IBM

Smarter Analytics: Increase Business Success by Applying IBM Business Analytics and IBM Smarter Commerce Solutions

Redguides
for Business Leaders

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■ Learn about capabilities that enable you to really know your customer

■ Explore solutions to business challenges throughout the value chain

■ Gain insight into ways to improve your supply chain

Redbooks

Executive overview

Today's successful businesses understand that customer centricity is a key to their success. They strive to increase customer satisfaction with every interaction. And they seek insights from available data, enabling them to personalize the customer experience at every touchpoint. These successful businesses go beyond simply offering a great sales experience, they aim to delight their customers at every point in the value chain lifecycle, from procurement, through marketing and selling, to post-sales service.

Many businesses strive to achieve these goals but this evolution is not without its challenges. Some organizations find it hard to embrace the new, dynamic channels of interaction such as, social media and mobile devices. Others have difficulty engaging their customers consistently as the customers traverse different channels and touchpoints. Some businesses have yet to optimize their supply chain processes to ensure a superior customer experience. Contributing to these challenges are issues such as:

► Inability to leverage knowledge of past, present, and future events that impact customer value

► Inconsistent or missing information about a customer leading to inappropriate offers, out-of-context communication, inconsistent service delivery, and inferior customer relationships

► Contradictory customer experiences when they are using different channels because each channel has its own go-to-market strategy, offers, and pricing defined by independent lines of business

► A less than optimal supply chain leading to inventory levels out of line with demand, costly and inefficient transportation and warehousing, and a generally lower level of customer satisfaction

IBM® Smarter Commerce™ solutions and IBM Business Analytics can help businesses overcome these challenges. These solutions enable you to deliver superior customer experiences including:

► Establishing a supply chain that is prepared for the unpredictable
► Producing marketing material that is targeted to each customer personally
► Providing service and insight into what customers want, often before they themselves know
► Selling to your customers, wherever they are, across multiple channels

This IBM Redguide™ publication explores the commerce challenges and describes how the union of capabilities from IBM Business Analytics and from IBM Smarter Commerce solutions

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can help overcome these challenges. This guide provides an introduction to the IBM Smarter Commerce solution portfolio and related IBM analytic solutions that help across the four key commerce domains: buy, market, sell, and service.

It is all about the customer

Technologies (such as social networking and mobile devices) have empowered customers with far more information than they have previously had. Customers can learn about products, prices, sales, ratings, and reviews, and they can instantly share their own experiences with the world. These advances have dramatically changed the dynamic between the buyer and seller and as a result, customer expectations of service, price, and delivery are soaring. In order for businesses to compete and excel in today's market, every aspect of the commerce lifecycle is being impacted. Supplier relationships must support the changing requirements, the entire supply chain must be flexible and efficient, and marketing campaigns must be relevant and timely. Every communication with a customer must be coordinated and of course, delivering excellent customer is critical.

These expectations go beyond those of just individual customers and are changing all aspects of commerce including how businesses collaborate with each other, and even fragmenting and forcing entire industries to evolve.

Smarter Commerce solutions help business respond to these new requirements. These solutions focus on the customer, and leverage business analytics to deliver capabilities in four key domains (Figure 1).
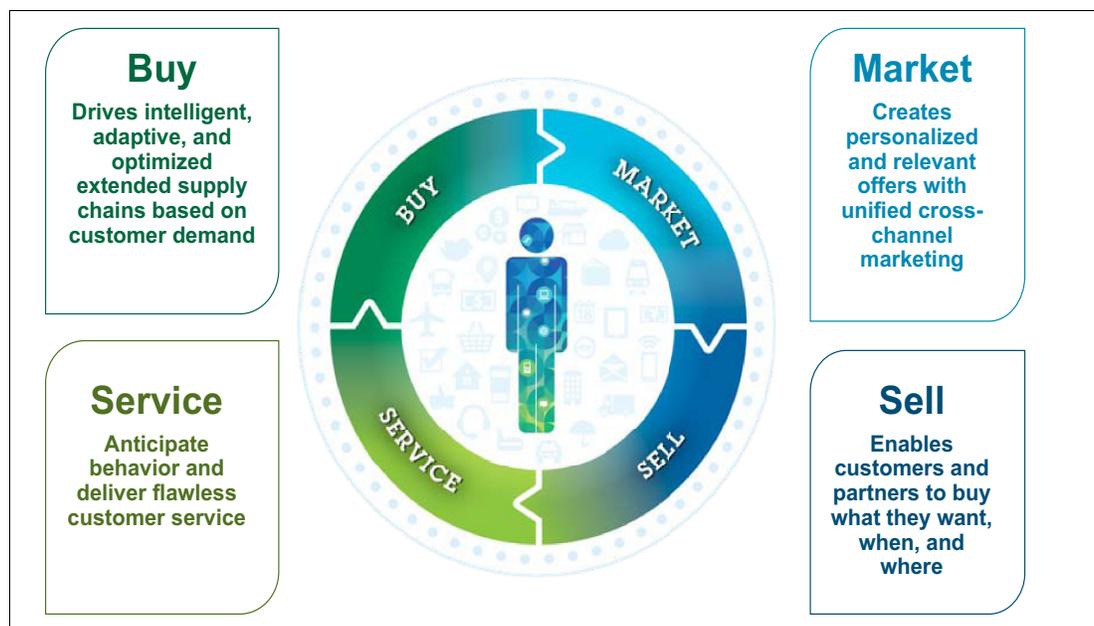

Figure 1   The four domains of commerce

The four key domains shown in Figure 1 are described as follows:

► Buy (also known as procurement)

The buy domain is all about the procuring of goods and supplies efficiently and effectively. In this domain all interactions between the enterprise, suppliers, and partners should be optimized, adaptable, and provide the ability to anticipate changes in demand and customer behavior.

- ► Marketing

  In the marketing domain, enterprises take advantage of deep customer insights and behaviors from all channels to deliver timely and personalized engagement across multiple touchpoints.

- ► Sell

  The sell domain covers customer and partner engagement enabling them to shop, exchange information, and collaborate across all touchpoints. These touchpoints span human, digital, social, and mobile modes of access that are optimized according to customer preferences. Analytic and behavioral insights allow enterprises to offer the right products, to the right customers, at the right price, at the right time.

- ► Service

  The service domain focuses on providing quality customer service, which is essential to retaining existing customers and attracting new ones. By incorporating analytics into their customer service processes, enterprises can deliver flawless customer service across all interactions, anticipate their behaviors, and take actions to maintain their loyalty.

Smarter Commerce solutions support all four of these domains by providing business users targeted capabilities that leverage the IBM technology and infrastructure. These solutions enable the business user to respond to the emerging requirements of the empowered customer and address those requirements across the entire commerce lifecycle.

