BI – Today and Tomorrow

BI has been one of the most important business initiatives providing positive impact on the health of organizations. Usually, questions are raised on the maturity of the BI initiative and the technology backbone to yield business benefits. And after getting the desired benefits from the BI initiative, the obvious question has been "What next?".

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Kamlesh Mhashilkar heads the Business Intelligence and Performance Management (BIPM) Practice under Enterprise Solutions and Technology Excellence Group at Tata Consultancy Services Ltd. with the prime focus on strengthening solution delivery capability through architectural excellence, design & delivery discipline, and championing technology applicability. Along with the thrust on bringing industry experience into analytical computing, his expertise span across Business Strategy, Practice Management, Corporate Research & Development, Consulting and Coaching.

The prime contribution of Mr. Kamlesh is in terms of TCS solutions in Business Intelligence and Data Warehousing branded as BIDS™ and bringing delivery specific rigor to it. He has led many BI solution deliveries in the domain of banking, financial services and telecommunications, which include Enterprise Data Warehouse initiatives for ICICI Bank, Reserve Bank of India and British Telecommunications.

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Introduction

For more than two decades, organizations have been leveraging Business Intelligence (BI) platforms with the sole objective of 'management by facts' for business benefits. Traditionally, BI platforms have been spanning across Information Integration (e.g. ETL, EAI/ESB, CDC), Information Storage (e.g. Data Warehouse, Cubes, Metadata) and Information Analytics (e.g. Enterprise Reports, OLAP Reports, Dashboards and Data Mining) components. Over this period, the landscape of BI has changed with the touch of business integration and innovation. And this change is not just limited to the corporate world. The police force using advanced BI to bring down the crime rate with an agile work force, military operations using predictive analytics to move troops for desired results and GIS-based Tsunami early warning systems, are a few live examples of how BI systems have matured to benefit the humanity.

BI is definitely one of the most important business initiatives, which has shown a positive impact on the health of organizations. A lot of questions are raised regarding the definition and the scope of the BI platform to get clarity on the maturity of the BI initiative and the technology backbone to yield business benefits. After getting the desired benefits from the BI initiative, the usual question has been "What next?".

BI Solution Paradigm

In the current dynamic market, the rate of change is faster than yesterday and what we do today may not be relevant tomorrow. Eg. change in the landline tariff didn't happen for more than a decade, but mobile tariff and service plans are changing on an almost quarterly basis. To survive and grow in the vibrant market space, every organization is facing outrageous competition, business convergence, demand for profitable growth and intense pressure on cost. Organizations are becoming innovative in their approach to make business truly performance driven at Strategic, Tactical as well as Operational levels.

The frame of reference is in which an organization performs is a reflection of the relationship it has with its stakeholders, e.g. relationships with customers, suppliers, partners, employees, regulatory authorities and sub-contractors. With precise behavioral analysis, prediction and correlation of the relationship, appropriate action can be taken at the right point in time through BI; otherwise the cost of managing the relationships can escalate and business could also suffer. Eg. without fully understanding the customer profile (demographic, psychographic and socioeconomic) and portfolio, if an add-on offer is made through cold calls, the cost will be higher and so will the chance of dissatisfaction, resulting in customer churn.

For business excellence, innovation is necessary and there is no innovation without risk. Hence for better performance, it is necessary to minimize the area outside the area under control i.e. the Risk Area. Precision in predicting risk (e.g. credit risk, market risk, operational risk) with BI provides the advantage of having more Capital available for operations as well as innovation e.g. Regulatory Authorities relax the Cash Reserve requirement, if predictions in Risk Management are consistently well under the threshold.
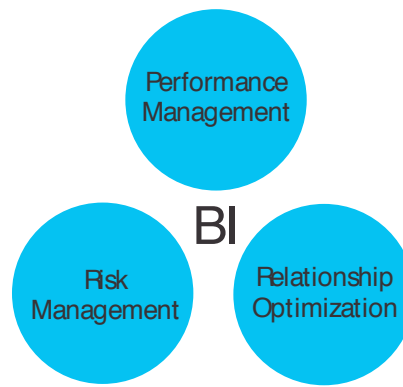
The journey towards business excellence is facilitated by the Pervasive BI correlating the Performance Management, Relationship Optimization and Risk Management at all levels in the organization. Hence similar to business excellence, BI is a journey and not a destination.

BI Technology Advancements

Along with traditional tools and technologies (i.e. ETL, OLAP, Appliances, Dashboards, Mining), new technologies have started finding their place under the BI umbrella due to the increase in key drivers.

Growth in Data volume: Globalization, consolidation and increase in customer and product base have resulted in tremendous growth in data volume. This has led to the increased use of appliances, and data compression. Since data usage patterns are different for data created during different periods, it's not necessary to use all of the computing power (powerful disks, memory and processors) for the whole dataset in a data warehouse. Critical or important datasets can be given main computing power, while keeping the other datasets (mostly >70% of whole dataset) in inactive (not necessarily offline) state with the help of ILM (Information Lifecycle Management) products. This significantly increases system performance with the same computing power.

