Spend Matters Compass Series, 2010, Volume 2.

- Leverage third party service firms not just for systems selection and implementation, but for process knowledge transfer. Third party suppliers can be engaged to identify opportunities for further improvement and cost savings through improved supplier relationships.

All of this requires healthcare providers to select providers who are aligned with a spend management strategy that relies on centralization of spending, but engagement of stakeholders for decision-making. Procurement business process outsourcing has become the norm in healthcare. It's time to regain internal control of spend data, and begin to truly manage third party spending as a strategic capability. While strategic sourcing has grown in leaps and bounds in most industries, healthcare has a long way to go. The time for change has never been better.

Author Bios

Robert Handfield, PhD

Rob Handfield is the Bank of America University Distinguished Professor of Supply Chain Management at North Carolina State University, and Director of the Supply Chain Resource Cooperative (http://scrc.ncsu.edu). He also serves as an Adjunct Professor with the Supply Chain Management Research Group at the Manchester Business School.

The SCRC is the first major industry-university partnership to integrate student projects into the MBA classroom in an integrative fashion, and has had 15 major Fortune 500 companies participating as industry partners since 1999. Prior to this role, Handfield was an Associate Professor and Research Associate with the Global Procurement and Supply Chain Benchmarking Initiative at Michigan State University from 1992-1999, working closely with Professor Robert Monczka.

Handfield is the Consulting Editor of the Journal of Operations Management, one of the leading supply chain management journals in the field, and is the author of several books on supply chain management, the most recent being Supply Market Intelligence, Supply Chain Re-Design and Introduction to Supply Chain Management (Prentice Hall, 1999, 25,000 copies sold, and translated into Chinese, Japanese, and Korean). He has co-authored textbooks for MBA and undergraduate classes including Purchasing and Supply Chain Management 5th revision (with Robert Monczka) and Operations and Supply Chain Management 2nd revision (with Cecil Bozarth).

Ragesh Rajan, Rahul Sharma, Sangram Chavan, and Swetha Menta are graduate students in the MBA program in the Jenkins College of Management at NC State University. All of them have extensive experience in supply chain software and spend analytics.

Appendix

Supplier Score Card Key			
	Basic	**Typcial**	**Advanced**
Item Master Build	Accepts current item master file "as is"	Collects MMIS purchase order and item master file analyzes by spend, and delivers result to hospital	Collects core files from all supply chain departments, analyzes by spend, and consults with hospital on final item master file
Verification of distributor catalog number, manufacturer, manufacturer catalog number, catalog description, and packaging data	Data is normalized in its current state without reference to an existing database	Matches pre-cleansed data to an existing database. Unmatched has no action taken. Packaging accepted at Purchase UOM.	Matches pre-cleansed data to an existing database. Unmatched manually verified at product source. Packaging researched to Low UOM.
Description Standardization	Reorganization of current client description to follow vendor decided naming convention.	Rules and abbreviations are provided by vendor with standard schema for use with every client.	Rules and abbreviations are customizable as per client needs. Vendor has clinicians write descriptions.
Item Classification	Applies a proprietary classification schema not based on an external standard	Applies UNSPSC codes to items	Applies UNSPSC codes to items and provides clinical equivalency
Physical Copies of Contracts are Available in Application	Contracts are in a searchable archive with limited vendor pre-defined search criteria.	Contracts are in a searchable archive with multiple vendor predefine search criteria.	Contracts are in a searchable archive with multiple vendor predefined search criteria as well as custom hospital criteria (e.g., department and buyer codes)
Contract Types Handled	GPO only.	GPO contracts but locals manually uploaded by hospital with limited access.	Contract warehouse holds any type of contract (e.g., GPO, local, and non-supply).
Reporting Capability	User can obtain reports on a single group of GPO contracts.	Reporting available by contract class, type, and OEM on GPO contracts only.	Robust reporting of all supply contracts by type, buyer, date, OEM, class, tiers, rebates, renewal, etc.
Item Level Detail	Items are tied to contracts. Search is limited to contract header or contract name for GPO contracts only.	Items are tied to contracts. Search is limited to contract header or contract name for GPO and local contracts.	Contract warehouse is searchable by item level detail using OEM or distributor information and reports across all contracts local and GPO.

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Appendix

Supplier Score Card Key			
	Basic	**Typcial**	**Advanced**
File Maintenance	Data is manually sent in batches on an as needed basis. Prepared reports are sent back to hospital.	Data extracts occur manually and are sent to vendor on a scheduled basis. Vendor uploads into the application and reports are available monthly or quarterly.	Automatic data extract, transfer, and loading to vendor with data returned to both the hospital for MMIS upload and uploaded into online reporting engine for productive use. Provides continuous contract and IM maintenance.
Ease of use	Application is installed at the hospital. Software requires a high degree of training. Hospital IT must be highly involved.	Application is either web based or hospital installed. Medium degree of training required to learn navigation. Hospital IT must be somewhat involved.	Application is web based with easy to use, intuitive functionality that multiple users with varying skill levels can understand. Administered by hospital power user. Hospital IT minimally involved.
Support	Application support is limited to e-mail with one to three day turn around.	Help available via e-mail with one to three day turn around or help desk during normal work hours.	Dedicated, ongoing relationship with implementation specialist during normal working hours. E-mail support with 24 hour turn around.
Reporting Data Export Function	Limited export capability limited to printing unformatted screens.	Reports are available in Excel with limited access to data within the application.	Report on all user defined data can be exported in Excel, PDF, or Word format with icon driven button click.
Price Benchmarking	National price benchmarking database. Printed, hard copy report.	National price benchmarking database linked to hospital purchase data. Printed, hard copy report.	National price benchmarking by hospital size and region linked to hospital purchase data for line by line variance. Online report with available export to Excel, PDF, or Word.
Reports (part number based)	Letter of Commitment Opportunity.	Letter of Commitment Opportunity; Off Contract Vendor Purchases.	Letter of Commitment Opportunity; Off Contract Vendor Purchases; PO Discrepancy.
Reports (commodity based)	Data is aggregated by commodity.	Data is aggregated by commodity, linked to purchase volumes.	Data is aggregated by commodity, linked to purchase volumes and contracts and used to examine on/off contract spend.
Reports (charging based)	Charge variance report that shows hospital where charge master is set inaccurately compared to varying purchase price.	Charge variance report that shows hospital where charge master is set inaccurately compared to varying purchase price tied to purchase volume.	Charge variance report that shows hospital where charge master is set inaccurately compared to varying purchase price tied to purchase volume and contracts.

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Appendix

Supplier Score Card Key			
	Basic	**Typcial**	**Advanced**
Materials Consulting	Off-site non-dedicated resource to support hospital personnel who are working reports	On-site dedicated resource to work reports	On-site dedicated resource to work reports, re-align policies and procedures, and reengineer any processes resulting from the use of the technology
Technical Consulting	Expertise to implement the vendor's application	Expertise to implement the application and to review its impact on other supply chain technology used by the hospital	Expertise to implement the application and to review its impact on other supply chain technology used by the hospital and support the data upload back into the MMIS
Validation and Cultural Change	Validation of application results performed by single employee within hospital materials department	Validation of application results and impact are performed by and overseen by a hospital multi-functionalgroup	Validation of application results and impact are performed by and overseen by a hospital multi-functional group who examine associated cultural effects, processes, policies and procedures

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