Figure 2 on page 4 shows a high-level architecture of Smarter Commerce capabilities within an enterprise environment. Each of the four domains and their core components are included. Each component is made up of capabilities from one or more IBM products in the Smarter Commerce portfolio.
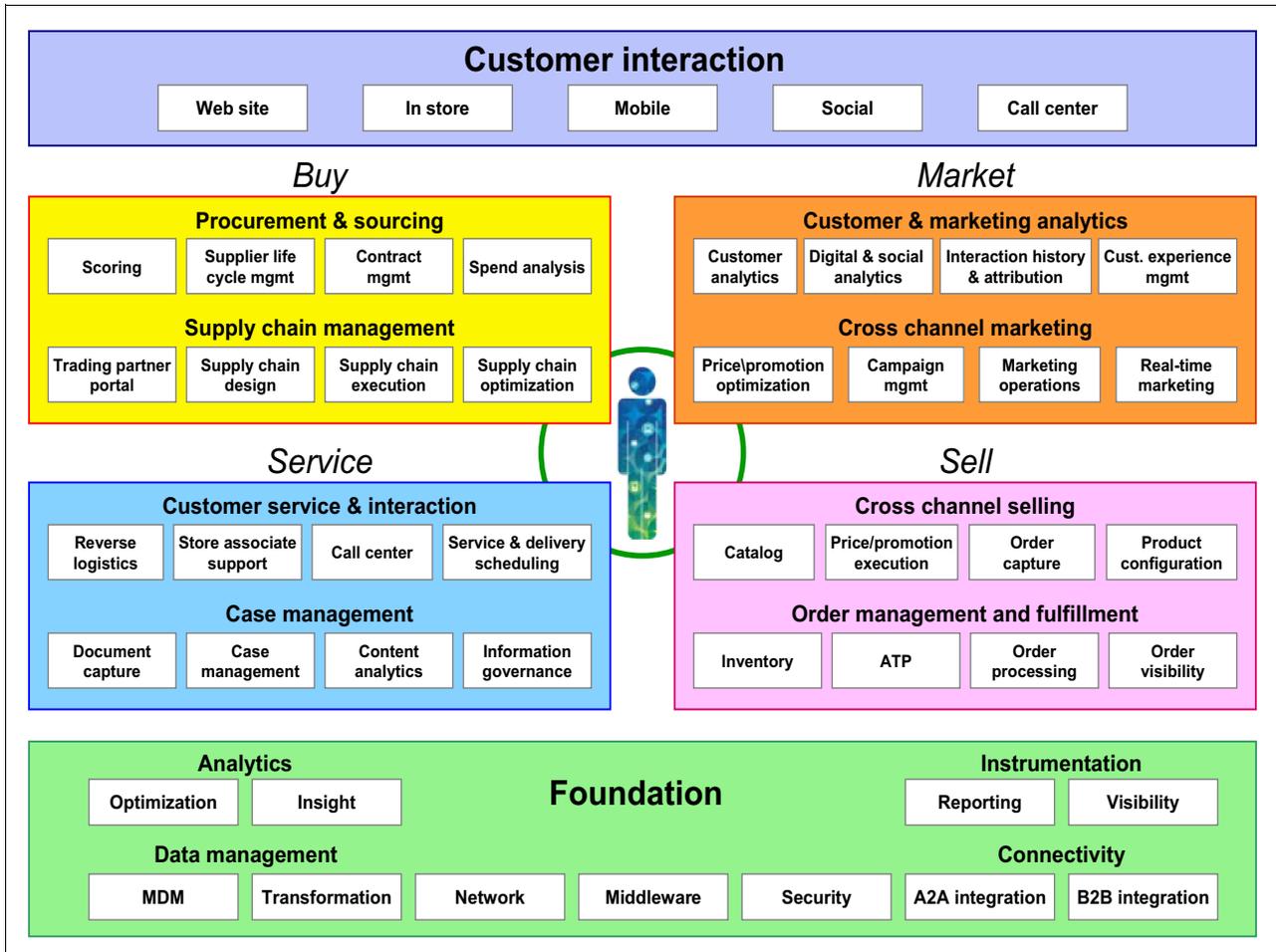
Customer interaction				
Web site	In store	Mobile	Social	Call center

Buy

Procurement & sourcing

Scoring	Supplier life cycle mgmt	Contract mgmt	Spend analysis

Supply chain management

Trading partner portal	Supply chain design	Supply chain execution	Supply chain optimization

Market

Customer & marketing analytics

Customer analytics	Digital & social analytics	Interaction history & attribution	Cust. experience mgmt

Cross channel marketing

Price\promotion optimization	Campaign mgmt	Marketing operations	Real-time marketing

Service

Customer service & interaction

Reverse logistics	Store associate support	Call center	Service & delivery scheduling

Case management

Document capture	Case management	Content analytics	Information governance

Sell

Cross channel selling

Catalog	Price/promotion execution	Order capture	Product configuration

Order management and fulfillment

Inventory	ATP	Order processing	Order visibility

Foundation

Analytics

Optimization	Insight

Instrumentation

Reporting	Visibility

Data management **Connectivity**

MDM	Transformation	Network	Middleware	Security	A2A integration	B2B integration

Figure 2   The key Smarter Commerce capabilities including business analytics

Knowing and retaining your customers

Smarter Commerce solutions put the customer at the center of everything your enterprise does. In many ways, this is a return to the roots of retailing. Fifty years ago, a customer would primarily shop at their local store. That merchant would intimately know the shoppers including what the customer had previously bought, what new goods the customer might be interested in, and what items were selling well to other customers similar to them. The rise of high volume and big box stores brought significant cost savings and efficiencies to commerce, but often these benefits came at the cost of the personalized service and experience that characterized the local store.

The most effective sellers today are combining the best of these requirements by leveraging technology, data, and analytics to really know each individual shopper. Sellers are also delivering an exceptional and highly personalized experience, without having to compromise on the cost and efficiencies that modern big box retailers can deliver.

Delivering exceptional service might sound like an easy goal, but it needs to be backed by infrastructure that allows the entire organization to execute. A helpful and well trained store associate is capable of impressing your customer. However, if the warehouse or supply chain cannot deliver the goods ordered in a timely and efficient manner, the overall perception of the experience can be negative.

For many businesses, an enterprise's customers are not individual customers but other businesses. Even for manufacturers and other business-to-business (B2B) suppliers, the core tenant is the same in every case including these goals:

- ► Knowing your customer
- ► Delivering what your customer wants and providing accurate information
- ► Being responsive to the enterprise's revolving requirements

All of these items are key steps in delighting customers and retaining them for the long term.

Turning data into insights to produce actions with business analytics

The commerce lifecycle is rich with data. For example, analysis of the data can help answer questions such as:

- ► Which products are selling
- ► Which products are sitting in stores or warehouses
- ► How much stock is en route from suppliers

In addition, it is possible to track every single customer touchpoint, for example the seller can track:

- ► Which marketing offers have been sent out to a customer
- ► When the customer responds
- ► When and how did they respond to that offer
- ► When did a customer browse the website, walk into a store, or purchase a product

It is important to realize that the data itself is only a raw material. In order to turn the data into actionable insights that can be executed, the data needs to be processed, analyzed, and understood. IBM Business Analytics technologies help the business user visualize the key information, predict likely trends and future changes, and identify and report on key performance indicators (KPIs).

From a delivery and implementation perspective, some business analytics are leveraged as components that are embedded and shipped as a core part of the Smarter Commerce solutions. In other instances, the solutions are sold separately and can be integrated and exploited.

The following sections describe the four commerce domains in more detail and identify the Smarter Commerce solutions and the business analytic capabilities related to each domain.

The buy domain

The modern enterprise cannot rely entirely on the business units, employees, and its assets to make good purchases. Products are brought together from raw materials, tools, machines, and services that have a combined impact on the overall quality and cost of their products. Because quality and cost drive revenue and profit, there is nothing more critical to an enterprise than ensuring that these goods and services are produced reliably and consistently. This approach helps ensure that the product is available whenever the demand exists. Achieving this requires strong collaboration within the enterprise and beyond. The modern enterprise must convert suppliers into true partners with a unified mission of producing the highest quality product. The challenges faced by the procurement (buy) organization include:

- ► Analyzing the expenses created by the enterprise and determining where significant cost reductions can be found, helping to reduce spend with partners/vendors.

- Identifying potential partners with the requisite capabilities and that satisfy any pertinent regulatory constraints critical to the enterprise.
- Cataloging and categorizing partners according to their capabilities, quality metrics, and other data. This analysis helps identify key relationships, so those partners can be leveraged consistently throughout the enterprise.
- Engaging selected partners in a cooperative relationship providing ongoing feedback that feeds process improvements and cost reduction.
- Identifying the right partner to provide goods and services for particular missions based on total cost, factoring in other externalities such as risk.
- Negotiating and managing contracts and commitments made with partners, ensuring that the partner meets the expectations of the agreements made during the sourcing exercise.

The IBM Emptoris® Strategic Supply Management solutions provide analytical solutions for procurement specialists and their business partners. These products address both data and business process needs.

Creating the data foundation for purchasing

Quality data provides not only the foundation that is required for effective business flows, but the foundation for analysis to generate insights. Raw data can be examined by business analytics solutions to gain an understanding of and insight into customers and partners in your value chain.

Analytics enables ongoing integration, validation, harmonization, and enhancement of a wide variety of data sources, such as:

- Categories and products

    The ontology of goods and services that are acquired, providing a complete and consistent source of data across the enterprise and across industries where necessary.

- Partners and contacts

    External organizations and the individuals from those organizations responsible for managing the relationship.

- Geographical subdivisions

    Ontology of logical geographic regions pertinent to the enterprise.

- Business units

    Hierarchy of the internal organizational structure of the enterprise and the individuals within those organizations.