Focus on operational efficiency: The philosophy is to have 'the right information available to the right person at the right time'. As per the Time-Value Curve for Decision Making, business value decays with time and the definition of the 'right time' depends purely on the optimization need in the business decision making cycle. If a call center person needs to perform the 'Best Action' while interacting with the customer,
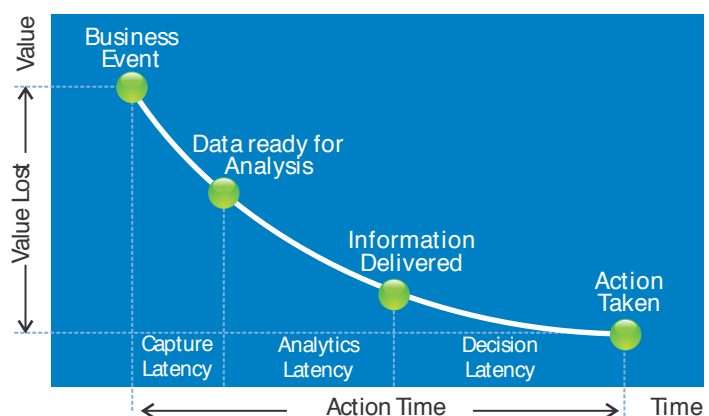
he/she needs to know the as-of-now customer profile (e.g. customer information along multiple focus areas such as Account / Subscription, Affinity towards Products, Campaigns sent and Faults reported). In the absence of that, improper action may be taken resulting in customer churn. In this case, the as-of-now information can be with 5-10 minutes latency. But when it comes to surveillance at a Stock Exchange, the responses need to be on near-real time basis. This need has brought EAI/ESB (/middleware), EII (Enterprise Information Integration), CDC and BAM (Business Activity Monitoring) tools into the picture for decision making on near-real time basis. The next level of decision making in the operational space has been greatly enabled by Rules Engines e.g. determining 'Next Best Action' to control customer churn at call centers and CEP (Complex Event Processing) products e.g. Algorithmic Trades in Capital Markets, predicting right price in the Commodity Exchange trades. CEP has been in use in the military and capital market for more than a decade. Just a couple of years ago, it has entered the commercial market for requirements such as enriching end customer experience, fault identification, price prediction and fraud detection. In order to satisfy system performance with simultaneous READ / WRITE operations needed for near-real time decision making, the demand for handling of mixed workload in databases has increased. This is bringing in-memory databases and solid-state drives onto the scene.

Advanced information delivery: There is a significant change in data visualization techniques for better understanding of data. GIS or integration with maps (e.g. google maps) has improved the productivity of decision makers e.g. analysis of telecom products and services in a locality along with penetration of competitor products. Flash-based reports and dashboards have increased the richness of user experience. Faster information delivery through products using in-memory features also finds better acceptance. There is also an increase in the information delivery channels. Mobiles and tablets have increased the mobility of stakeholders and hence alerts, dashboards and quick tips are available to sales force, managers and executives on these devices. Even campaign distribution to shortlisted consumers is happening through such channels.

Content Analytics: Textual information stacked up in organizations is being put to good use due to advancements in Text/Content Mining. Text mining algorithms, to find trends in product service claims and alter the design to reduce the warranty cost, to find patterns of irregularity (black-spots) in telecom network elements and proactively fix them to reduce downtime, have changed the way organizations have been looking at their content. Even to improve call center efficiency, voice data is processed through speech synthesis software and patterns, such as fast issue resolution, standard product issues, and standard operating procedures, which are easily identified. Social networking has made a vast amount of data available on the Internet. Sentiment analysis, topic analysis, opinion tracking of products and services is possible. Eg. Film distributors planning movie promos at regular intervals, CPG manufacturers changing packaging based on opinion tracking, news analysis to understand the impact of all possible events in the specific region on a specific product or service.

Importance of data quality: Failure to maintain the quality of data passing through an audit can cause a heavy penalty. Not understanding the unique customer/household may result in escalated cost and incorrect perception about the customer and portfolio. 'Garbage in – garbage out' philosophy has been taken very seriously by organizations and hence there is more adoption of data profiling, data quality,

data cleansing and master data management products. Also if there is a failure to define centralized metadata, 'On Time Delivery' may mean delivery against customer requested date for one unit and against promised date for another unit. Metadata management products are also gaining more acceptance in the market. But there is still the major issue of version control and automation in metadata inferences due to which metadata management products are not so widely used in the market.

Lower TCO (Total Cost of Ownership): Eventually, the TCO plays a major role in the acceptance of technology products for an organization. Pressure on reduction of the TCO has lead to adoption of platform vendors (e.g. IBM, Oracle, SAP, Microsoft) instead of best-of-breed, Open Source (e.g. Hadoop, Jasper, Pentaho) and solution hosting (on cloud, hosted environment).

Conclusion

In spite of availability of advanced BI technologies in the market, most companies are still struggling to get the BI foundation right i.e. to set up an Enterprise Data Warehouse and governance and get reports and dashboards. Once the right foundation is set for BI, adoption of the new technologies and the path towards institutionalization of innovation can be laid out. In the vibrant market space, the BI Program can provide a path to Certainty in Experience, while continuing the journey towards perfection. We always need to remember that it is a journey and not a destination!

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