

Want Big Returns from Big Data? Think about Sweating the “Small Stuff”

How Services Organizations Can Unlock Big Data by Thinking Small

Second Edition with Chatbots. April, 2017.
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Preface

Chatbots at the sharp end of Big Data

“Markets are conversations” led the opening chapter of The Cluetrain Manifesto, the 1999 book that defined the web as we know it in 2017.

Most business activities whether they be the supply of goods and services, pure financial transactions or anything else contains an element of negotiation or collaborative human decision making. Those negotiations or decision making processes are the conversations.

The Shared Services functions, IT, Human Resources, Finance, and Procurement, are business processes that can be largely automated, but the sharp end still requires a human to navigate the exceptions whether it be raising a credit limit, recruiting a senior team member or on-boarding a new vendor. These all require a conversation where a human needs much more than a web-form can provide.

Robotic Process Automation (RPA) is the most recent term for a wave of automation efforts that improve service levels and reduce costs in Shared Services. Major initiatives include big data analytics, digital supply networks and the use of Artificial Intelligence to augment decision making. These initiatives can be implemented as feedback loops that continuously improve processes or in-line to optimize the current activity stream.

Despite the increasing level of dark-room automation, humans are still needed to provide input whether to handle exceptions, provide strategic input or simply to maintain oversight. For a process touching many functions, leveraging data from a lot of systems and operating dynamically, designing the all-encompassing user console in the web paradigm is difficult to do and will require constant modification. What's needed is a smarter user experience that combines the flexibility and empathy of a human contact center with the availability, scale, and speed of a web application.

The second edition of this whitepaper contains an additional chapter that discusses how chatbots can play a role in benefit realization in more efficient and effective Shared Services Operations.

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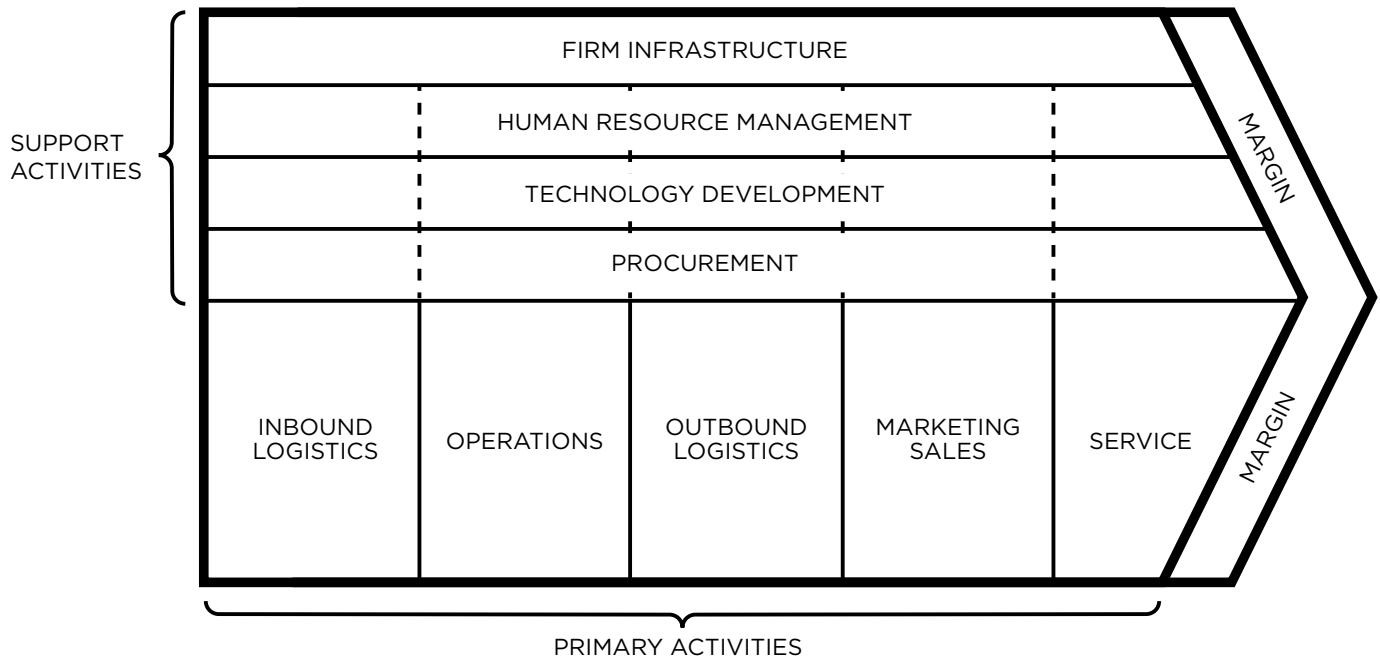
Big Data ERP and the Shared Services Organization

The Lost Boys of the Business

Thanks to Michael Porter and Jim Collins, businesses have been trained to favor value chains and core competencies to achieve competitive advantage.

