

Data management

Enabling the new procurement agenda



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Executive summary

Managing costs and delivering savings continues to be a focal point of the procurement agenda. However, procurement also has to focus on driving innovation to ultimately help drive the growth agenda. This is against a backdrop of increasing regulation that requires more transparency governance and compliance in ever-increasing competitive markets.

With the rise of big data, procurement is in a perfect position to help manage the new and expanding data information sources. This presents organizational and technology challenges and opportunities in delivering against the new agenda. Additionally, who is responsible for and owns this information, how should it be managed and what lessons can we learn from the past and what are the new opportunities going forward? These are just some of the key questions that Chief Procurement Officers (CPO) ask — or should be asking.

The IBM® Procurement Solutions team worked in collaboration with Cranfield University to conduct research on the new data paradigm of managing big data, specially with regard to procurement activities. This included literary research combined with a number of interviews with relevant stakeholders in industry.

The research question, “*Why should procurement take more ownership in master data management?*” provided the framework of the study. The key findings were summarized into five main areas:

- Procurement has the opportunity to directly impact the corporate performance in the areas of cash, innovation, risk, compliance, cost and so forth, therefore, has the opportunity to become a critical value-added business partner to the organization.
- With procurement extended remit focusing more on innovation, risk and compliance, coupled with the explosion of data, procurement is in a perfect storm with regards to managing the expanding and new data information sources.
- Poor data quality is a significant hurdle to delivering on the promise of the business insights from advanced analytics and cognitive systems.
- Procurement is uniquely positioned within the enterprise to drive better supplier data quality and has the opportunity to shape the new business insights agenda.
- The goal is to deliver sustained value generation as reflected in the corporate performance metrics. Ultimately, this requires new ways of working with cognitive computing playing a key component in driving that transformation.

The call to action is to identify and influence key data management areas to ensure the business outcomes are delivered in an efficient and sustainable manner. Big data and cognitive capabilities are here now, seize the opportunity to shape and drive the business through the lens of the new procurement agenda.

From a business scenario perspective, your organization may be trying to consolidate the procurement view of your spend across the business, it may be looking to automate contract

compliance between upstream and downstream purchase-to-pay processes, it may be defining the broader analytics data model for procurement including risk and compliance, or you may be starting to exploit the value new cognitive solutions are delivering around the innovation and growth agenda.

In all these scenarios, and many more, the supplier record is a common master record and a good place to start due to its impact on business information. Unlike other stakeholders, Procurement is uniquely placed to help ensure data quality of supplier information across the lifecycle is delivered and sustained.

Just like Spend Analysis has historically provided a pipeline of sourcing opportunities to deliver savings, Big Data now provides a new and broader pipeline of business opportunities waiting to be exploited to help drive competitive advantage in the complex world we operate in. The humble supplier record has a big role to play in that success.

Research

Research approach

The research was designed to be short and focused, in order to quickly gather insights and to help stimulate subsequent discussion and debate around many of the interrelated topics. The research included literary research, combined with a number of interviews with business stakeholders across different industry sectors.

IBM Procurement Solutions worked in collaboration with Cranfield University to perform this research around the new paradigm business are facing around the use of data. As a starting point, this particular activity focused on the use of procurement master data.

Even though there are many aspects related to exploiting data, master data was seen as key building block in starting this research. Additionally, to understand the business impact and outcome, it was also important to see master data, not just as a technical component, but in the context of business processes, hence master data was investigated in the context of strategic procurement process scenarios.

Research topic

The key research question that provides the framework for the study was: “*Why should Procurement take more ownership of master data management?*” With this in mind, we explored the current perceived position as related to Master Data Management (MDM), for instance, its lack of business impact.

A key aspect related to the scope of this research was in the definition of MDM and how it related to business outcomes. In this context, business outcome was associated with core procurement processes, for example, business scenarios such as category management and MDM was defined as the management and maintenance of key procurement data objects including supplier records, contracts and categories. (The appendix provides an expanded definition as well as a procurement-specific definition of MDM from Gartner.)

In trying to answer the key research question, six related questions were asked during the interviews covering multiple use cases, data sources such as social, the role of MDM, and the level of executive sponsorship. The full lists of questions are detailed in the appendix.

Research insights

Business process scenarios

This section of the research investigated how the business processes and related data sources play a critical part in influencing the overall performance of the organization.

Even within the context of procurement, what constitutes a relevant business scenario varies according to specific roles. For example, a supplier manager that focuses on supply risk may have a different emphasis than someone in charge of operations who is measured on performance against contracts. Similarly, a corporate services function may have an emphasis on visibility and auditability of contract compliance between upstream negotiations and downstream call off processes. Furthermore, adding an industry perspective can add another layer of complexity to the use cases and associated data that needs to be managed.

