2015: Ten Predictions for Decision Sciences

White Paper

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With most businesses across industry verticals still reeling under the impact of the economic slowdown, an increasing number of them are focusing on analytics driven decision support across all facets of business where experts have to take decisions based on bits of information. Several players have defined their competitive edge on the foundations of data driven decision making while others are struggling to play catch up.

Mu Sigma is the largest pure play analytics service provider with a global delivery model. We have released a list of 10 predictions that we believe will have the greatest impact on the industry by 2015. These trends will challenge conventional business wisdom, drive the emergence of new business models and allow organizations to differentiate themselves to compete and drive growth.

The DIPP™ Index as defined by Mu Sigma involves the following.

1. D for Descriptive Analytics – What happened in the business (using reports and dashboards)?
2. I for Inquisitive Analytics – Why something happened in the business (using analyses)?
3. P for Predictive Analytics – What will happen in the business (using predictive modeling)?
4. P for Prescriptive Analytics – the So What, Now What?

While convention suggests that organizations need to evolve from Descriptive Analytics to Predictive Analytics, a concurrent use of Math, Business and Technology across the DIPP index is essential at any point in time to effectively drive data driven decision making.

As companies adopt analytics as the new science of winning, the future of analytics will not just be based on applied math, business and technology, as it is today. In the future, decision sciences will have Math + Business + Technology + Behavioral Economics.

Yesterday

- Business + Technology allows us to simply automate

Today

- Math + Business allows us to more cogent arguments at the board room
- Math + Technology allows us operate proactively with anticipation
- Math + Business + Technology allows us to execute better

Tomorrow

- Math + Business + Technology + Behavioral Economics will let us develop nudges (cognitive repairs) against biases that we as human beings are gifted with

Based on our experience working with multiple industries and across a wide spectrum of business problems using analytics, we have some perspectives on where the industry is moving and what key trends will be seen over the next few years.

The following are the top 10 predictions, although not in any particular order. Some of these are obvious and some are relatively obscure. The relative importance of each depends on the unique needs and business drivers of your industry vertical and analytical maturity of your organization:

Prediction 1: Hyper Competition

Evolution of Decision Sciences would lead to accelerated hyper-competition. Organizations will engage in information arbitrage games to exploit information asymmetry with the competition. Specifically in analytically mature industry sectors, information advantage would be a swiftly moving target due to the intense competition. Airlines and Financial Services are the industries that have historically pioneered in the usage of analytics as an integral component of their business models. Today, many Airlines companies are bleeding because they are not able to retain their competitive edge due to the intense competition. Airlines and Financial Services are the industries that have historically pioneered in the usage of analytics as an integral component of their business models. Today, many Airlines companies are bleeding because they are not able to retain their competitive edge due to the swiftly moving information arbitrage in an intensely competitive marketplace. On the other hand, firms such as Goldman Sachs have gained a formidable edge over competitors in high speed algorithmic trading by exploiting cutting edge models.

To unleash the true potential of analytics, companies would need to move beyond the traditional frontiers of pricing, marketing and risk, and leverage analytics to compete on innovation and relatively obscure areas of the business. Companies across verticals, be it Banking, Insurance, Retail, or Airlines would have to innovate in supply chain management and new value creation or constantly keep competing on price and quality (value for money) or have enough financial capital to outlast other competitors.

Prediction 2: Creation Versus Consumption of Analytics

Creation of analytics will become more commoditized while organizations compete on consumption of analytics. Context and relevance will be the key enablers for effective consumption of analytics. Organizations will have to focus on various competencies to get consumption of analytics right. The consumption cycle will necessitate a more balanced use of right and left brained thinking.

The rapidly increasing use of new, intuitive technologies such as visual analytics, interactive dash-boarding and decision support application simulation tools indicate the growing demand for consumption of analytical insights across levels and domains in organizations. Multiple applications such as Flex, Silverlight and Ajax based Rich Internet Applications are focusing on enriching the user experience. Companies such as Tableau Software, Tibco Spotfire and Qlik Technologies are pioneering visual analytics as a means to enable business users to gain quick insights into data. It is noteworthy that QlikView Inc. recently released an IPO and has a P/E ratio of 66 and a market cap valuation of around $1bn on revenues of only ~$150 million!