Competitive Advantage, written by Porter in 1985, contains content, guidance and frameworks that are still considered relevant by many industries today.

For instance, Porter's Value Chain, a framework that illustrates the path from product creation, distribution, sales and marketing through customer service. The aforementioned activities are defined as "value chain activities". At the top of the framework, Porter describes the "secondary activities" as procurement, infrastructure, human resource management and IT management. For the purposes of this whitepaper, these business units responsible for Porter's secondary activities will be referred to as the "shared services organizations".



In 2001, Collins published *Good to Great*, using data to describe why some companies transition from average to high performance. Collins highlights several characteristics of companies that make the transition, including the “Hedgehog Concept”. This concept provides companies with a framework to determine their core competency. Oftentimes, this framework can be misinterpreted, leading company leaders back to considering only the value chain activities as those that are essential for competitive edge.

Unfortunately, the prominent focus on business units within the value chain has adversely affected IT investment and data approaches for business transformation. And overall spend is small: according to research firm Gartner, businesses spend less than 15% of their IT budgets on innovation. As a result, the lion’s

share of overall IT spend is allocated to maintenance and support for existing systems, what most refer to as “keeping the lights on”. Further, Gartner’s analysis of IT spending by industry and function demonstrates that IT budgets heavily favor spending to support the Production function, between 25-30% of the total IT budget, cross-industry. The remaining budget is sparsely metered between HR, R&D, Marketing, Finance, Inventory Management, Customer Service, Sales Support and Other business units. For shared services organizations, such as HR, Finance, IT and Procurement, provision of resources and money is minimal.

A couple of years ago, things looked bleak for shared service organizations. Although these organizations are perceived as a necessary foundation for the business, they are not considered departments that contribute

true value. What is “true value” anyway? In short, “true value” can be quantified by its impact to the bottom-line.

Fortunately, shared services organizations, or the “Lost Boys of the Business”, are capable of creating significant business value by leveraging data differently. In general, these business units are under-served data and existing business intelligence solutions, which serves as a hindrance to innovation. However, even the most mundane data within the business, from human resources and supply chain data through finance and reconciliation data, represents an opportunity for value creation. Therein lies the big opportunity for shared services organizations.

The Elephants in the Room: ERP and Big Data

There are two elephants in the room. One represents the challenge to shared services organizations. The other represents the opportunity to create true value for the business.

The Enterprise Resource Planning solution, more widely known as the “ERP”, is a necessary evil in today’s business environment. The ERP governs most of the value chain activities, including product planning, cost and development, manufacturing, marketing and sales, inventory management through shipping and payments. Some ERPs support the shared service organizations and some do not. But all ERPs are developed to support the mass market or industry segments. Therefore, most ERP implementations require mass customization at the outset in order to conform to standard operating procedures of an organization. And, unfortunately, for the particular organization’s IT department, the business

evolves over time in terms of priorities, information and procedural requirements. Therefore, the organization invests heavily during the initial implementation of the ERP system for configuration and customization and during the ongoing maintenance for meeting changing business requirements. As a result, the IT organization becomes bogged down with “keeping the lights on”.

Of course, many ERP implementations are successful and provide a company with a number of benefits. Benefits include the collection of information regarding various business inputs, outputs and processes, which lead an organization down the path to becoming “data-driven”. However, limitations associated with rigid and dated ERP systems further antagonize an enterprise’s IT department. In pursuit of business intelligence for better decision-making, various business units demand new KPIs and reporting capabilities of the IT team to achieve this end. Consequently, the IT department becomes further ensconced in the maintenance of ERP and other transactional systems and the backlog of activities that may have limited impact on the business.