- Historic spend

    Expenditures made for acquisition of goods and services that are categorized by multiple arbitrary dimensions including category, internal business unit, and geography.

- Contracts

    Existing and potential legal obligations with partners.

- Programs

    Strategic initiatives for optimizing performance such as by reducing spend, improving compliance, and decreasing time-to-market.

Procurement optimization

To be effective and efficient, a procurement organization needs an end-to-end solution that can manage data and provide relevant data flows across functional boundaries. The Emptoris Strategic Supply Management solutions provide comprehensive solutions that support all aspects of procurement operations:

► IBM Emptoris Supplier Lifecycle Management

IBM Emptoris Supplier Lifecycle Management supports onboarding of suppliers and other business partners via assessments tailored specifically to the business requirements of the enterprise. By using a combination of available data from public or curated sources, suppliers are qualified across multiple business capabilities before being approved as a vendor. The qualified suppliers are classified by their capabilities and KPIs, enabling the enterprise to find the right vendors for the sourcing exercise and ensure that contracts are awarded only to certified suppliers.

► IBM Emptoris Sourcing

IBM Emptoris Sourcing supports the negotiation of prices and terms for goods and services using a variety of online negotiation techniques, including request for proposal (RFP) and reverse auctions to increase competition between vendors. Partners have the ability to offer complex tiered pricing or bundle various items into aggregate bids. IBM ILOG® CPLEX® Optimization Studio is used to determine the optimal purchasing choices over a range of items based on the supplier's bids. ILOG CPLEX Optimization Studio considers various factors such as, supplier performance ratings and other data gathered from IBM Emptoris Supplier Lifecycle Management or other trusted sources.

► IBM Emptoris Contract Management

IBM Emptoris Contract Management supports collaborative negotiation and management of the contract language and terms. User-defined custom approval workflows ensure that contracts comply with corporate standards and contain the most favorable terms. The advanced categorization and search capabilities enable authorized users to locate any agreement with ease. IBM Cognos® Business Intelligence and IBM InfoSphere® Information Server capabilities provide the enterprise with a holistic view of the entire body of contracts.

► IBM Emptoris Spend Analysis

IBM Emptoris Spend Analysis provides insights into ongoing and historic spend across the entire enterprise. It includes dashboards with detailed view capabilities supporting various data dimensions. Data aggregated and synergized from multiple enterprise transactional systems can be analyzed for compliance, trend analysis, and identification of savings opportunities.

► IBM Emptoris Program Management

IBM Emptoris Program Management enables the definition and tracking of strategic projects to improve procurement performance. Flexible team definition allows cross department collaboration on campaigns with specific goals measured consistently. This analysis is performed using a common workbench visible to all team members. Measured results are verifiable by requiring review and approval at multiple levels.

Handling complex procurement categories

Complex categories of procurement that comprise a significant percentage of overall spend require special processes. These special processes exceed the general capabilities provided by IBM Emptoris Strategic Supply Management solutions and require additional capabilities:

► IBM Emptoris Rivermine Telecom Expense Management

IBM Emptoris Rivermine Telecom Expense Management provides the assurance that telecommunication expenses are minimized throughout the enterprise. Invoices are tracked and compared to contract terms and actual usage data to ensure that payments are for verified expenses. Advanced business intelligence that is embedded in this product provides capabilities that enable complete visibility into telecom expenses, which are both contextualized and actionable.

► IBM Emptoris Services Procurement

IBM Emptoris Services Procurement controls and manages outsourced services such as, contingent labor. The full procurement lifecycle for third-party services categories which includes temporary labor, time and materials, and statement of work (SOW) service projects. These projects can include activities such as, IT outsourcing and business consulting.

► IBM Emptoris Virtual Supply Master Technology

The IBM Emptoris Virtual Supply Master Technology (included in IBM Emptoris Strategic Supply Management solutions) is the backbone on which data is unified, reconciled, and rationalized. The Virtual Supply Master (VSM) can combine data sets from multiple sources such as, enterprise data, procurement process data, supplier entered data, and data from external data providers into a single unified repository. This shared data repository ensures that the products in the IBM Emptoris Strategic Supply Management solutions and the broader enterprise are all sharing the same information when referring to partners, partner contacts, geographic regions, and product categories. The central administrative console minimizes the burden of creating and managing users, groups, and roles that are used throughout the solutions.

The market domain

The goal of marketers is to attract new customers, increase revenue and profit from those customers, and grow loyalty and advocacy—all through differentiated brand experience. To do this today requires a dialog, or continuous customer engagement. As customers embrace multiple channels, look to their social networks for advice, and engage when and wherever they want, marketers (even leading marketers) must find new ways to keep up. The baseline of capabilities needed to attract and retain customers is often filled with seemingly formidable challenges:

► While most enterprises have supported multiple channels for decades, these channels (such as store, website, email marketing, and call centers) are typically managed as separate businesses.

► Due to the various channel silos, determining a complete historical view of the customer is virtually impossible. To complicate this issue further, entity matching (identifying multiple versions of the same entity) is vital to getting the full view of a customer.

► Key data sources such as social media and customer reviews are voluminous, text-based, and unstructured. Most enterprises are in the early stages of managing big data and not at the point of mining the data for insights.

► Without a strong data foundation even basic reporting is challenging. Predicting customer response is a complex multi-dimensional problem that is difficult to scale and maintain.

► Customers have diminishing attention spans and limited patience for poorly designed websites or stores with out-of-stock issues. A bad experience can instantly be escalated through social media.

The IBM Enterprise Marketing Management (EMM) solutions within the Smarter Commerce solution set provide role-based analytical solutions for marketers and their merchandising

counterparts that address both data and business process needs. Figure 3 illustrates the key components of the Enterprise Marketing Management solutions.
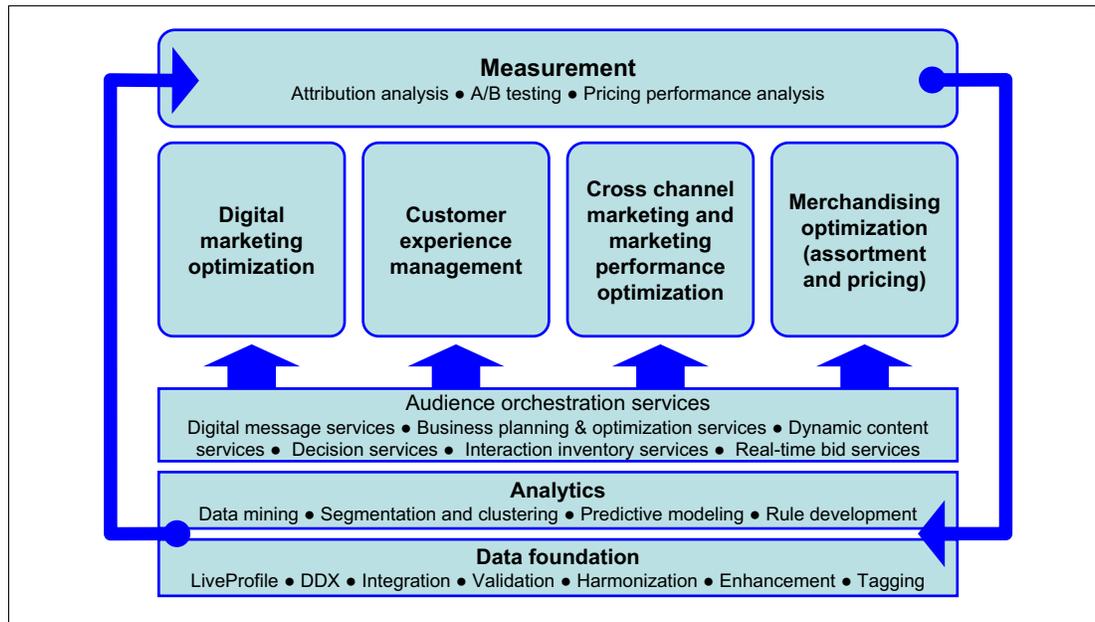

Figure 3   Enterprise Marketing Management role-based solutions

Data Foundation for Marketing and Merchandising

Perhaps the most important investment that an enterprise can make is in centralizing and expanding their data. The IBM Smarter Commerce marketing solutions enable ongoing integration, validation, harmonization, and enhancement of a wide variety of data sources:

► Systems of record are the existing sources of enterprise support, such as the Enterprise Data Warehouse (EDW), Enterprise Resource Planning (ERP), and Point-of-Sale (POS) systems, which contain a variety of information, including transactional data, inventory, product, and location data.

