ChainSys

Overview of

Enterprise Data Analytics

dataZap™ Whitepaper

Summary

Enterprise Data Analytics allows an organization to analyze and process data in a meaningful way. In today's competitive environment, businesses recognize the need to realize the full potential of using their Big Data to better serve existing customers and gain market share, which has propelled organizations to start looking at Cloud based data analytics solutions.

This paper provides an overview of the power of Data Analytics and how modern concepts of data visualization can serve as a starting point for data reporting giving businesses the ability to aggregate information from disparate systems into a usable format, which can be utilized for improved decision making. This paper also gives an overview into deeper concepts of Data Analytics such as Enterprise Data Management, Predictive Analytics and IoT.

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Sid is an experienced Digital Transformation leader driving innovation for enterprise clients. As a data management advisor across multiple market segments in the Oil & Gas, Manufacturing and High-Tech industries, he brings strategic solutions for their Data journey.

Data Visualization & Reporting:

Enterprise data is complex and often comprises multiple geographies, business units, and market segments. It is difficult to comprehend the data, especially when it spans across the enterprise in a di–jointed fashion. Data Visualization provides a visual communication tool for analytics that takes complex data and creates a visual representation of data in a graphical or pictorial format enabling users to see the data based on conditional logic and filtering criteria. Representing data in a visual format is the first step for data analytics and can provide a way to see and understand trends and patterns by utilizing visual elements such as graphs, charts, maps, etc.

Data Reporting using visualization organizes data into meaningful summaries, measuring core metrics and reporting these to provide information at a basic level.

Data Profiling

Data Profiling is the process of assessing the condition of data for various purposes such as determining the accuracy, completeness, and existence of duplicate records and to analyze the need for data cleansing. It uses algorithms to view trends and expose inconsistencies and reveals relationships in data to help mandate business rules and data maintenance methodologies. Additionally, it improves the success of master data management, data governance, and business intelligence.

Profiling can be performed on structured data such as data typically stored in relational databases within ERP environments as well as for unstructured data, which does not have a pre-defined data structure. Examples of unstructured data are: enterprise content such as business documents (contracts, memos), e-mails, text messages, input from social media, etc.

Structured data can be profiled to assure that the data is consistent and formatted correctly:

- Identify pattern matching

- Use of minimum and maximum values, means, medians, modes,

  standard deviation

- Easily defined in searchable mode

It is more challenging to search and analyze unstructured data to find patterns such as in social media postings, emails etc. Information in unstructured data is often more important to organizations than the information contained in structuredquantitative data, especially as it relates to customer input, reviews, etc. Typical statistics based search algorithms, as the ones used for structured data, do not work for unstructured data since the content changes from user-to-user, as in text messages. Unstructured data requires non-mathematical data analysis.

🗎 Enterprise Data Management (EDM)

EDM provides an organization the ability to aggregate data from multiple disparate systems into a unified and consistent data format, which is in a cleansed state. This cleansed data can then be used for Reporting and Analysis across the entire enterprise.

The first step in the EDM process entails the extraction of data from the source systems under consideration, typically into a Data Lake where available tools are utilized to cleanse the data. The next step is the normalization of data to create a Common Data Model, assuring that the aggregated data set has a consistent data structure regardless of the existence of varying data structures in the source systems. This aggregated data can then be grouped, utilizing available tools, by specific enterprise functions such as 'Spend', 'Suppliers', and 'Customers', etc. The value of such data grouping is outlined below.

Customer 360:

This is an important area that directly impacts profitability. Customer 360 provides a focused approach into the following:

- Holistic customer profile record keeping and maintenance utilizing MDM tools

- Highlights transactional layer and differentiates profitable vs less profitable customers

- Outlines Customer Relationships by functions such as Sales Team, Support Team, Project Teams, etc., giving a complete view of the various interactions with customers to provide a consolidated approach for business-critical information sharing

- Finds what is important to the customer

- Takes data from files, documents, emails, web logs, transaction logs, social posts to formulate growth strategies

- Improves engagement with customers

Customer 360 can be implemented with tools available in the market and is a must-have to not only keep the customer records clean but also enable effective decision making that leads to growth.

Product 360:

An organization's success depends on how its Product information is managed within the organization, how its supply chain channels product information updates back to the organization, and how the product information is channeled to its customers. Product 360 ties these three areas to assure operational efficiency and growth. Key parameters are as follows:

- The center-piece of Product 360 is the maintenance of all relevant and cleansed product information as part of a master data management strategy
- Product data from various data sources is integrated with the MDM system
- Product data is cleansed and enriched as part of MDM with approval workflows integrated to assure governance
- New products can also be on-boarded through the MDM system
- A Supplier Self Service portal can be enabled to allow suppliers to provide product information updates. This information also goes through a workflow governance process before this new information is updated in the system
- The cleansed product information is channeled to customer touch-points such as mobile, point-of-sales, social media content etc.

Product 360 leads to market penetration and sales growth as well as customer satisfaction.

Supplier 360 & Spend Analytics:

An enterprise can streamline its supply chain and sourcing if it has a single source of trusted supplier data available for making business critical decisions.

Supplier 360 view helps:

- Streamline information management for buying, sourcing and supply chains
- Combine supplier details like transactions and audits into one dashboard
- Give an insight into the total supplier relationship, including sub suppliers, across the entire enterprise

Spend Analytics is a subset to Supplier 360, which:

- Helps gain visibility into the total supplier spend and assists supply chain teams negotiate better pricing and improved payment terms.

- Tracks procurement performance metrics

- Provides insights to changes in spending and costs

- Increases efficiency of spending by making data easier to visualize

Spend Analytics enables the enterprise to reduce spend and improve supplier negotiations based on actual data evaluation instead of relying on human intuition.

