



April, 2012  
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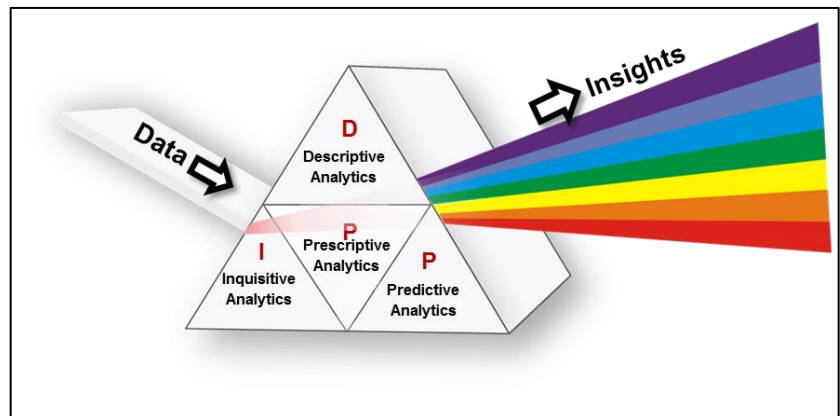
## Need for an Interdisciplinary Approach towards Decision Sciences and Analytics Education

### Nature of Decision Sciences & Analytics

In today's turbulent and competitive environment analytics is a powerful tool available to organizations for decision making. In a world of signal deluge even creative organizations need a mindset of measurement and improvement to optimize their decision-cycle times. Despite the acceptance of this notion, many companies continue to rely on intuition and gut-based decisions. However several companies are turning towards data-driven decision making and challenging conventional business wisdom.

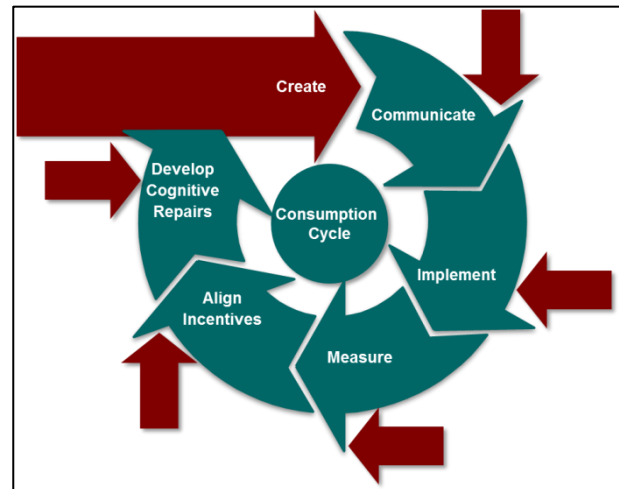
In their endeavor to become data-driven organizations need a systematic framework to think about the different types of analytics needed to create insights and help make better decisions. The following DIPP™ framework describes the different kinds of analytics needed:

- ▶ **Descriptive analytics** answers the questions “What happened in the business?” It is looking at data and information to describe the current business situation in a way that trends, patterns and exceptions become apparent
- ▶ **Inquisitive analytics** answers the question “Why is something happening in the business?” It is the study of data to validate/reject business hypotheses
- ▶ **Predictive analytics** answers the question “What is likely to happen in the future”. It is data modeling to determine future possibilities.
- ▶ **Prescriptive analytics** is the combination of the above to provide answers to the “so what?” and the “now what?” questions. For example, what should I do to retain my key customers? How do I improve my supply chain to enhance service levels while reducing my costs?



Counter to the traditional thinking that organizations evolve from Descriptive to Inquisitive to Predictive to Prescriptive analytics, all four kinds of analytics have to be done in the right mix. Organizations that focus on only one aspect of the DIPP™ framework will fail in generating the right insights and recommendations.

However creation of insights alone is not sufficient. Going forward, companies will compete, not so much on the creation of insights, but rather on the consumption of insights. Consumption of insights entails communicating insights, implementing insights, measuring, incentivizing and developing cognitive repairs. It refers to the planned, ongoing use of a set of interlocking business practices and competencies that collectively deliver superior value from analytics insights. Enabling consumption will need an appreciation of behavioral sciences and how organizations and human beings absorb new and often counter-intuitive insights and process them to adjust their cognitive machines to make decisions.