Due to the aforementioned circumstances, ERP was top-of-mind for most IT organizations from 2005-2010. Now, the conversation has transitioned to big data. Given the digitization of nearly everything, vast pools of data, both inside and outside the four walls of the organization are now readily available for crunching and investigation. Organizations are no longer limited to analyzing structured data formats within their own systems infrastructure, but can access third party data sources to assess external variables. Computing power is such that the defining factors of big data, including high volume, high velocity and high variety, are no longer an issue. The tools are available: now organizations must approach big data as their strategy to continue to compete effectively in the marketplace.

For some organizations, this can involve a comprehensive data strategy, one that consumes years

of brainstorming, planning and execution. Now, these approaches require executive sponsorship from the highest levels of the organization, and significant change management to adequately address the people, process and technology variables in the equation. This type of comprehensive data strategy adoption will challenge even the most mature and competent IT organizations, and unfortunately, can mirror the era of the ERP implementation, with waterfall and Big Bang rollout approaches.

Fortunately, this is not the only approach available to realize big returns with big data. Shared services organizations can effectively bypass the obstacles associated with the IT organizations of old and use big data to create small solutions for significant benefits (See “Thinking Small Can Change Everything”). These business units have an opportunity to collaborate with IT to build a thoughtful big data roadmap, characterized by “quick wins” to make a difference within their enterprise, and ideally, positively impact the company’s profits.

Thinking Small Can Change Everything

Can changing font size on printed documentation significantly impact the bottom line?

Depending on the business, it can. Recently, a fourteen-year-old boy adapted an old science project for a new use case. The original science project evaluated the effects of a font change on paper handouts at a United States’ middle school. The original study found that substituting the Times New Roman font with Garamond would deliver significant savings on printing costs. In fact, projected savings amounted to \$21,000 per year.

This boy then applied his model to the US government, which is estimated to spend \$1.8B in printing in 2014 alone. The results were impressive. According to the model, the US government could save up to \$136M per year, approximately 8% of the total annual budget.

While some may think that printing handouts is considered “core competency” of the US government, it might be worth reflecting on the magnitude of this microscopic change to the organization’s support operations. If \$136M in annual savings is the projected outcome of a small change for US government support operations, then how would a small, yet creative change impact the bottom-line of other companies?

Takeaway

With the introduction of big data, shared services organizations have an opportunity to strategically benefit the enterprise. Vast amounts of data stores are accessible to these business units as a result of data collection and generation. It is the responsibility of shared services organizations to determine the manner in which available data (internal and third party) can be leveraged to optimize business process. Many businesses are undertaking this project and the results are overwhelmingly positive. The challenge is to seize the opportunity to create positive change today.

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Where Change Happens, Where To Leverage Data

Big Data, Big Deal

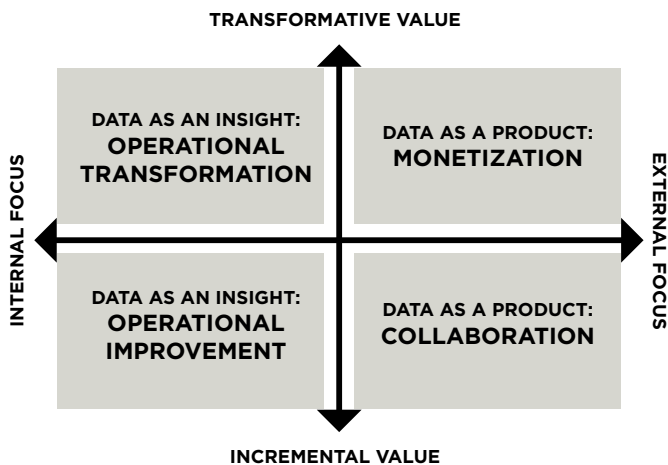
The most positive attribute of this big data phenomenon is that the business is now focused on data rather than solutions. The sheer amount of data stored is so vast that it's impossible to believe

a standard market solution exists for every mashup and permutation of available data. When confronted with the potential of big data and the availability to integrate external and potentially, unstructured information sources, the business is now free to explore creative solutions to operational issues, as opposed to seeking available packaged IT solutions.

Big Data: The Possibilities

Today, all types of data can be collected, normalized and delivered via reporting and analytics toolkits to deliver insights to internal business units. Such insights can lead business leaders to make incremental changes to existing processes for business improvement. On the other hand, insights may uncover a cost savings or revenue generating opportunities prompting the business to completely re-imagine and re-engineer the former business process.