This variability, just within the procurement remit, illustrates part of the challenge—the scope and definition of what data a supplier master record should include, can vary significantly. As procurement extends its reach in supporting areas such as audit and compliance that now impact areas like brand, security, regulation and so forth, the need for information that is contextualized to the new use cases also grows, and potentially so does the scope of the supplier record.

Clearly, new business scenarios are driven by the desire for procurement to add value and grow its responsibility. These scenarios have usually been driven by a top down strategic category planning process, maybe incorporating methodologies such as a political, economic, social and technological (PEST) analysis to identify and predict market trends, technology shifts or new regulation on the horizon.

While this approach is valid, another perspective is to take a bottom up approach that creates new processes based on new data insights gleaned from mining the data. For example, finding a correlation between supplier performance and time of the week, or supplier level of innovation and the way different buyers interact with them or even when the probability of fraud rises significantly due to certain buyer supplier relationships—the scenarios are potentially endless—but the challenge becomes prioritizing them and choosing what makes sense for the business.

This illustrates how procurement can add value by merging new and different data sources to extract insights to ultimately drive competitive advantage. The relevant question is; does MDM have role to play when considering different scenarios particularly with new and granular data elements such as time of the week, location, buyers and so forth?

Questions two and three of the interview explored the significance of data sources and its relationship to MDM.

Data sources

As indicated earlier, related or associated data sources also have an important role to play in providing more granular detail and contextual relevance to what a user is trying to do, to help make more informed decisions. This could be anything from an external weather feed, supporting a supplier segmentation process that highlights high supply risk factor in sourcing certain items and are only available in certain geographies. Alternatively, it could be monitoring a market index and its impact on contract obligations around volume/price commitments related to commodity price changes.

Providing granularity in a structured way is not always practical especially when considering spend on third party service categories, such as audit, professional services,

consultancy and so forth. Managing unstructured data associated with complex services that are typically custom and creative, typically do not have a master item record. Imposing a structure such as a service's taxonomy provides some structure and reference point, however, it is still a compromise in terms of actively managing services spend across its entire life cycle. Consequently, much of the data is rendered “dark,” meaning that it is left to sit dormant in a data store somewhere, not being used, visible or valued.

When looking at the use of new data sources such as social media, feedback from the research indicated there was fairly limited uptake. Some of the reasons for this related to its accuracy, reliability and therefore trustworthiness. That said, social listening programs are being used to monitor supply chain risk, however like many big data activities, the difficulty is filtering out the “noise,” and identifying insights to drive action.

As procurement business remit broadens, their responsibility also often extends to becoming security custodians of sensitive data. Management of data and information has to happen under a growing internal and external (for example, regulatory) governance framework to help ensure that it is secure, and that the behavior of its owners and users is compliant within the appropriate frameworks.

Managing data more efficiently and effectively at a granular level requires a granular data structure, like an item master record that has the framework to hold all these possible data sources. However, this can become a significant overhead to whoever is responsible for maintaining them. This approach is probably inefficient when trying to address these new challenges as managing the rate and volume of related data sources becomes unsustainable.

Cognitive computing (simulating human thought processes in a computer model and using natural language querying) provides a new approach to address many of these challenges by not needing a formal structure defined. The ability to process large amounts of data, which cannot otherwise be processed by the human brain, and interpreting the context and aiding in complex decision-making by using natural language, makes this type of technology more appropriate to address the new types of data challenges.

Thus far, these topics are valid points when highlighting the many challenges and opportunities of managing data; however, they fall under the broader topic of analytics. If insights are to yield value, data often needs to be shared with other processes and stakeholders in a timely manner, but also in context to the processes that needs it elsewhere in the value chain.

A supplier on-boarding process can be combined with other information to provide different business functions with key data, sometimes used in common ways, sometimes not. For example, the total insight derived from the supplier on-boarding process might be used by finance to assess financial risks, which then might be used by procurement to assess supply risk, and then by compliance check for any conflict of interests.

Sharing, collaborating and integrating data and information between stakeholder processes and systems in a timely manner means that MDM has a critical role to play in providing both a harmonized and contextual view. A common theme of the research found that sharing even basic information about a supplier or contract between different stakeholders can be a significant step forward for some organizations.

For insights to result in action in a faster and systematic manner, there needs to be a closer relationship between analytics and MDM with a common business architecture providing this binding. At the heart of this business architecture are the business use cases. Advanced analytics provides the potential for new value creation scenarios across a broader stakeholder community, and MDM provides the mechanism systematically to deliver this information in a timely manner to different stakeholders to realize this value.

MDM: Past and present

Historically, master data management has fallen under IT departmental control. It was not a core topic that previously caught the procurement executive attention and consequently, procurement's role has been secondary to IT and Finance needs.