► Customer data and predefined segmentations provide context and identifying information for each customer (including email, location, and demographics).

► Marketing interaction history consists of ongoing information on offers presented, context and campaign details, and responses.

► Digital data, which includes clickstream and customer experience information.

► External data consisting of broadly available information (such as, weather and economic indicators) and acquired information (such as, competitor pricing/product assortment and social media data).

IBM Smarter Commerce marketing solutions integrate and synthesize whatever relevant data that a client has available. These solutions can grow with the client as their needs expand and mature. As part of this foundation, IBM provides both a Live Profile, which continually consumes data from these various sources, and a Digital Data Exchange (DDX) that facilitates the instrumentation and syndication of data across a broad partner ecosystem.

With these data elements in place, a variety of audience orchestration services are enabled which includes:

► Digital Message Services leveraged for digital message construction and delivery management.

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- ► Dynamic Content Services, which provide asset storage (including third-party repository integration) and layout capabilities (such as, retrieval and assembly).

- ► Interaction Inventory Services provide a managed repository and lifecycle management for offers, promotions, and messages.

- ► Decision Services combine multiple algorithmic techniques, state management/event detection, and rules to identify and arbitrate the best possible action for a customer interaction.

- ► Real-time Bid Services integrate with third-party ad networks and exchanges to manage paid spend, enabling marketers to create a private ad/interaction network for its own affiliates.

- ► Business Planning and Optimization Services provide planning, program management, scenario planning, and business collaboration services to effectively manage the business.

Digital marketing optimization and customer experience management

Any meaningful marketing or merchandising solution must start with an understanding of customer behavior. Given the strength and growing popularity of online channels, it is important to understand both these elements:

- ► Quantitative elements of the customer experiences (such as, real-time sales data, traffic flow on the site, and conversion benchmarks)

- ► Qualitative elements (such as, user interface (UI) interactions, errors, and indications of "struggle")

The IBM Smarter Commerce marketing solutions provide digital analytics that are suitable for users of all levels of sophistication, as well as tools that dramatically simplify the management of digital channels and modeling. The modeling can be performed on both online and offline customer behavior in order to understand what impacts customer demand. The Smarter Commerce solutions for marketing include the following solutions:

- ► IBM Digital Analytics

  IBM Digital Analytics fuels digital marketing by providing both historical and real-time KPIs such as, sales, number of unique visitors, number of orders, average order value, and page views. These KPIs are tracked for the client enterprise and benchmarked against similar enterprises (peers and competitors) in a vertical or sub-vertical industry/market. Benchmarks can be defined for multiple time periods, easily compared period to period, and updated in virtually real time with intra-day updates.

  Digitally determined customer segments can be published directly into IBM Campaign. This approach facilitates cross channel marketing without the need for harmonizing disparate data sources. For example, customers who exhibit unhappiness or who are an attrition risk based on analysis of their online behavior can be given special treatment or promotions when they contact customer support.

- ► IBM Digital Data Exchange (DDX)

  With the growth of tools for digital marketers comes the challenge of managing multiple technology providers. IBM Digital Data Exchange (DDX) enables a large and growing list of certified partners to participate in a streamlined tag management system and includes distribution of real-time digital behavioral data. This *gold tag* approach dramatically improves the user experience because pages are not overpowered by data collection tags.

Along with these important quantitative digital analytics, further insight can be gained by examining more qualitative elements of the digital experience. For example, an enterprise

realizes that conversion rates are down and that some people are not entering a specific field (address) on the application view. This situation could indicate that customers are struggling (having difficulty completing a task) when using the website. Some customers might continue to try to use the website and succeed. Other customers might become frustrated and try another channel (such as a call center). In the worst case, customers completely give up and move their business to a competitor.

With IBM Customer Experience Optimization tools, enterprises can identify and remedy any struggle in customer digital experiences:

► The IBM Tealeaf® CX Platform captures and manages visitor interactions on a website. It provides extensive visibility into customers' online experiences and insight into customer behaviors within web browsers.

► IBM Tealeaf cxImpact transforms the customer experience data into searchable and visually replayable sessions, showing each action that was taken in real time. Customer-experienced obstacles such as error messages, are easily identified and summarized.

► With the addition of IBM Tealeaf cxOverstat, enterprises can leverage leading visualization techniques to identify *hotspots* and rapidly resolve issues by redesigning or fixing web content. A full suite of tools (such as Link Analytics, Form Field Analytics, Click Heat maps, and the Attention Map) summarize the experience of all customers with actionable insights.

Customer experience optimization is as much about service as it is about marketing. For more details, go to the section "The service domain" on page 18.

With respect to understanding both online and offline customer behavior, IBM solutions provide both detailed predictive models of customer demand and techniques for segmenting customers. This understanding is based on both shopping behavior and shopper characteristics (including perceived needs, demographics, and geography). For many clients it is possible to link online and offline personas through loyalty cards/programs, email addresses, and other identifiers. Although not mandatory to get started, cross channel insights are invaluable in both marketing and merchandising strategy for customer segments and individuals.

Marketing capabilities

In order to target customers with the right message at the right time, extensive cross channel marketing optimization capabilities are needed. The IBM capabilities for cross channel marketing and marketing performance optimization enable full management of campaigns including:

► Definition of campaign building blocks (including audiences, segments, offers, treatments, and exclusion rules)

► Execution of the campaign

► Understanding how to attribute response to the various stimuli

► Preferences of individuals can also be tracked and implemented

The following IBM solutions help streamline marketing processes and improve marketing management:

► IBM Marketing Operations

IBM Marketing Operations supports cross-channel marketing by providing marketing resource management, which includes visibility into marketing expenses, budgets,

forecasts, and resources. It also supports the management of digital assets and a comprehensive marketing calendar. With these collaborative tools, marketers can easily share project specifications and production data with their colleagues and partners.

► IBM Campaign

IBM Campaign enables customer relationship marketers to engage customers in a dialogue across channels and throughout the lifecycle of the relationship. Campaign acts as the outbound command center, not only managing multi-wave and cross-channel campaigns but also acting as a centralized repository for many of the key campaign elements such as offers and customer segments. This approach ensures that new campaigns can be quickly derived from proven building blocks. Supporting a full range of analytical techniques from simple rules to sophisticated scoring algorithms, Campaign ultimately assigns offers to customers and generates lists to various communication channels.

► IBM Interact

IBM Interact provides real-time personalization of interaction with customers for inbound channel interactions (such as website, call center, kiosk, and point-of-sale). Taking full advantage of the dynamic data foundation, Interact synthesizes both historical information as well as real-time updates (for example, customer behavior on a website) to determine the next best action, whether it is an offer, a message, or an alert about something the customer cares about.

► IBM Marketing Center

For those wanting a multi-purpose marketing solution that is specific to the digital channel, IBM Marketing Center offers a cloud-based solution that combines digital analytics with real-time marketing execution. Users can explore customer behavior by examining their interaction history across web and mobile sites. Users can also define customer segments and then design personalized communications using a drag-and-drop editor. These communications can be easily saved and reused or updated with additional personalization. The Campaign Calendar shows all campaigns in flight. For those clients leveraging IBM Digital Analytics, no additional tagging is needed to get started, minimizing reliance on IT resources.

► IBM Product Recommendations

By synthesizing each customer's shopping interests and similar behaviors across customers, IBM Product Recommendations provides relevant recommendations in real time. This activity is accomplished by analyzing session details such as search terms, browsing history, and cart content. Product Recommendation logic can be tailored based on a variety of goals (including inventory, revenue, and margin) and is further configured with rules based on stock position, margin, and seasonality.