Data can also be collected, normalized and productized to deliver information to external users. In some cases, insights specific to an individual business unit can be packaged into forums to promote collaboration across the enterprise and to its operational partners. On the other end of the spectrum, data can be reformulated into a product that allows a company to enter new markets.



Data for Insights: Operational Improvement

Although fraud is a common concern for most consumer-facing industries, it can be particularly damaging to operators in the sweepstakes and competition segment. Instances of fraud impacting this particular industry can range from unintentional submissions by consumers to deliberate entries tendered by professional fraud rings.

Traditionally, sweepstakes operators have maintained long lists of suspicious names and addresses to combat professional fraud groups. These lists were used to validate entries, and in the event of a positive match, the entry in question was suppressed. This traditional approach has its share of disadvantages; the process is overly time-consuming and is not effective in reacting to potential new fraud attempts.

To improve fraud prevention, sweepstakes operators can rely on big data as an appropriate solution to overcome the shortcomings of the traditional approach. For instance, a data-driven solution can be designed to investigate the complete history of all entries and build a profile of a typical event. This profile, considering all variables influencing the outcome, can be used to predict future competitions. Usually, a fraudulent event leads to an irregular pattern of submissions, perhaps concentrated to a given location, time or another variable, which may reflect deviations in the original profile. As the competition progresses, any variances from the original profile can be highlighted. In the event that a defined deviation threshold has been exceeded, the fraud prevention team can be alerted to proactively initiate an investigation of submissions.

Bringing this back to the Shared Services data, very often fraud patterns can be detected in contract,

payments, and invoices data. Additionally, monitoring delivered quantities, contractor utilization and travel expenses may surface patterns worth investigating for cost inefficiencies.

Data for Insights: Operational Improvement

When former President and CEO Alan Mullaly joined Ford with the auto manufacturer, Ford was struggling during the economic downturn. Dealers were challenged to present a variety of inventory on their lots to stimulate sales and simultaneously reduce inventory holding costs.

To accommodate specific consumer demands, dealers would transfer inventory and purchase additional stock. Subsequent analysis revealed that increasing vehicle inventory drastically boosted inventory holding costs by approximately \$10 per vehicle per day.

Under Mullaly's leadership, the business found a way to reduce inventory without affecting sales by using data-driven analytics. In most cases, a Ford vehicle has 60 points of configuration, which leads to 27 quadrillion different combinations for a given car. Ford's high power analytics solution considers a number of factors to deliver purchase recommendations to dealers, such as configuration point affinities (e.g., trailer-towing packages and load-leveling suspension) and localization of consumer color preferences (e.g., gold and green features in South Bend, Indiana). Migrating from intuition-driven purchasing to data-driven purchasing has saved dealers approximately \$90 per vehicle.

The shared services takeaway is that the key insight can lie in the combinatorials, and the analysis of the effect of large numbers of permutations can be done on the most granular data in the ERP system. Business Intelligence provides an aggregated view for

management consumption, but the big data approach leverages the detail that is available in the raw transaction records.

Data as a Product: Collaboration

Electric power utility operators are currently very busy installing smart meters across all its domestic and commercial customer locations. However, most of these organizations are not designed to manage field installation teams or new data generated by these devices.

A company worked diligently to fill the gap and service the large electric utility operators in North America by providing field installation teams, vehicles and equipment and job scheduling processes to support operations. In addition, the company collected smart meter RF readings every 15 seconds, rather than twice per year as allowed by the former device.

Data from the North American smart meter network was collected and aggregated by the company. The sheer number of meter installations runs into the millions, therefore, the quantity of 15-second readings falls into the category of a big data implementation. Although this data was collected as a byproduct of operations, utility companies were unable to leverage it.

To add tremendous value to their customers in the utilities business, the installation company packaged a data product developed from these frequent readings. Such data can be viewed in aggregate or at the minute level, such as by individual home or commercial office. For example, the utilities operator can view electrical usage by neighborhood and overlay demographic maps to determine how different types of customers use power in relation to temperature, seasonal events and

even television programming. This allows the utility provider form better plans to generate cheaper power and satisfy demand peaks.

The shared services lesson is that the data by-product inside systems, often providing a perspective across many information silos, can deliver additional value to business partners. For example, key performance indicator data can be benchmarked across vendors to find best observed practice and that information shared with the vendor to help them improve efficiency and effectiveness.