Prediction 3: Creativity & Innovation

Creativity and innovation would be assets owned by a few. The premium for disruptive innovation would increase and we would observe more continuous incremental innovation. Typically, the speed of innovation is inversely proportional to the kind of innovation. Disruptive innovations tend to take longer to release and have a longer shelf life. Incremental innovations tend to be faster to create and can be relatively easier to replicate.

Many companies would invest in incremental innovation strategies using the investments they have made in their data assets. At the same time, the true disruptive innovators would focus on creating the right mix of qualitative and quantitative analytics by bringing in new areas such as behavioral economics and social anthropology to create and execute on innovative ideas.

Historically, we have observed the valuation for disruptive business models increase exponentially from Hotmail (online email) to Yahoo (online portals) to Google (search based online advertising) to Facebook (social networking). The uptake in usage of decision sciences will enable clients to leverage continuous innovation more easily thus placing a premium on creativity and disruptive innovation.

Prediction 4: New Data Sources

New data providers will emerge focusing on intelligently interpreted data – especially for social media analysis, location data, etc. Multiple Scores (such as FICO for credit, HICO for health etc.) would be created to better understand human behavior. Web 2.0 business models exploiting network effects will lead to exponential increase in user generated data. E.g. FourSquare, Twitter etc. Smartphones will monitor our vital signs and chronic conditions yielding a wealth of data for disease prediction and medical research.

The bulk of what will contribute to this explosion of data, according to Eric Schmidt, CEO of Google, is user generated content. From that content, far more prediction than what we've seen today is possible in the future. "*If we look at enough of your messaging and your location, and use Artificial Intelligence, we can predict where you are going to go.*" – Eric Schmidt, CEO of Google.

What this would mean for analytics is that an increasing proportion of it would be on unstructured data (Text, Video). Social Media data (Radian 6, Viral Heat etc.) and RFID data would be merged with location information for supply chain analytics. Similarly, text mining would be utilized for social media analytics, customer voice data for customer service and call center analytics, and video data of customers' emotional responses to products/store layouts, traffic monitoring etc. for retail analytics.

Prediction 5: Emerging Roles

The equivalent role of a "Chief Analytics Officer (CAO)" will emerge in organizations. The primary responsibility of a CAO would be to over-ride organizational and departmental boundaries to build data driven competencies wherever decisions are made using information. The expertise of professionals from varied disciplines such as Technology, Applied Math, Anthropology, Behavioral Economics etc. would be utilized for decision making. To tackle the supply side issues for such professionals, globally distributed and location agnostic teams and partnerships with talent sources would be formed.

Companies such as Emsense (neuroscience based marketing), Q Interactive (Online Ad Network), Adenyo (Mobile Marketing), Equities First Holdings (Securities lender) have already appointed Chief Analytics officers from backgrounds as diverse as human behavior, economics, computer science etc. Going forward, even business analysts would need to morph into content engineers by exploiting the synergies of left and right brain thinking to generate more holistic insights.

Prediction 6: Education

Analytics Education will be formalized.

University of Ottawa, North Carolina State University, DePaul University have started offering formal degree programs in Analytics. As companies begin to leverage analytics more and more, they will recognize the need to create and develop talent in this space and will provide support to universities to build formal degree programs in analytics. Mature organizations will augment the formal education with their own corporate analytics programs, which will bring in domain knowledge and business context to effectively use analytics in their organizations.

Prediction 7: Process Automation Will Take a Fore Front

Certain areas of analytics (e.g. Marketing Mix Modeling, Trade promotions analytics etc.) will move from a research/discovery phase to become mature repeatable methodologies that will get "operationalized" with automation technologies. This will enable the respective analytics at a greater level of detail and scale than possible earlier e.g. Marketing effectiveness by product, SKU, channel, country etc. However, each company will need to assess the applicability of the automation paradigm to its analytics problems as there is a potential danger that pure automation will supersede the necessary human intervention and oversight.

Prediction 8: Open Source analytics platforms and Analytics-as-a-Service (AaaS) will gain prevalence

More and more Open Source analytics platforms would emerge to increase adoption and better mine the wisdom of crowds.