Merchandising capabilities

For most enterprises, merchandising consists of these actions:

► Deciding what products to carry in their assortment

► Determining how to set prices for those products on an everyday basis, for promotional events

► Determining when to clear products out of the assortment

Assortment analytics consist of determining product assortments that meet the varied and localized needs of their customer base. IBM Assortment Optimization leverages advanced data mining and modeling techniques to quantify "transferable demand" and the incrementality of each item relative to other similar items. Assortments can be created for

each cluster or planogram size and can also be tailored to specific customer segments. Figure 4 shows an example of Assortment Optimization and recommends both products to add and delete from the assortment, based on evaluation of the entire category.
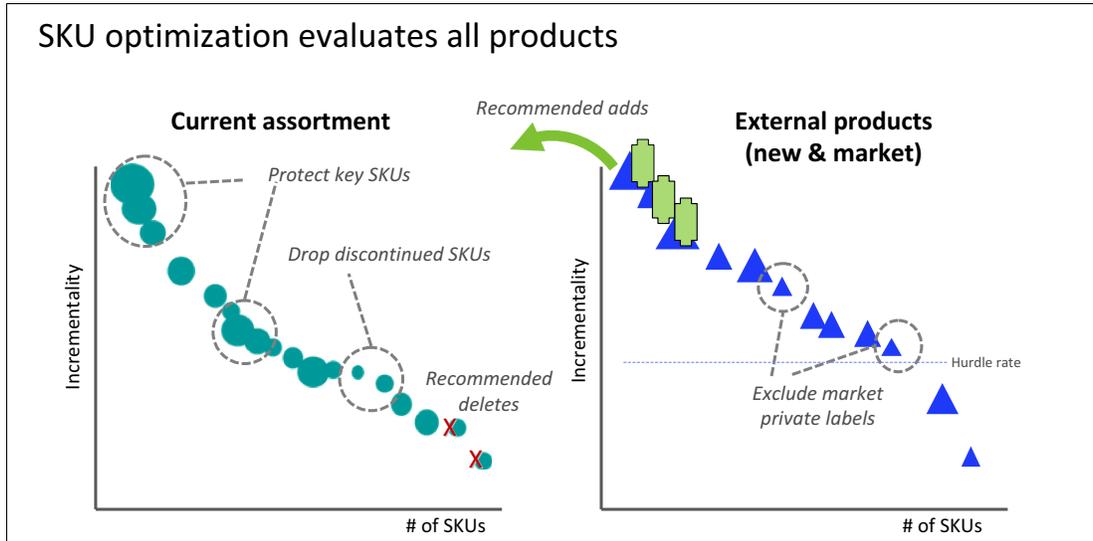

Figure 4   Assortment Optimization example

Setting and managing the assortment is a very collaborative activity, and Assortment Optimization is designed with collaboration in mind. The cloud-based delivery model leverages a retailer-fed hub, which includes features and security to support sharing of information across retailers, manufacturers, and distributors.

Strategic pricing requires an understanding of customer preferences and sensitivities as well as an understanding of product lifecycles. The IBM DemandTec® solutions for pricing help retailers set everyday prices, promotional prices, and clearance prices across channels, taking into account various factors. These factors include individual price elasticities and cross-elasticities with related products, competitor prices, seasonality, holidays, weather, and inventory. To provide this understanding, models of customer demand are estimated at various levels of granularity to support pricing for a variety of channels, zones, and customer segments.

IBM DemandTec Price Management and IBM DemandTec Price Optimization enable retailers to implement a wide range of base pricing strategies. Simple rules are supported, for example rules-based pricing with rules for cost changes and competitors. Also included are more complex scenarios, such as optimizing gross margin while adhering to a hierarchy of potentially conflicting business rules.

For most retailers, a significant amount of time is spent in planning and executing promotions, often in collaboration with their vendor partners. The IBM End-to-End Promotion Management solutions help reduce complexity by spanning the entire promotion process:

► IBM DemandTec Deal Management

  IBM DemandTec Deal Management automates and streamlines the trade promotion negotiation between retailers and vendors, accelerating the reconciliation and audit process with an electronic document archive

► IBM DemandTec Promotion Planning

  IBM DemandTec Promotion Planning provides an interface for defining promotions and a centralized repository of all promotional offers. IBM DemandTec Promotion Optimization enables forecasting of outcomes for events and entire categories of products.

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- ► IBM DemandTec Promotion Execution

  IBM DemandTec Promotion Execution enables merchants, buyers, marketers, and ad planners to tie optimized promotional offers to concrete vehicles. These concrete vehicles include print media (including ad circulars, in-store displays, other signage), and digital media (such as eCommerce sites, email, digital circulars, and mobile media).

End of season markdowns are a necessary evil and potentially a tremendous opportunity for retailers. Analytics are critical to maximizing profitability while meeting on-hand inventory objectives through the season. IBM Markdown Optimization answers these questions:

- ► What should I markdown? And where?
- ► How much should I markdown by?
- ► When in the season should I start markdowns?

The engine behind Markdown Optimization provides sophisticated pattern recognition and predictive modeling techniques, particular to forecast sales for products that have never been marked down before. Plans can be localized all the way down to the store or customer segment level and enable specification of the maximum number and depth of price changes.

Performance optimization and measurement

An essential part of marketing and merchandising is learning. IBM provides a variety of tools for quantifying the impact of marketing and merchandising campaigns. Some examples of measurement tools are as follows:

- ► IBM Attribution Modeler

  IBM Attribution Modeler employs various statistical techniques against a marketing interaction history to attribute credit to various stimuli, with a variety of user-driven choices in the approach and time period employed. Popular traditional approaches such as, First Touch, Last Touch, and Average are available. Users can also employ a more sophisticated technique, Statistically Inferred Real-time Attribution (SIRA). With SIRA, the timeline of marketing stimuli and responses are analyzed using response likelihood models.

- ► IBM Digital Analytics

  The A/B Testing functionality within the IBM Digital Analytics offering provides the ability to run split tests with various adjustments and determine the impact of various settings on revenues, conversion, and other business metrics.

- ► IBM Digital Analytics Benchmark

  The IBM Digital Analytics Benchmark delivers aggregated and anonymous competitive data for specific industries. These benchmarks allow viewing of intra-day information and toggling between multiple time periods (days, weeks, months, quarters), helping enterprises understand where they stand versus their competitive set with respect to several key performance indicators such as session conversion, transaction metrics, and paid search metrics.

- ► IBM Marketing Performance Reports

  IBM Marketing Performance Reports combine attribution response with campaign costs to help identify relative performance and return on investment (ROI) for cross-channel campaigns. Marketers can view a green/red dashboard showing which marketing channels appear to be driving ROI and which ones are not. Trend analysis provides a view over time of campaign performance by channel, offer, and campaign.

- ► IBM DemandTec Base Price Performance

IBM DemandTec Base Price Performance analysis helps answer how much improvement is attributable to the implementing of optimized base prices. This model-based methodology helps answer the question, "What is the difference in profit and revenue between how my optimized prices performed and what would have happened if I had continued with my original pricing strategy?". This activity is accomplished by adjusting for current factors such as trends, merchandising plans, and seasonality.

The sell domain

Changes are happening in the marketplace at an ever accelerating pace. Analytic capabilities enable enterprises to transform tactical execution platforms into strategic environments by optimizing efficiencies, improving cost performance, and increasing customer satisfaction. Your enterprise cannot simply rely on after-the-fact reports to keep pace with daily changes. Analytics can automate decisions and improve efficiency by applying these technologies to processes and using them to continuously improve business processes.

Frequently, enterprises are setting omni-channel as their new goal. Omni-channel increases the complexity and demands that are placed upon the overall enterprise commerce engine. IBM WebSphere® Commerce B2C and Omni-Channel Retailing solutions' capabilities help the enterprise manage these new complexities, allowing the organization to put their customer at the center of the operation. These solutions help improve the overall responsiveness of the organization by orchestrating order capture and fulfillment across your extended enterprise.

Using analytics to make execution strategic

In today's customer-centric omni-channel business arena, the customer is everything. This means delighting customers at every opportunity, without increasing costs. Until recently, analytics has been disconnected from the day-to-day operations that manage these customer interactions. Enterprise applications were designed to produce volumes of reports that provide value. However, these reports do not help make real-time intelligent decisions around capturing and fulfilling orders.

The Smarter Commerce solutions for the sell domain provide capabilities such as:

► Omni-channel commerce

– Customer engagement and conversion
– Central Order Hub
– Fulfillment

► Omni-channel supply network

– Inventory management
– Distribution and fulfillment
– Supplier collaboration
– Order promising and execution

► Improving performance with analytics

– Optimized inventory plans
– Distribution and fulfillment
– Sourcing and supplier collaboration
– Forecasting

Applying analytics to the sell domain provides optimized results. Examples of optimized results are illustrated in Table 1 on page 16.