Data as a Product: Monetization

ZestCash, a former loan provider for borrowers with below average credit scores, decided to use monetize its consumer data to enter into a new market. Originally, the business evaluated the risk of a potential borrower with complex data analysis techniques to determine credit quality. Over time, the business collected massive amounts of consumer data and determined that this data had additional value. Thus, the executives determined to sell its analysis to other lenders serving the same market.

The company pivoted and was subsequently renamed ZestFinance. The company served Spotloan, a national subprime lender, credit card companies and several non-profits providing financial services to poor credit consumers. By introducing new variables to assess credit-worthiness, ZestFinance has surpassed a dated credit-scoring system and uses contextual and behavioral indicators to assess potential risk. Non-traditional warning signs collected and analyzed by ZestFinance include giving up a pre-paid cell phone, which indicates a willingness to lose social connections.

As a result of monetizing their data, ZestCash was able to exit the hyper-competitive loan market and re-position itself as a data provider. Co-Founder of ZestCash/ZestFinance Douglas Merrill notes, "All ... lenders are data poor. We hope we can make them data rich, insight rich."

Often a by-product and possibly an off-brand stretch for shared service organizations, the value of the data after analysis may generate enough of a proposition to be spun out of the business, or at the very least packaged up as a service to internal business units.

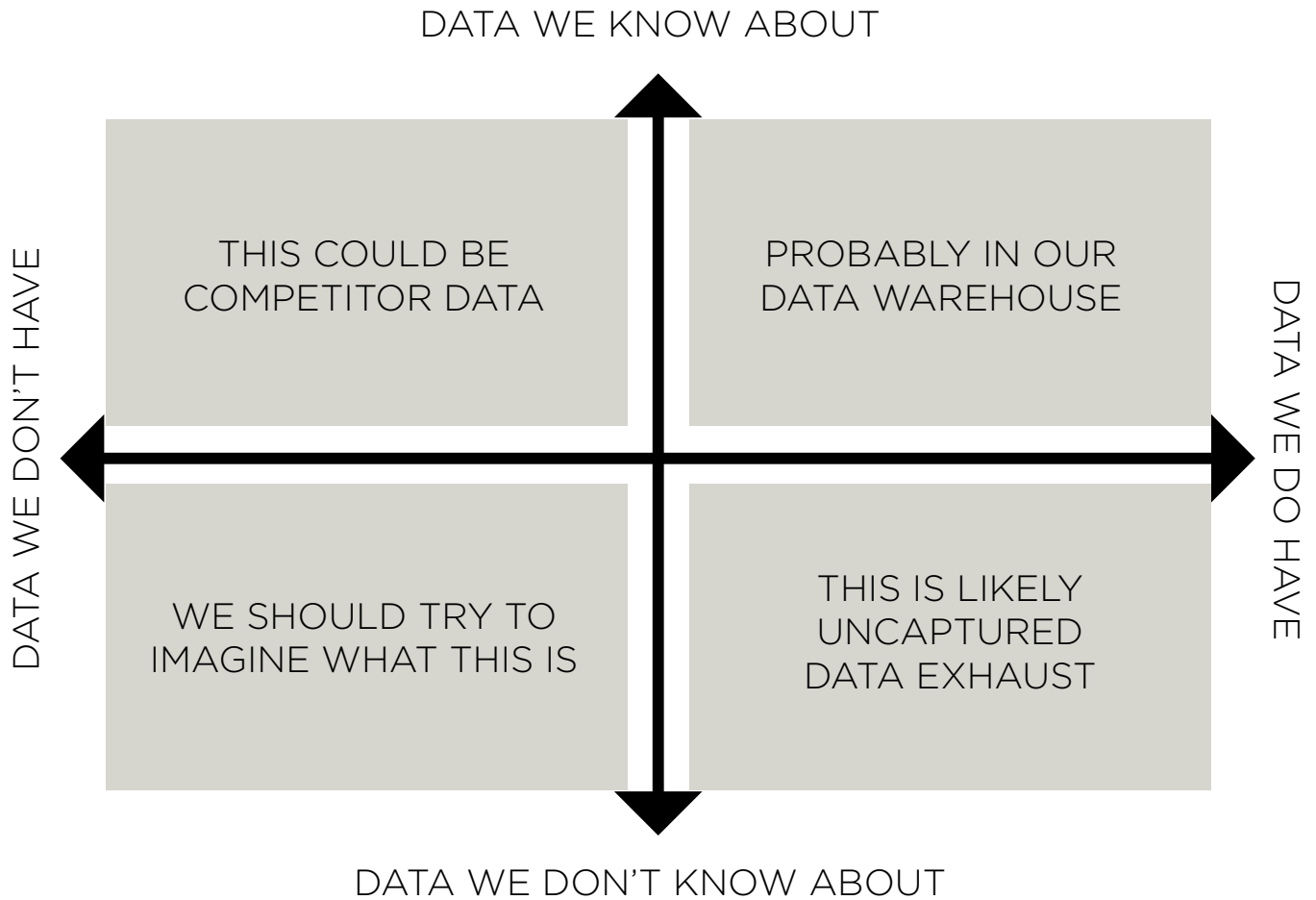
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How To Do IT? Building the Data Mindset