Thus the future of analytics will not just be based on applied math, business and technology, as it is today. The future will witness the notion of analytics evolving to decision sciences encompassing Math + Business + Technology + Behavioral Sciences.

**Yesterday**

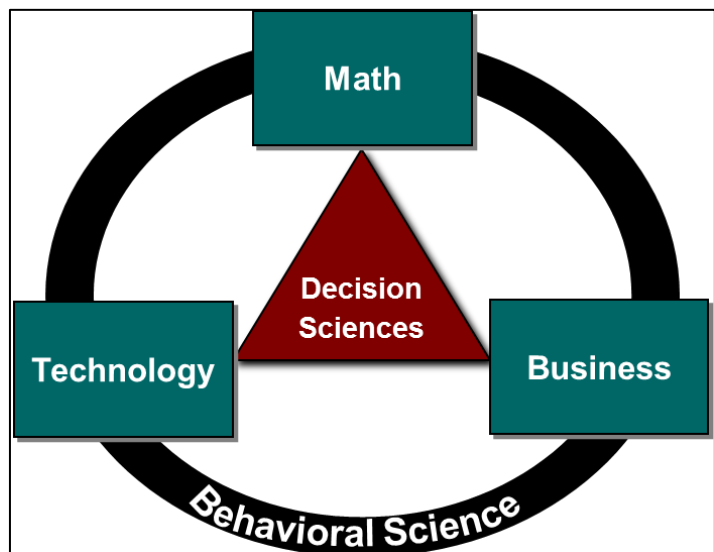
- ▶ Business + Technology allowed us to simply automate

**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 Sciences will let us develop nudges (cognitive repairs) against biases that we as human beings are gifted with



## Decision Sciences & Analytics Education

Based on the foregoing a formal educational framework for decision sciences should enable creation and consumption of analytics and inculcate a culture of data driven decision making by imparting the necessary knowledge, skills and values.

One of the short-comings of existing educational programs is that they tend to focus a lot on analytics techniques, applications, technologies and data; essentially the data science aspect of decision sciences. However holistic educational programs will recognize the key imperatives and challenges for making decision sciences successful in an organizational context and will create programs for different roles that come together to enable data driven decision making.

We believe that a new army will emerge at the forefront of analytical competition and formal education programs must work towards developing curriculum for these roles:

- ▶ **Soldiers** - These are typically analysts and data scientists who work on solving business problems, generating and communicating findings & insights. They will come from varied backgrounds including Engineering, Computer Science, Economics, Math, Statistics, MBAs and other quantitatively oriented fields. They will need to develop skills in analytics techniques, data, technologies and applications along with a combination of consultative first-principles based thinking for problem definition and hypothesis-based approaches. Also they will need to bring together right brain and left-brained thinking to balance the rigor of science with the creativity that business requires. Principles of design, usability and visualization will be key to making them successful both in the creation of insights and consumption enablement
- ▶ **Captains** – These are middle managers driving analytical initiatives. They are usually quantitatively oriented professionals with experience in both analytics and functional roles such as marketing, risk, supply chain, etc. Agile and iterative project management skills required for analytics will be essential to adapt to the dynamism of the business problem environment and to manage new processes that cut across functional boundaries. They will also need to develop knowledge management frameworks leveraging insights from across verticals and domains to drive innovation in addition to effectiveness and efficiency. The ability to work with geographically dispersed teams will also be a key requirement in a world of glo-calization where bringing local perspectives will be essential to success in developing and emerging markets. These captains will play a pivotal role in consumption of analytics since they need to simultaneously play the role of explaining the science behind the analytics to the business user and translate findings into insights and recommendations. Thus understanding of behavioral sciences and the role of cognitive biases in decision making will be key
- ▶ **Generals** – These senior management folks with a strong vision and passion for data driven decision making. They will come from diverse backgrounds and will be organizational leaders with deep business acumen and an appreciation of data based insights. They will need to develop skills in creating and running cross-functional analytics councils, shared services eco-systems, governance models for analytics organizations, analytics roadmaps, etc.

Change management and the ability bridge the gap between creation and consumption of insights will be their key focus.

## **Conclusion**

Data-driven decision making is a journey and without the right talent across organizational levels the benefits of decision sciences cannot be truly realized. We believe decision sciences education is in a nascent stage and needs to evolve to a holistic approach. What is needed is an inter-disciplinary approach drawing its foundation from mathematics, business, technology and behavioral sciences.