Table 1   Examples of optimized results

Optimized results	Descriptions	Benefits
Workforce planning	Determine the optimum number and type of skills needed to achieve customer service levels	Workforce cost reduction
Store layout optimization	Determine the best layout for displaying products in the store	Increased sales
Assortment planning and optimization	Assortment plans that consider key characteristics and attributes	► Reduced inventory carrying costs ► Improved product availability and presentation
Shelf space optimization	Determine what should be in a store, how much, and where it should be placed	Improved sales
Inventory scheduling	Determine the right level of inventory across the entire network to maximize the service levels and reduce inventory safety stock	Inventory carrying cost reduction

Figure 5 shows applying analytics to the sell domain to transform tactical operations into optimized results.
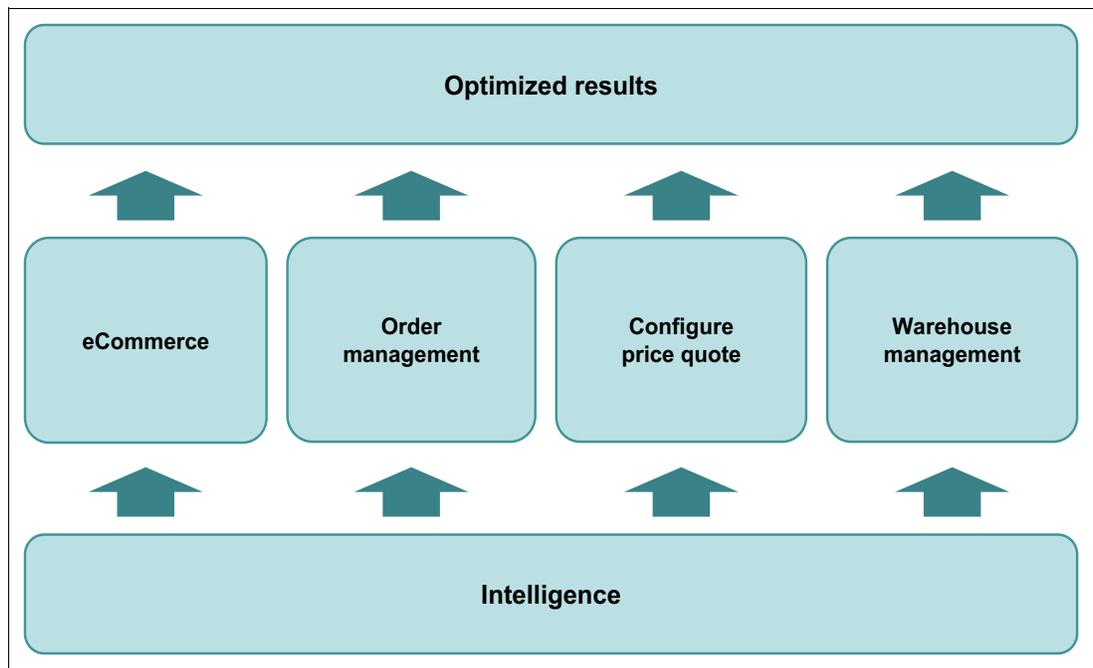

Figure 5   Analytics within the sell domain

The sell domain is supported by these IBM products: IBM WebSphere Commerce, IBM Sterling Order Management, IBM Sterling Configure, Price, Quote, and IBM Sterling Warehouse Management.

Execution and intelligence

The IBM Smarter Commerce solutions for the sell domain provide solutions for omni-channel commerce, which addresses both execution and intelligence. Any enterprise trying to accomplish true omni-channel customer interaction has to consider order capture and order orchestration as the foundation. Analytics provides the intelligence to delight the customer and improve efficiencies. With the IBM service-oriented architecture (SOA)-based framework, integration with other Smarter Commerce solutions is easy.

E-commerce

E-commerce is a key component of the IBM omni-channel solution. IBM WebSphere Commerce provides a single, integrated platform to support the many ways that a company does business and to meet the challenges that are unique to cross-channel e-commerce. It provides differentiated capabilities to support the business goals of e-commerce and to enable the best practices of successful e-commerce business models.

Order management

IBM Sterling Order Management serves as the central order hub, providing another key component in any omni-channel strategy. With the ability to easily integrate with the other components within Smarter Commerce solutions, all orders flow through order management, allowing everyone within the enterprise to see all aspects of the end-to-end order process. Sterling Order Management easily integrates with other IBM components and existing technologies—leveraging its service-oriented architecture and built-in services definition frame-work, creating the central order hub.

Sterling Order Management provides omni-channel order-management capabilities that manage orders across many disparate systems, provide a global view of all inventories across the entire supply chain, and enable changes to business processes in real time.

Order management includes key activities such as sourcing and delivery, and service scheduling:

- ► Sourcing

   IBM Sterling Order Management combines omni-channel order aggregation and global visibility to inventory, delivery, and service availability, enabling the complete order promise and providing the ability to order from anywhere and fulfill from anywhere. Order promise covers available-to-promise, available-to-deliver, and available-to-service. With optimized, rules-based order promising and scheduling, inventory and resources are appropriately allocated from any internal or external source to meet the conditions of the order and the requirements of your business. It is the first step to optimizing fulfillment processes based on rules that are tied to your company's performance objectives.

- ► Delivery and service scheduling

   IBM Sterling Order Management provides the ability to dynamically schedule product deliveries and associated services at the time of sale, based on the order conditions and resource availability. The monitoring of both the physical movement of products and the movement of service providers ensures that customer expectations are met.

Configure price quote

The IBM Sterling Configure, Price, Quote solution automates every step of the configure, price, and quote process. This solution helps organizations generate more revenue, reduce incorrect sales orders, lower the cost of sales, and create a positive buying experience for customers and partners. The buying experience can be across all sales channels, including web, call center, store, and field sales.

This solution transforms and automates the most challenging multichannel selling processes, the configuration of complex products, services, and bundles while hiding this complexity from users. It allows business users to easily manage product and service configuration and pricing rules, and guides prospects, customers, business partners, sales, and call center representatives in selecting and validating products and services that are based on specific needs.

It guides users through the process of finding, configuring, and selecting complex products and services. It also supports the creation, change, and communication of product pricing data and the automated quote approval process from creation to negotiation.

Warehouse management

The IBM Sterling Warehouse Management System is a complete solution for managing your warehouse operations. It can manage a single warehouse or provide a central point of control that spans multiple facilities of varying types. It easily integrates with your existing infrastructure and material-handling equipment and supports new technologies such as, radio frequency identification (RFID). It brings operational discipline to complex warehouse operations by providing a planning layer, a real-time execution layer, and an operational monitoring tool to ensure optimal utilization of resources.

Optimized results

Business intelligence (BI) reporting and dashboards provide users with answers by putting actionable information into their hands through flexible and secure dashboard options that can be created for every member of the organization. This reporting capability uses a web-based BI workspace for users to easily assemble, personalize, and interact with their own dashboard.

Decision making is improved by delivering comprehensive views of all relevant information directly into the BI workspace.

Reporting is often a starting point for BI as companies look to mature the way that they deliver and receive information. Business intelligence reporting software fits the reporting needs of all users in any organization:

- ► Business users who need to create their own ad-hoc queries
- ► Professional report authors that are responsible for designing one-to-many reports
- ► IT administrators who must deploy and manage the application in a centralized, streamlined manner

The service domain

Customers are more likely than ever before to jump to a different brand if they feel they are not getting the proper service. The world of commerce today is hyper competitive and customers use tools like social media and search engines to research buying decisions. These buying decisions often take more than price into consideration. Customers can look at a company's ability to provide service after the sale as key criteria for doing business with them. Likewise, market leaders realize the opportunity does not end at the time the order is captured and that service is a key part of keeping customers happy.

IBM Smarter Commerce solutions and IBM Business Analytics support service in various ways:

- ► Providing continuous real-time assessment to identify immediate problems and opportunities to provide better service

- ► Helping capture and analyze large volumes of unstructured content to gain relevant and actionable customer insight, both improving products and service

- ► Performing statistical analysis and modeling of operations data to reduce costs and improve service levels

These three areas are discussed in more detail in the following sections.