Everyone can't be a data scientist. Most business departments, in particular, the shared services organizations, cannot afford to employ data scientists. But everyone can think about data and how it influences their area of the business.

How to Identify Data-Driven Opportunities

The optimal way to pinpoint areas for improvement using data is to understand the data landscape. The following matrix classifies data into four distinct categories, which serves as an excellent framework for recognizing potential resources for new operational insights.



Documenting the data landscape allows members of the shared services organization to contemplate the possibilities. Once the landscape is recorded, individuals can evaluate the relative value associated with each data sources and discern synergies between multiple data sources. The team should embark on a creative brainstorming exercise to attempt to map available data sources to current business issues. For most, this approach is counter to standard product management process, where one identifies a market, then builds a product to address the market need. When dealing with “data exhaust”, one must begin with the data, manipulate the data to add or discover value,

and then find an applicable business application. These exercises include rigorous evaluation of available data sources and mapping information to opportunities for business improvement or current business issues.

Data scientists aren't necessary, but they can help with guiding users towards productive inquiries regarding current business processes and optimal business processes. Proven frameworks, such as the Data Mindset training workshops provided by the data scientists at First Retail, also help shared services organizations jump-start big data programs.

Data as a Product: Monetization

After obtaining a thorough understanding the data landscape, shared services organizations can employ five simple steps to monetize data. These include:

- Comprehension of data transaction and associated value for users
- Detection of all data points created during the transaction
- Identification of potential market for raw data, whether untouched, aggregated or combined with additional sources
- Definition of a monetization model based on this potential market
- Replication of process until data output is monetized effectively

Shared services organizations create mountains of data. This data often is referred to as “exhaust”, simply the unused output of daily routines. However, when the shared services organization can convert this exhaust into insights that result in better business operations or a product that results in revenue generation, the shared services organization can effectively change its perception as a “cost-center” to a group that contributes substantial value to the business.

Thinking Differently About Retail Data: Amazon

No one can contest that data has revolutionized retailing, especially with the advent of e-commerce. Retailers can now obtain stats on the browsing detail, understand shopping cart abandonment and conduct A/B testing on offers to determine optimal approaches to fostering customer engagement. As a pioneer in many areas of retail, from technology and operations to site experience and pricing, Amazon is generally considered a dominant force when it comes to data understanding and utilization.

The following quote taken from a recent shareholder letter written by Jeff Bezos’ illustrates this sophisticated, data-driven approach to operations:

At a fulfillment center recently, one of our Kaizen experts asked me, “I’m in favor of a clean fulfillment center, but why are you cleaning? Why don’t you eliminate the source of dirt?”

Andreas Weigend, former Chief Scientist at Amazon, applied the same thoughtful approach to business operations. An excerpt from Weigend’s blog included the following summary of Amazon’s approach to data:

In the 1990s, Amazon pioneered the use of data to help its customers make better decisions. First, implicit data: Clicks and purchases of all users are aggregated to suggest items to a shopper in response to their most recent click. Second, explicit data: Customers have the opportunity to publish reviews that potentially influence the purchasing decisions of other customers. User-generated content turned marketing—previously viewed as carefully controlled and released information—on its head.

I think of Amazon as a data refinery: Amazon takes the data that people create, refines the data, and returns results, allowing people to make better decisions. Amazon now influences how a billion people shop.