Enterprise resource planning (ERP) systems have provided a significant role in formalizing operational procurement processes in most organizations, and with many of these deployments, procurement has had to adopt classification and taxonomies that have been led by Finance and IT. Consequently, they did not always meet the needs of procurement and drove the need for additional, tactical data warehouse and spend analysis solutions to help drive spend visibility, where procurement could see and act on their own data. Many ERP systems typically were not designed to address the strategic supplier management processes and consequently created further complexities of data and information flow between strategic and operational processes.

Business acquisition and poor system discipline contributed to proliferation and duplication of supplier records and poor data quality. As organizations realized the impact it was having on business decision making, they started moving to centralize the MDM function to administer supplier creation and maintenance processes alongside centralized data warehouse function.

At a concept level MDM is simple, however, to date it has had limited success, often manifesting itself in the form of poor data quality.^{1,2} The problems are largely non-technology related with overall ownership of the data and data quality at the heart of the problem. Organizational alignment around a common definition (what attributes should be included as a supplier master record with the appropriate governance framework) is a simple concept. However, in practice, working towards a common goal with downstream processes and stakeholders is difficult to implement in complex global organizations.

Supplier cost, compliance and risk processes all need a supplier record, and a category manager needs to understand the aggregated spend for that supplier, across multiple business units and systems, in order to negotiate from a position of strength. An auditor needs to ensure that the invoice spend from a supplier can be traced back with an audit trail to demonstrate management control and oversight that covers the contract, the order, the approvals, all the way back to the original request. A risk officer needs to perform the appropriate due diligence check such as money laundering, anti-bribery, use of conflict minerals and so forth, when there is some material change in their supply chain such as an acquisition announcement in the press.

These scenarios require a supplier record with the ability to interrogate related data sources depending on your role. Traditional forms of addressing this challenge has been a top down approach to develop a data governance council defining goals, policies and measures of data quality, etc. During the research, we tested whether there was a different way to get to the same business outcome, rather than adopting a traditional approach to master data management.

While most participants of the survey felt that there was no silver bullet to the data management challenge, there were examples where some customers were exploring new technology options around advanced analytics and cognitive computing. These technologies provide fresh opportunities to unlock the value often sitting dormant in data stores, particularly with the ability of cognitive systems to address unstructured data.

Like most artificial systems, cognitive computing needs to be trained by domain experts and humans to understand the business context, for instance, there is still the need for some reference framework such as a policy, procedure, part number or other forms of structure to enable more effective data management. However, unlike traditional computing systems, cognitive systems have the ability to learn and adapt and even possibly find an alternative way to address issues around poor data quality. Poor data quality is largely an organizational challenge, rather than a technical issue, but with cognitive systems capable of interpreting and applying policy, cognitive capabilities provide new opportunities to derive added value.

Role of procurement and MDM

If procurement wants to take a more active role in value creation as a trusted business partner, then procurement needs to take a more active role in shaping the topics that it impacts. Procurement recognizes the importance of topics such as big data and advanced analytics, and yet organizations today are least likely to use advanced analytics in procurement compared with other corporate functions.³

Many large organizations recognize the role of a Chief Data Officer managing these topics, however, not all large organizations have a Procurement Data Officer to champion the procurement agenda within the enterprise. However, if procurement strives to become business advisors in helping drive competitive advantage, they actively need to be on the inside track driving topics around analytics, data and how master data is an integral component to advanced analytics and business process integration across the enterprise, rather than be a recipient of business data strategy from other business functions.

Going forward, data management requires new ways of working with a different skill set, taking advantage of new tools that are becoming available. When it comes to big data, how many procurement professionals are able to identify patterns, trends, insights with machine learning algorithms or apply statistical models to large scale data to find the perfect hidden opportunities? And yet, an understanding of data science is needed to exploit these opportunities in the culture of data and analytics. It is the business users—like procurement—who understand the impact that data can have on driving competitive advantage and that it makes sense to develop these skills, rather than outsource from another business function.

Advanced analytics provides the potential to discover new value creation across a broader stakeholder community. Data Management has a key part to play in providing business context to bring these opportunities to life to the different stakeholders. Data management also provides the mechanism to help ensure that the data and information systematically flow to the right areas (people and systems) in a timely manner.

Procurement is uniquely positioned to overcome the critical challenges of poor quality data associated with data management. Across the enterprise, procurement has more touch points to suppliers than anyone else in the business—from on-boarding, to contract negotiations, supplier performance reviews and to phasing them out—procurement plays key part and can help ensure that supplier information from all the different business interactions are accurately reflected in the supplier information records.

With regard to supply contracts and risk, procurement is better placed than many other stakeholders within the enterprise, as again, it has many touch points into the business processes such as commercial and contractual obligations and risk. Linked with the tight association with suppliers, procurement's role is well positioned to shape and drive a broader data management agenda.