Real-time monitoring of service metrics

In every business, there are time sensitive service level agreements (SLAs) and KPIs that impact customer satisfaction and operating costs. Knowing the enterprise is meeting customer service delivery expectations immediately can make the difference in keeping hard won customers. Knowing if today's operational costs are consistent with projections means that the enterprise can act quickly rather than waiting for weekly, monthly, or quarterly reports.

IBM Cognos Real-time Monitoring (RTM) provides dashboards, which capture and display current business metrics from message traffic. This solution provides insight into what is happening with service delivery right now so that action can be taken immediately. Cognos Real-time Monitoring allows the enterprise to configure thresholds, which can send real-time alerts to the appropriate business stakeholders when metrics fall outside established parameters. These alerts enable the stakeholders to take action, whenever it is appropriate, day or night.

Cognos Real-time Monitoring provides the stakeholders with the ability to look at detail by using the dashboard to determine the root causes of the alert without waiting for technical staff to run custom reports and queries. With this additional insight, they can take action to achieve real and immediate business benefits. These immediate alerts and associated insight can accelerate response and reduce impact, avoiding wide-spread customer satisfaction problems, helping the enterprise achieve significant savings and increase revenue potential.

The enterprise can also use this capability as a sales tool. Sales can increase customer loyalty by demonstrating an enterprise's ability to monitor, in real time, the service delivery metrics that impact their business. The enterprise also has the ability to proactively notify customers when there is a service delivery issue before the customer identifies it themselves. This capability can be a competitive advantage in today's hyper-competitive markets.

Improving service with unstructured data analytics

It has become more difficult to differentiate brands that are based on product attributes. Driving sustainable growth requires providing a superior service experience. Social media sites, blog posts, industry forums, product review and rating sites, and discussion groups all contain consumer sentiment, both good and bad. Even with an army of social media savvy personnel, it is not practical to manually search and analyze all of this unstructured data regularly.

IBM provides products that help the enterprise perform analysis of structured and unstructured data:

► IBM Cognos Consumer Insight

  IBM Cognos Consumer Insight (Figure 6 on page 20) provides the ability to look across diverse channels of customer feedback and perform analytics to determine the customer's perception of enterprise service delivery quality. In addition, Cognos Consumer Insight allows navigation and analysis across multiple dimensions such as geography, demographics, social media types (including influencers, recommenders, and detractors), users, and prospective users. This capability provides a more detailed view of business drivers such as customer sentiment, customer care, and corporate reputation.
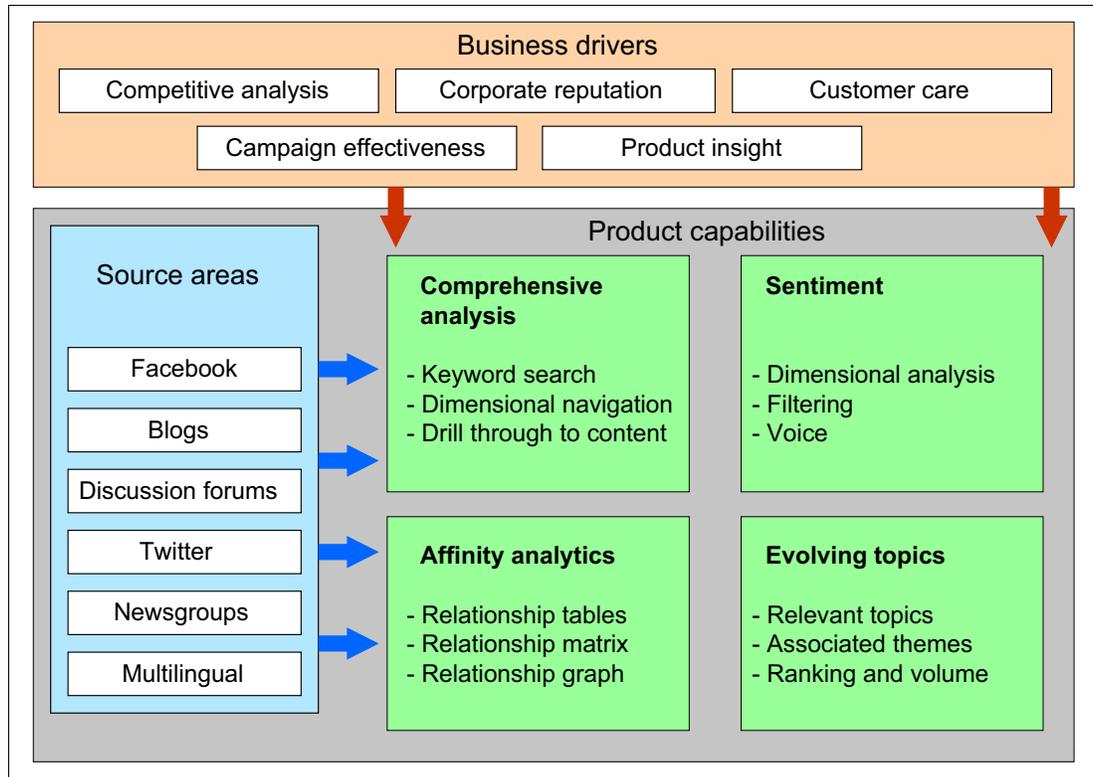
Figure 6   IBM Cognos Consumer Insight high-level architecture

► IBM SPSS® Data Collection

  IBM SPSS Data Collection supports the entire survey research lifecycle so that you can capture valuable customer feedback through various sources. Gathering information from social media is important. Reaching out proactively to determine customer sentiment is also a critical element of getting a complete picture of how well the enterprise is providing service to its customers. Creating, delivering, gathering, and analyzing survey data quickly and efficiently provides additional insight to decision makers. This insight can result in additional revenue opportunities, better customer support, and improved customer loyalty. The collected survey data can be analyzed by IBM SPSS Statistics, IBM SPSS Modeler, and IBM Cognos software, enabling the enterprise to understand what their customers are thinking.

► IBM Tealeaf solutions

  The IBM Tealeaf solutions allow business and technical stakeholders to view mobile or desktop web sites through the eyes of each individual customer. These solutions enable the analysis of customer sentiment and survey data. For example, if a customer is dissatisfied with website changes, the stakeholders need the ability to see what customers are seeing exactly as they are seeing it. This insight enables the stakeholder to optimize online channels and deliver quick resolution of problems that could otherwise erode customer satisfaction and online revenues. This optimization can reduce contact center costs by reducing the number of calls from customers who are frustrated by the online experience. Improving the mobile customer experience can increase the adoption of the enterprise's mobile applications, leading to increased revenue and profitability.

  IBM Tealeaf solutions enable more proactive customer experience management as defined in Table 2 on page 21. Businesses start with reactive problem resolution where they investigate and monitor issues as they are reported. IBM Tealeaf solutions enable proactive monitoring where changes in metrics (for example, conversion rate) drive

identification and monitoring of customer struggle metrics. These actions lead to improvements, which can be measured by the business impact. The most advanced businesses look at customer experience across multiple channels and perform activities such as, multivariate testing to determine customer preferences. This level of optimization can prioritize resources based on business impact and improvements to customer satisfaction.

Table 2   Customer experience maturity

Activity	Reactive problem resolution	Proactive monitoring	Multi-channel (Advanced optimization)
Prioritization and communication	Impact analysis (count of issues)	Business impact analysis (financial estimate)	Prioritize resources based on business impact
Customer listening	Investigate issues from contact center (problem resolution)	Integrate with Voice of the Customer solutions and other site feedback	Integrate with social media feedback
Monitoring metrics	Monitor and alert on known issues	► Investigate changes in conversion rates ► Identify and monitor customer struggle metrics ► Conduct fraud forensics	► Investigate results of multivariate testing ► Integrate with other data sets (WA, BI, DW)
Customer recovery and cross-selling	Determine impacted customers for recovery		► Implement remarketing leveraging real-time data ► Cross-sell/up-sell to "abandoned" customers
Customer immersion		Conduct "movie nights"	Integrate with usability analysis
Contact center optimization			► Improve customer satisfaction and first call resolution ► Conduct cross-channel analysis (phone/web)

Analytics for service performance optimization

According to the paper *Analytics: The new path to value How the smartest organizations are embedding analytics to transform insights into action*[1] by the IBM Institute for Business Value (in collaboration with the MIT Sloan Management Review), despite popular opinion, the biggest hurdle to adopting analytics is not mining the right data. Rather, according to 40% of study participants, it is grasping how to use analytics to improve their business.

