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BI and Analytics Continuum for Enterprises

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Business Challenge

The voraciousness and complexity of data volume, velocity, variety being generated by organizations today, often have the CIO, CAOs and business heads thinking along the following lines. How do I make my BI and data infrastructure and organizations more efficient? How can we generate more insights from the data? Based on these insights, how can we drive greater business impact from actions?

At Nisum, we advocate a multi-prong approach to address these questions wholistically. The key components of this approach are in creating a strong data governance mechanism to ensure robust & scalable BI architecture and using advanced analytics built on this infrastructure to drive greater actionable insights.

In this whitepaper, we will discuss the latter focusing on why transition from BI to advanced analytics is important and the Nisum approach to helping our clients scale the analytical robustness of their organizations.

The Advanced Analytics Imperative

According to multiple CIO surveys, most of the C-suite executives agree that Analytics as an enabler of competitive advantage. In fact, Analytics/Big Data is a top-3 $ investment category for CIOs in the 2016-17 cycle in addition to cloud computing & security. The top Analytics investment areas specifically are: Predictive Analytics, Visual Dashboards, and Data warehousing. It is also widely known that companies leveraging analytics have demonstrably higher revenue & lower costs (1-3%) compared to those that don't. All these make executing on advanced analytics paradigms imperative for all business today.

However, turning a mountain of data into insights is not always easy. In our experience, most mid-size and even many large organizations, typically are well-evolved and with good future plans when it comes to traditional BI departments; however, we have often seen that they lag behind in usage of this infrastructure to generate actionable insights and turn those BI investments into additional revenue & profits.

The table below shows a Nisum framework for a quick assessment of where your organization might be on the BI - Analytics continuum.

Key Aspects	PHASE OF EVOLUTION			
	Beginner	Siloed (IT, Departmental)	Advanced	Strategic
People	Functional knowledge of BI, little or no analytics expertise	Few business analysts with high degree of descriptive work mix; BI team focused on performance, availability & security	Experienced data evangelists, analytical modelers, statisticians, data scientists present	Complex problem solving (both long term strategic & short term tactical) well integrated into a chartered Analytics Center of Competence
Technology & Tools	Simple historical reporting and dashboarding	Data warehouse implemented, BI tools usage, limited analytics tools and data sandboxes usage	Realtime database mining for insights, High performance computing and analytical & visualization tools	Widespread usage of diverse analytical tools, data architecture & governance include cutting edge technologies
Data Governance	Little or none	Basic data warehouse model and architecture; adhoc change management governance practices	Business processes, data definitions and models standardized across the entire company	Clear master data management strategy and well oiled data governance process & team including business
Business Impact	No substantial financial impact. No ROI models in place	Some revenue generating KPIs & business program ROI clearly understood	Significant revenue generation impact measured & monitored regularly	Analytics based strategy & competitive differentiation by the company
Line of Business	Frustrated, one off event driven analytics requests	Visible, some teams not aligned; Specific needs/ events focused (e.g., promotions)	Aligned (including all business heads), pervasive analytics focus	Cross-departmental with usage extended to external suppliers, customers, partners, etc
CXO Office	Hidden	Limited involvement	Deeply involved	Transformative with CEO involvement

From our experience in working with clients in several verticals, the two most common challenges cited for this lag in the evolution are as follows:

- Difficulty in managing the complexity of data sources consistently and efficiently, regardless of the size of the organizational data
- Lack of appropriate analytics skills to unearth insights, particularly those that are directly actionable and leading to clear business impact in revenue or profit

For many companies, the BI to Analytics transition often starts with asking a different set of questions than ones that merely describe a certain aspect of the product or customer or promotion or customer contact/behavior in the past.

Asking the Right Questions

Consider for example, a typical mid-size retailer with several hundred million dollars in annual revenues, multiple products or categories and a diverse client base in multiple geographies. We can see below how the questions asked about a typical customer, Nisa in the organization differ depending on where a client is in their BI - Analytics evolution. The organizations that ask and answer the advanced, predictive and future looking questions, typically do better with respect to business results, compared to those asking more descriptive and historical business questions early in the evolution.

Early in the Analytics Evolution
- What products did Nisa buy last week?
- How much did Nisa spend last month?
- To what promotions did Nisa respond to last month?
- How long has Nisa been a customer?
- Is Nisa's spending more or less this month compared to last month?
- What is the trend of Nisa's spending month over month this year?
- Is Nisa a web or phone sales customer?
- Has Nisa called our customer service till date?
- What are the demographic details (gender, zip code, income level) of Nisa?
- Which customer cohort does Nisa belong to?

Advanced in the Analytics Evolution
- How many times is Nisa likely to buy our products this summer?
- What promotions is Nisa likely to use?
- What is the likelihood that Nisa will buy product Y?
- What is the probability that Nisa will buy product Z, after she buys product Y?
- What is the profit potential of Nisa in 1 year?
- What is the likelihood of Nisa's churn as a customer within 3 months?
- Which of our customers are similar to Nisa in buying behavior?
- What promotions or products will get Nisa to contact us 2 more times a month?
- What profile or cohort types give us the best lifetime value?

A few other examples related to questions about customers, revenue and marketing or promotions are continued below.