Executive positioning

Creatively managing categories can help to reduce your cost base and directly impact your profitability. At the other end of the spectrum, creatively managing your categories can help you create new revenue streams and even develop new business models to directly impact the growth agenda.

Negative association with suppliers has the power to massively impact brand and share price. Conversely, actively managing risk allows organizations to potentially outperform their peers and helps drive competitive advantage. This is important to executives and stakeholders, even though data management may not explicitly be discussed, its impact is felt by association to these topics.

Just like oil is a natural asset that delivers value in terms of energy, wealth and security; data is the new resource that delivers value in endless ways. Actively exploiting this new asset helps provide new avenues to achieve positive business outcomes that executives and stakeholders are always looking for. Unlike oil, which is a shrinking asset, data is exponentially growing and providing a growing number of opportunities.

Striking oil provides an initial sense of jubilation, however unless that oil can be processed and distributed to factories, offices and consumers, the true value will never be realized. Analytics has the power to discover the rough diamonds in data, Data Management provides the mechanism to filter and process this data into information that is valued by the downstream consumers. Whether they are inside stakeholders or suppliers, this value rolls into a business scorecard, providing a picture of overall enterprise performance measurement.

Like many initiatives seeking executive sponsorship, there needs to be a compelling business case, but also an assurance that it can deliver against the promise. The financial business case is relatively easy to compile, due to the direct impact on the corporate performance metrics, whether it is cash, innovation, risk, compliance, cost and so forth. Exploiting advanced analytics presents a pipeline of opportunities that help impact these metrics.

The critical question is how to deliver and what challenges need to be addressed? As already highlighted, poor data quality is a key area that needs to be tackled and procurement is best positioned within the enterprise to drive better data quality.

The real prize does not come from the impact on the corporate performance metrics in the first year, derived from some focused initiatives in a central team, but rather sustained value generation. This involves the broader organization exploiting data insights as a normal part of their daily activities. The broader challenge therefore is one of transforming the organization into a new way of working.

As procurement engages with the business, and advises on opportunities and threats, the system of engagement with a natural way of working becomes a critical component in driving adoption of new ways to work and ultimately, helping to transform the organization.

Cognitive systems that simulate human thought processes in a system of engagement are examples of such new tools that play a critical component to driving adoption and transformation to a data driven business culture.

Appendix

Master data management definition

General definition: Master data management (MDM) is an application-independent process which describes, owns and manages core business data entities. It ensures the consistency and accuracy of these data by providing a single set of guidelines for their management and thereby creates a common view of key company data, which may or may not be held in a common data source.” (Smith, 2008).

Gartner Definition: Master data management (MDM) of product data solutions are software products that:

- Support the global identification, linking and synchronization of product information across heterogeneous data sources through semantic reconciliation of master data
- Create and manage a central, persisted system of record or index of record for master data
- Enable delivery of a single product view to all stakeholders, in support of various business benefits
- Support ongoing master data stewardship and governance requirements through workflow-based monitoring and corrective action techniques

Interview

Interview introduction

Typical business use cases of dealing with procurement data includes category management specifically benefits tracking, spend visibility and so forth.

The key data objects that are typically considered are suppliers, contracts, categories and so forth.

Interview questions

1. What additional business scenarios (use cases) and data objects do you see that need to be addressed in your organization?
 - For example, scenarios related stakeholder management, both internal stakeholders such as marketing, audit, finance and external stakeholder including suppliers, auditors and so forth?
 - Why do you think these are important?
2. With the rise of social channels and new ways of collaborating (micro-blogging) with tools such as Twitter, cross-platform mobile messaging such as WhatsApp, Snapchat, sharing videos and drawings, what do you see are the new challenges and opportunities in regard to managing and leveraging procurement data?
3. Do you see the need for new data objects, such as wikis, forums, blogs, messaging, videos or other examples?
4. How do you see Master Data Management (MDM) playing a part in these traditional and new use cases?
 - What do you see as the specific challenges of using MDM?
 - Do traditional methods of MDM of mapping data between different systems work, or do you see other ways to get to the same outcome, especially when considering new social and collaborative data sources?
5. How do you see the role of Procurement with respect data governance, particularly in the area of core procurement data objects such as suppliers, categories and contracts?
 - For example, should procurement be responsible for defining the policies and processes, and responsible for maintaining the data?
 - What challenges (organizational, technical and so forth) do you see in regard to this approach?
 - Who currently owns this process today – procurement or other departments/stakeholders?
6. Explain how Procurement Data Management is perceived at an executive level in your organization:
 - Is the impact of Procurement Data Management on business performance clearly understood?
 - How can you elevate Procurement Data Management up the executive agenda?

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