Recently, the company released a new mobile phone, the Amazon Fire. Although many analysts have commented on the saturation of the smartphone market, they admit that this phone can serve as a possible “game changer”. Prior to the release of the Fire, Amazon knew the shipping location and purchasing history of a customer, and, potentially, what a customer watched on-demand and read. An obvious piece of data missing from the customer experience was an understanding of the individual’s current location. Hence, the Amazon Fire. Today, it is not clear how the e-retailer will leverage location data, but if the company’s track record with data utilization persists, they will use the data. If there is one company that understands data, it’s Amazon.

Amazon is successful because it is willing to question and contemplate current processes. The e-commerce giant thinks about business process in terms of possibility and potential, unlike other retailers that spend their time reviewing the past. For instance, Amazon considers delivery drones and fulfilling products that customers “may” want prior to the actual purchase transaction, whereas the typical retailer thinks about average transaction size and store traffic counts.

The key to Amazon’s success is the constant focus on the right metrics. The Seattle maintains its dominance with agility – always asking whether the right metric availability for the current issue.

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How Shared Services Organizations at the Most Successful Companies Think Small

Purchasing Modifying the Behavior of Business Travelers

For many organizations, including the following international enterprise, travel and other employment policies are defined and governed by the procurement organization. Policy is generally universal, meaning that

under the same circumstances, such as travel to the same location for the same duration, every employee is subject to the same rules regarding expenditures. For instance, the existing travel policy may provide explicit guidelines regarding lodging and meal costs. These policies are established to minimize overall spend, but may not be the most beneficial for the organization.

For instance, a First Retail customer was determined to reduce costs associated with business travel. They were challenged to uncover potential savings using the

the normal variables, such as hotel, restaurants and airfare. The data scientists at First Retail challenged the Purchasing organization to contemplate a new variable, specifically, productivity. As the team explored cases of downward pressure on lodging expenditures, it was discovered that many executives were opting to stay in hotels farther away from work sites to comply with corporate policy. Such travel time significantly reduced time spent working, especially for executives occupying much of the workweek on the road.

Instead of relying on policy, First Retail challenged the business to use travel data as a way to modify behavior. In collaboration with First Retail, the team developed a data product for internal distribution. This product was a mobile application providing real-time transparency to individual travel spending (albeit anonymous) across the enterprise and gamification tactics to modify executive behavior. This data product resulted in significant cost savings in business travel.

Finance and Accounting Capturing Early Payments Discounts

Oftentimes, large multinational companies, like the one in the following example, manage supplier networks with tens of thousands individual vendors. Each year this global corporation managed billions of dollars of supplier invoicing, which demanded substantial resources for processing.

There were vendors who, in an effort to reduce their cashflow pressures that offered discounts on early payment. Yet those advantageous terms are often overlooked, not because the company does not want the savings, but because the data is inconvenient to see and act upon.

An invoice processing operation is most efficient in a uniform environment with standardized processes.

Invoices are received, approved by an invoicing specialist prior to payment being made, yet often by the time the approval process is complete the early payment window has expired. The data mindset view will reframe the problem as a speed issue where reducing processing time allows more invoices to be reviewed and paid within any potential discount window.

To define the opportunity, the data scientists at First Retail studied historic Purchase Order agreed terms, reconciliation times and invoice payments to identify missed early payment discount opportunities. Based on this analysis they built a predictive model that when presented with a new invoice, would determine the likelihood of a reconciliation problem. Invoices with a low probability of an issue would pass quickly through an accelerated approval and . This meant that invoices where an early payment discount is applicable would be processed fast enough to take that discount.

By applying data science to the problem the company was able to start benefiting from negotiated Early Payment terms.

How They Did IT with First Retail

Little projects can deliver big results, especially when working with skilled data scientists. Professional data scientists, like the experts at First Retail, can review existing systems and processes to identify existing data assets that present opportunity for shared services organizations to realize true value. First Retail recognizes that data can be used to accomplish several positive outcomes, including cost efficiencies, additional leverage with suppliers, competitive advantage and new revenue opportunities.

Existing data platforms, such as the ERP, cannot

accomplish this in silo. Existing business processes may continue without issue, however, over time the business' current position in the marketplace can be sacrificed to competitors using their data assets to transform business processes and reach new markets. Organizations that want to win cannot afford to wait another minute: it's time to think small and generate big returns with big data.

5

Robotic Process Automation, Artificial Intelligence and Chatbots

Since the original version of this paper in 2014, we have witnessed further

business and industry transformations inspired, then enabled by data. We also recognize that it is not a question of 'Big Data', rather just data, be it large or small. In fact "Small Data" may well be the key to realizing the monetary benefits of these insights. Big data analytics as we have previously advocated, give rise to all manner of game

changing insights, whether it is calculating the cost of a one day delay in payment across hundreds of thousands of invoices or understanding employee motivation based on email statistics.