Another key area is performance measurement across the enterprise - identifying areas for improvement and rating supplier performance based on KPIs such as on-time delivery, product quality, etc. This data can serve to identify non-performing suppliers.

Additional features such as new supplier qualification with built-in workflow approval process help expedite supplier on-boarding. Also, supplier self service information management can be enabled. This helps the enterprise keep its supplier master data clean by enabling suppliers to keep their information updated.

Employee 360:

Employee 360 serves as an important assessment tool for gathering employee assessment from peers, subordinates, and supervisors to help build strong high-performance teams. Primary focus is on the following:

- Allows coworkers to give feedback on employee

- 360 because feedback comes from all directions in the organization, not only from the top-down but from the bottom-up as well

- Focuses on skills, interactions, contribution, work habits, and accountability

- Identifies employee strengths as well as areas for improvement

Predictive Analytics & Machine Learning

Predictive analytics is an advanced method of analytics that utilizes historical and new data to forecast future activity, and predict trends/behaviors based on innovative analytical queries, logistic regression statistical analysis, and automated machine learning algorithms.

Predictive analytics is rapidly growing in parallel with the growth of Big Data. As organizations aggregate large volumes of data in Hadoop clusters and other Big Data platforms, opportunities for data mining are becoming more rampant for predicting future scenarios.

This is an area that takes the EDM process to the next level and gives organizations an insight into predictive modeling for better decision making by embedding predictive data into its future planning. Key benefits are:

- Automates analytical model building using AI

- Allows faster analysis of bigger and more complex data

- Ability to transform decision making by modeling future business scenarios based on automated "what-if" scenarios. For example, adjust plant capacity based on previously unforeseen business needs.

- Realize tremendous cost savings by predicting future outcomes such as maintenance schedules, plant shut-downs, service intervals, etc.

Internet of Things (IoT)

Internet of things is a network of devices, equipment, appliances, machinery, vehicles etc., that are software and connectivity enabled. This allows them to connect, interact, and exchange data. Billions of physical devices are now connected to the internet and share/exchange data.

A small example is a lightbulb that can be turned on/off with an app. A complex example is a self-driving car that relies on complex data interactions with its environment using sensor technologies and multiple systems working in conjunction to help navigate through traffic.

As IoT gains traction, interesting use cases are emerging, which can help organizations stay competitive and create new business opportunities:

- Predictive maintenance based on using sensors, cameras, and data analytics to avoid costly down-time can potentially save organizations

  millions of dollars.

- Deployment of smart meters by utility companies to allow consumers to see energy consumption in real time and adjust usage. Additionally, utility companies can accurately predict forecast and streamline consumption.

- Connected vehicles for designing a robust self-driving vehicle network to avoid congestion and accidents.

- Tracking assets and monitoring positions to bring efficiency into supply chains by optimizing logistics and avoiding down-time.

IoT has the potential for enabling billions of devices to interact in real-time and revolutionize the world around us. The business case for organizations is compelling and will lead to innovation and growth.

Supported Endpoints (Partial)

Oracle Sales Cloud, Oracle Marketing Cloud, Oracle Engagement Cloud, Oracle CRM On Demand, SAP C/4HANA, SAP S/4HANA, SAP BW, SAP Concur, SAP SuccessFactors, Salesforce, Microsoft Dynamics 365, Workday, Infor Cloud, Procore, Planview Enterprise One	**Cloud Applications**
Oracle E-Business Suite, Oracle ERP Cloud, Oracle JD Edwards, Oracle PeopleSoft, SAP S/4HANA, SAP ECC, IBM Maximo, Workday, Microsoft Dynamics, Microsoft Dynamics GP, Microsoft Dynamics Nav, Microsoft Dynamics Ax, Smart ERP, Infor, BaaN, Mapics, BPICS	**Enterprise Applications**
Windchill PTC, Orale Agile PLM, Oracle PLM Cloud, Teamcenter, SAP PLM, SAP Hybris, SAP C/4HANA, Enovia, Proficy, Honeywell OptiVision, Salesforce Sales, Salesforce Marketing, Salesforce CPQ, Salesforce Service, Oracle Engagement Cloud, Oracle Sales Cloud, Oracle CPQ Cloud, Oracle Service Cloud, Oracle Marketing Cloud, Microsoft Dynamics CRM	**PLM, MES & CRM**
Oracle HCM Cloud, SAP SuccessFactors, Workday, ICON, SAP APO and IBP, Oracle Taleo, Oracle Demantra, Oracle ASCP, Steelwedge	**HCM & Supply Chain Planning**
Oracle Primavera, Oracle Unifier, SAP PM, Procore, Ecosys, Oracle EAM Cloud, Oracle Maintenance Cloud, JD Edwards EAM, IBM Maximo	**Project Management & EAM**
OneDrive, Box, SharePoint, File Transfer Protocol (FTP), Oracle Webcenter, Amazon S3	**Enterprise Storage Systems**
HIVE, Apache Impala, Apache Hbase, Snowflake, mongoDB, Elasticsearch, SAP HANA, Hadoop, Teradata, Oracle Database, Redshift, BigQuery	**Big Data**
mangoDB, Solr, CouchDB, Elasticsearch	**No SQL Databases**
PostgreSQL, Oracle Database, SAP HANA, SYBASE, DB2, SQL Server, MySQL, memsql	**Databases**
IBM MQ, Active MQ	**Message Broker**
Java, .Net, Oracle PaaS, Force.com, IBM, ChainSys Platform	**Development Platform**

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