	Early Analytics	Predictive Analytics
Customer	When did the customer C last visit/call us?	When is the next likely contact from the customer & why?
	How many customers visited us Online last week?	How many customers are likely to visit our site online this week?
	How many customers moved from Continuity 1 to Continuity 2 this month?	What specific behaviors are indicative of our Continuity 1 customers moving to Continuity 2?
	How many customers responded to offer O?	What customer set is likely to respond well to a new product offer O?
	How many customers cancelled last week?	What are the correlations between customer attributes and returns/cancellations?
	How many customers returned product P last week?	What are some unusual customer behaviors indicative of cancels or frauds or returns?
	How many customers will attrite from our customer base if we retire product P?	What is a good new product to add-to/retire-from our portfolio given our current customer and demographic base?
Revenue	How much revenue came through affiliates last week?	How much revenue can we expect to generate next holiday season?
	What is the weekly revenue trend for Proactiv for last month?	What is the projected revenue for Proactiv next quarter?
	What was the most profitable product last quarter?	What is the likely revenue mix of the portfolio next month?
Promotions	How many calls did our TV promotion last week generate?	How many leads will our new marketing campaign generate if we changed our offer?
	What loyalty offers had the best response rate?	What product offer should we make to our mid-tier customers and when, to promote loyalty?
	What is the revenue of customers in region R?	What is the revenue potential of our customers in city/region/zip-code Z?
	What is the revenue from promotion P1?	What specific attributes make promotion P1 better than promotion P2?
	What is the recency, frequency & order value of customer C?	What is the lifetime value of a customer given his/her traffic, call, spend, promotion response attributes?

An advanced analytics organization also looks at its marketing programs differently to get more value out of every dollar it spends on its promotions. Take for example, a program or marketing intervention many retailers like the above may have aimed at gaining back attrited customers or customers on brink of churn. An advanced analytics organization commonly asks the following questions of such a program.

Business Question:

- How do I win back cancel-risk customers for product P?

Analytics Questions:

- Who are the cancel-risk customers?
- What is the predicted cancel rate for a given customer cohort?

- What is the likelihood/probability of them cancelling by each customer?
- What is the historical cancel rate trend for this customer set?
- What are some leading behavioral indicators for cancel-risk customers?
- What type of offers have best response rates for this customer set?
- What is best time/date/day/time to contact this customer set in what channel?
- How do we segregate the test and control groups?
- What are the best offer/creative recipes to test for the program?
- What is the likely win back rate for this customer set?
- If we did this winback program, what is the expected ROI?
- What is the predicted confidence level for repeatablility of the program?

Nisum Advantage

As shown in the figures above, asking the right set of questions in multiple domain areas, is only the first step in advancing analytics maturity of the organization. How do organizations answer these questions? Typically, it is through a cohesive set of tools, techniques and people - the most important being people, with specialized skills in different domains, analytics techniques and tools in addition to presentation skills (both verbal and visualizations). A subset of these is mentioned below.

Tools				Analytics Domain Areas	Analytical Techniques
Analytics	Visualization	Platform			
SAS	Tableau	Teradata		Online Analytics	Linear Programming
R	Qlikview	Hadoop		Promotion Analytics	Non-Linear Programming
Python	Chartio	Birst		Retail Analytics	Markov chain Monte Carlo methods
Java	D3 charts	Datameer		Customer Analytics	Latent Class methods
C++		Domo		Call center Analytics	Structured Equation models
SPSS		Birst		Customer Experience Analytics	Discrete Choice model
Matlab		Looker		Text Analytics	Dimensionality reduction
Minitab		AWS		Social media Analytics	Bayesian techniques
Spotfire		Wave analytics		Forecasting	Linear/Non-Linear/Logistic Regressions
VBA		MS Azure		Predictive modeling	Time-Series Models
Excel		Cloudera		Pricing & Revenue Analytics	Optimization
		Power BI		Fraud/Risk Analytics	A/B Testing
				Statistical Modeling	Clustering
				Optimization	Factor Analysis
					Principal Component Analysis
					Neural Networks
					Support Vector Machines
					Survival analysis
					Association Rules
					Sequence Discovery

Our Approach

Given these multi-dimensional complexities, making the transition from a traditional BI organization to actionable analytics empowered organization is not easy. We have seen many companies attempt to do it organically and not create scalable and sustainable efficiencies over the long term. At Nisum, we are passionate about using big data to create successes for our clients. We have experience creating both specific short-term wins and long-term organizational impacts leveraging your current BI & Analytics investments.

We could work with your business or IT organization on a limited scope and specific business problem to show quantifiable impact using BI and Analytics or create a longer-term roadmap for sustained BI and analytics success for your organization. Specific projects include conversion/leakage improvements, customer contact reductions, marketing ROI improvements, demand generation and repeat rate optimizations, fraud reductions, etc.

Our flexible engagement model allows us to work together with you on specific project by project basis or on strategic value driven partnership terms. Our on-shore, near-shore, off-shore and hybrid business models can bring in unique business advantages while enabling a round the clock BI and Analytics support that is custom designed to suit your business requirements.

Who We Are

Nisum enables transformation for industry-leading brands: we know how to build strong emotional bonds between B2C clients and customers via smart technology solutions.

Nisum is a global consulting firm headquartered in Southern California. Founded in 2000 with the customer-centric motto, *Building Success Together™*, we've grown to comprise over 900 consultants and 8 offices across the United States, India, and Chile. Our philosophy and deep technical expertise result in integrated solutions that deliver real and measurable growth.

Whether you're a hot start-up or a major global brand, our approach is the same: forge the most powerful connection possible between people, processes and products to achieve unparalleled success. At the intersection of business and technology, Nisum has everything you need to grow your organization. From Strategic IT Planning, Agile Enablement and Business Process Engineering to Application Development, Test Automation and DevOps, Nisum has you covered. We specialize in building Adaptable Back-End systems such as Order Management, Inventory and eCommerce to facilitate true omni-channel success for our customers.

Nisum strongly believes in an organizational culture that is open, transparent and progressive. We encourage creativity and innovation and consciously maintain an environment that is conducive to positive employee growth, learning and performance.