Enterprises have massive amounts of data about their services organization. Some of the types of services-related data captured in various business organizations include:

► Customer services data such as, support case data (processing and handling data), case processing data, and service expertise that is required to resolve customer issues

 – Customer data such as previous customers and their buying behavior, demographics and other profile data, channels that each customer uses, and customer attitude

► Product information such as product quality, new products, and product changes

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[1] IBM Corporation, Oct. 2010, http://public.dhe.ibm.com/common/ssi/ecm/en/gbe03371usen/GBE03371USEN.PDF

► Other related data such as financial market movements, weather reports, political events, and commodity and currency prices

Each business organization that interacts with customers may be performing analysis of the data in their domain to provide a level of insight into the business. When the data is analyzed across organizations, the data can deliver even more valuable insights that are related to service offerings available to customers. Figure 7 shows how the quality of decisions improves as a broader base of data is analyzed.
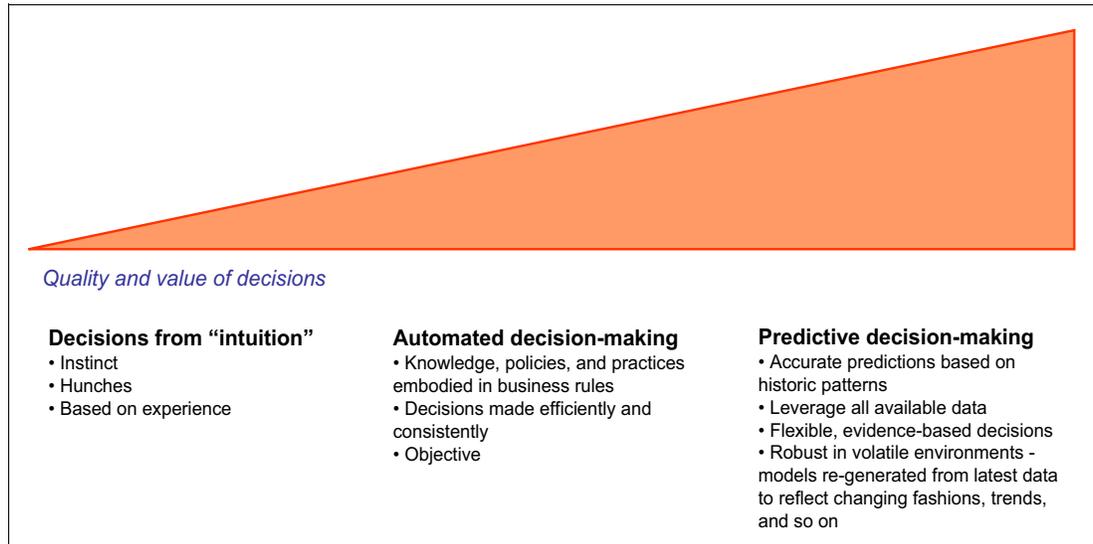

Quality and value of decisions

Decisions from "intuition"
• Instinct
• Hunches
• Based on experience

Automated decision-making
• Knowledge, policies, and practices embodied in business rules
• Decisions made efficiently and consistently
• Objective

Predictive decision-making
• Accurate predictions based on historic patterns
• Leverage all available data
• Flexible, evidence-based decisions
• Robust in volatile environments - models re-generated from latest data to reflect changing fashions, trends, and so on

Figure 7   Improving quality and value of decisions

Most forecasting and other types of business analytics for the corporate services business is based on historical data at best and often on prior experience (shown in Figure 7). Often, future outcomes are expected to mirror what has happened in the past. In the dynamic world that we live in today, conditions do not remain static and do not mirror the past in any meaningful way. This situation makes models that can take into account new and changing conditions absolutely necessary to achieve the value of predictive decision making.

► IBM SPSS Modeler

IBM SPSS Modeler uses advanced predictive analytics on cross silo historical data to find patterns and trends in structured and unstructured data. These patterns and trends can be used to predict outcomes that are valuable to making good decisions. These models can explain what factors influence the predicted outcomes so that the enterprise can better understand how to leverage these opportunities and mitigate risks. SPSS Modeler has a long track record in developing a complete view of the customer through all stages of their lifecycle including post-sale service.

► IBM Digital Analytics

In today's multi-channel world, customers interact through many channels when doing business with a company. IBM Digital Analytics (a leading provider of web analytics and marketing optimization solutions) can analyze unstructured text (such as customer service emails or customer call center transcripts) and social data (including surveys and social media mining).

The resulting data (from IBM Digital Analytics processing) in conjunction with sales and product lifecycle management data can be input into SPSS Modeler. Analysts (using SPSS Modeler) can model the data and predict customer support needs. To build even more sophisticated customer service models, analysts can incorporate various types of data including:

- ► Delivery data (such as delivery date accuracy, delivery speed, freight claims, and delivery costs)
- ► Return data (such as return reasons and returns frequency)
- ► Customer relationship management data (such as contact frequency and contact type)

Summary

This Redguide described the key challenges that are facing businesses engaged in commerce. It provided information on Smarter Commerce solutions combined with analytics solutions that provide the technology and business value to enable your line-of-business staff to develop closer relationships with your customers based on their interests, shopping behaviors, and buying patterns. For example, analysis of business and customer data generates customer insights. These insights can be turned into customized interactions with the customer such as presenting the right products, content, and offers through whatever touchpoints they choose. This approach results in increased cart size, conversion rates, and revenue.

Enjoying the benefits of a world-class supply chain is possible by leveraging these customer insights that are generated by the Smarter Commerce solutions and associated analytic solutions. These solutions enable complete inventory visibility, improved supply, partner communication and collaboration, and increased efficiencies in procurement and contract management processes. This approach is not only about the cost savings that naturally come from these optimizations, it is about the improved satisfaction across the entire value chain from the order, to fulfillment, to invoicing, and post-sales service.

Putting the customer at the center of your business seems obvious. An adaptive, dynamic, customer-centric business leads to improved overall customer satisfaction, loyalty, and repeat business. It often enables growth into new markets, anticipates and responds to dynamic market conditions, and reshapes itself in anticipation of what is going to be needed next.

IBM, along with its rich ecosystem of business partners, has the skills and expertise to help you rapidly realize the full value from these solutions. IBM software experts can help you get the most from your Smarter Commerce and business analytics solutions with consulting, training, technical support, and services. IBM Global Business Services® complements these technical capabilities by providing expert business strategy and vision development, business case creation, and links strategy to execution in ways that build continuous improvement and a foundation for ongoing innovation.

Other resources for more information

This section provides pointers to additional information about key products discussed in the guide.

► IBM Smarter Commerce

  http://www.ibm.com/smarterplanet/us/en/smarter_commerce/overview

► IBM Business Analytics

  http://www.ibm.com/software/products/us/en/category/SWQ00

► IBM Emptoris Strategic Supply Management solutions

  http://www.ibm.com/software/procurement-solutions/emptoris

► IBM Enterprise Marketing Management

  http://www.ibm.com/software/products/us/en/category/SWX00

► Cross-channel marketing optimization

  http://www.ibm.com/software/products/us/en/category/SWX60

► Cross-channel campaigns

  http://www.ibm.com/software/marketing-solutions/cross-channel-campaign-management

► IBM DemandTec solutions

  http://www.ibm.com/software/marketing-solutions/demandtec

► IBM WebSphere Commerce

  http://www.ibm.com/software/products/us/en/websphere-commerce

► IBM Sterling Order Management

  http://www.ibm.com/software/products/us/en/subcategory/SWH20

► IBM Sterling Configure, Price, Quote

  http://www.ibm.com/software/products/us/en/configure-price-quote

► IBM Sterling Warehouse Management System

  http://www.ibm.com/software/products/us/en/warehouse-management

► IBM Cognos Real-time Monitoring

  http://www.ibm.com/software/products/us/en/cognos-real-time-monitoring

► IBM SPSS Data Collection

  http://www.ibm.com/software/analytics/spss/products/data-collection

► IBM SPSS Modeler

  http://www.ibm.com/software/analytics/spss/products/modeler

► IBM Digital Analytics

  http://www.ibm.com/software/products/us/en/digital-analytics

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