Currently, the open source "R" has emerged as a leading platform for statistical innovation and collaboration both in academic and industry circles. This is evidenced by an increase in commercial vendors of R such as Revolution Analytics Inc. which is focused on scaling the use of the R computing language. Also, there is an increasing trend of collaboration between proprietary and open source platforms e.g. Tibco Spotfire platform offering the option to call R functions from within its environment and SAS introducing support for R scripts. This signifies a shift towards loosely coupled open computing platforms in the future.

Analytics-as-a-Service (AaaS) will be common place and will take different forms including analytics services providers, analytics focused SaaS companies, existing IT services, system integration and data providers moving into value added analytics services etc. Outsourcing and global delivery will yield significant supply side benefits to the analytics industry.
Big players such as IBM and Accenture have already turned their attention towards analytics. They are making significant investments in tools, e.g. IBM has invested in acquiring Cognos and SPSS Inc. It is also opening several analytics centers across the globe including India, China, etc. There is an increasing trend of companies in the Fortune 500 to issue RFPs and follow systematic procedures for procuring analytics services and managing vendors.
Software-as-a- Service Models are being deployed for analytics by many players e.g. Web analytics (Google, Omniture, etc.), Marketing Analytics (M-factor), Hosted and On Demand Business Intelligence Platforms (Panorama, Lucid Era, etc.).

Prediction 9: Human Behavior

Behavioral Economics as an area of science is seeing more traction and application in corporate world. While analytics helps us gain insights and make decisions, those decisions can create a positive impact only if human biases are taken into account during implementation. Analytics based insights will challenge many traditional ways of working. Executives trying to champion data drive decision making will need to leverage an interdisciplinary approach using Business + Technology + Mathematics + Behavioral Economics + Social Anthropology. As this becomes a formal practice in corporate operating procedures and corporate strategies, better understanding of human biases would help develop cognitive repairs or nudges to ensure better application of decisions.

Today, more and more organizations are investing in dedicated consumer insights teams. They focus on developing segmentation strategies, understanding Customer Lifetime Value, market sizing etc as independent initiatives. Over the next few years, they will move towards a holistic approach to understand their customers.

Prediction 10: Collaboration using Convergence

With blurring of value chain boundaries and emerging business models, a new era of convergence in the use of analytical techniques and frameworks will come into play. Cross industry and cross domain learning will lead to significant breakthroughs in the development and deployment of analytics solutions.

Application of new business models in existing companies is accelerating the need for convergence and collaboration e.g. Microsoft entering Retail, Cellular phone network providers entering the Netbook category, Dell moving from custom configurations to pre-built offerings, etc. Scottrade and Yahoo are collaborating on data and analytics to optimize lead generation for Scottrade.

Historically, certain analytical techniques have been developed and utilized mostly in specific domains e.g. Yield optimization in Airlines, Survival Modeling in Life Sciences, Lean Principles in Manufacturing, Diversification in Finance etc. However, these techniques have a strong potential to be used across industries e.g. Yield optimization methodologies for online advertizing industry, Survival Modeling concepts for Financial Risk analytics and Diversification for Marketing and Supply Chain.

Conclusion

Analytics is going to play a very key role in the coming years in Corporate America. The past two years, including this one, have witnessed unprecedented economic situation. The world is shifting to a 'new normal' and we are seeing advent of new customer psyche previously unheard of. Institutionalizing analytics is not a destination or a goal your company should aspire for rather it

is a continuous process of internalizing and integrating analytics in your company's business decision making process and this will be a key differentiator for successful businesses.

About the Author

Dhiraj Rajaram is the founder and CEO of Mu Sigma, an analytics services company that helps clients institutionalize data-driven decision making. Dhiraj is responsible for the vision, strategic direction and leadership in Mu Sigma. His key strengths lie in the area of managing teams, aligning organizational resources to a customer centric vision and delivering profitable growth. He has built Mu Sigma from ground up during which time he executed on activities that included raising seed and growth capital for the venture, securing key Fortune 100 customers, incubating an offshore delivery unit and hiring key leadership members into the company. Before Mu Sigma, he advised senior executives across a variety of verticals as a strategy and operations consultant at Booz Allen Hamilton and PricewaterhouseCoopers.