Obstacles to Benefit Realization

We have seen three obstacles to taking each insight from theory to benefit realization:

1) Data Liberation

The data used to generate the insights is generally not in one single system and even if it is, being able to run the statistics requires a huge amount of preparation. The preparation activity can be undertaken by a data scientist but this activity needs to be automated, scaled and must remain responsive to new patterns in the data, requiring some Machine Learning and some ongoing human intervention.

2) Executive Sponsorship

Successful organizations evolve to become more efficient than their competitors, but this requires that efficiency to be encoded in business processes and operating procedures. Big data insights by their very nature will challenge the rules that underpin established processes and procedures. In doing so, they disrupt the status quo and create fear and uncertainty in the minds of operatives, managers and staff members, whose effectiveness is based on their speed and knowledge of today's processes. Executive sponsorship is necessary to incentivize change and remove fear as the new processes are implemented.

3) Deployment

Top down process change is only one aspect, the other needs to come from the bottom up, and this is where the theory of small data can be applied. The big data insight is generally where a large number of data points is analyzed and their combined effects on a macro-variable can be shown. The small data application is where every transaction embodied in the data points can be shifted slightly and the macro-variable changed. But shifting behaviors across millions or even billions of transactions is not easily done. The broad reach tools available today are emails and mobile alerts, but these are impersonal and struggle to provide high enough rates of change (or conversion).

How Small Thinking can help Big Rollouts

Let's say we have found a Big Data insight for the Procurement organization, understanding how business travelers book and expense their trips. The analysis required a year's data from all employees traveling to all locations and the insight focused on minimizing total trip costs rather than reducing the cost of individual parts of the trip. Even using a corporate booking system or agent, the large number of variables and span of time required to fully determine every aspect of the trip, makes it difficult to get the greatest value at every stage. For example juggling flight dates and accommodation and the travelers calendar will likely make poor trade-offs in travel time optimization vs. expense. And no individual can expect a human agent to be dedicated to that specific trip.

The Rise of Working Class Intelligent Agents

What if the traveler was tended to by an intelligent agent whose job it was to seek out the optimal combination of trip components while applying travel policy. That agent would receive simple instructions from the traveler and would come back quickly with options. The beauty of the automated agent is that it is quick to respond but almost infinitely patient as it waits for the traveler's input. The agent would also be able to process a huge amount of information - for example assessing a large number of flight and hotel permutations. These agents would engage with the traveler via chatbot technology which makes them responsive to natural language, available via just about any messaging platform, and able to work in hybrid mode supplemented by a human agent to handle inquiries that cannot be resolved programmatically.

These are just examples of how agents can be the business-end of the big data insight, ensuring that the benefits are actually realized, yet they close a very important loop in the Big Data story for Shared Services Organizations.

About First Retail

Our philosophy is that value comes from creative innovation. We've worked with some of the largest organizations in the world, helping them drive profitability, create competitive advantage and save money.

We're experts at change management — both the technical challenges and the human element. We have an excellent track record of delivering business benefits, and we're quietly working on what we believe is revolutionary technology to power commerce in the age of the semantic web.

Technology Inspired Business Innovation

At heart, we're technologists who innovate and solve real problems. First Retail is bootstrapped by revenue — businesses large and small hire us for our complex problem-solving skills, analytical minds, and aptitude with technology.

We have improved processes and technology research for large multinational organizations, and have helped fast-growing startups build their first-generation software development and infrastructure support teams.

We're on a mission to make complicated data simple for business people.

We've spent our careers turning Enterprise data into food for hungry decision makers. Deeply technical, we understand what goes on behind the data warehouse, how data should be governed, and how to quickly process dirty, unstructured or streamed data sources on the cloud.

We're experts at identifying valuable data sources and cleansing and normalizing your data, all the way through to creating powerful data products to deploy throughout your organization.

None of this is done in a vacuum. Our decades of experience mean we know how enterprises really tick, the pressure that IT departments work under, and how business users always need more data to make decisions.

We're headquartered in Silicon Valley and have the smartest engineers and data scientists busy in San Francisco and an increasing number in India, Russia and Bulgaria.

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