Secrets for Delivering Measurable Value by Using Data, Analytics, and AI-based Solutions

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Tuesday, January 21, 2025
12:00 – 1:00 PM
BMI Classroom 4004
Woodruff Memorial Research Building

or

Join us on Zoom link:
https://zoom.us/j/98011559891

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Abstract: Data, Analytics, and AI-based solutions have potential to deliver enormous value to decision makers. Because of this astronomical potential, HBR reported that many organizations aspired to become data-driven so much so that they embarked on digital transformations by investing in big data and AI projects for enabling them to "compete on analytics" or to be "AI-first" in their business. Despite the promise of immense value, the percentage of failed data science projects has been alarmingly very high. Gartner Research estimated 80% of analytics insights failed to deliver value. A Gartner analyst also estimated that 85% of big data projects failed. A recent whitepaper from the Centre for Business Analytics at Melbourne Business School, while confirming the high failure rate of 80%, also reported the failure rate to be as high as 90% for analytically immature organizations but only as low as 40% for analytically mature organizations. In addition to the high failure rate, a high percentage of analytics projects failed to move beyond their pilot phase, 87% according to an estimate by VentureBeat AI. Even those that went into production faced low adoption rates. In a recent survey, DataIQ estimated only 23.9% of AI-driven solutions have been widely deployed into production.

Since 2004, the 7Cs framework for delivering values has been proven to identify and capture values. It has been used in the design, development, and deployment of data, analytics, and AI-based solutions in industrial settings where it captured and delivered over $1 billion in measurable outcomes from virtually every project in which it was used. The 7Cs functions like a checklist comprising seven elements all of which begins with the letter 'C' — hence, the name. The first is Context: understanding of objectives and goals. Next is Concept: requirement to be able to describe the flows of materials, resources, and information in the system / entity where challenges or problems need to be solved by using Physics, Chemistry, Biology, Business Dynamics, etc. to understand inputs, process, and outputs. After Concept, interdependency or interconnectedness — referred to in the framework as Connection — among elements of the flows need to be clearly articulated. The fourth C is Constraints that usually limit the flows or put restrictions on feasible actions. Because nothing is constant, the approach will evaluate impacts of Change involving variability and uncertainty by identifying the known unknown and the unknown known as well as anticipating the unknown unknown through scenarios so that risk can be assessed and planned to be mitigated accordingly. Communication, the sixth C, plays a crucial role in gathering and putting together a "picture" from the previous five Cs. It also plays an important role in creating data, analytics, and AI models in the seventh element of the framework which is Calculus.

Examples of how the 7Cs have been used in industrial settings will be presented next. In the end, ideas of how the 7Cs may be useful for Emory will be discussed.

Bio: Benny Budiman is the Director of Research Data Analytics in the Office of Research Informatics, Data and AI. He has a Doctor of Science (Sc.D.) degree in mechanical engineering with a minor in business dynamics / operations research from MIT. He is eager & excited to apply his extensive data & AI knowledge and experience to data-driven research, healthcare, and educational optimization at Emory. Benny has over two decades of experience in delivering over $1B in quantifiable impacts from analytics solutions using data and AI in industry and consulting.

During his 7.3 years in consulting with McKinsey and Accenture, Benny designed data and AI solutions and led teams to develop and deliver the data, analytics, and AI-based solutions in several industrial sectors (e.g., oil & gas, petrochemical, pulp & paper, electric & gas utilities, industrial manufacturing, apparels, high tech equipment, and retails) & functions (manufacturing & supply chain; product marketing & distribution; and retail inventory positioning & management). In addition to expertise in data quality, he has expertise in digital twins for optimal decision making and decision experimentation.

His data, analytics, and AI-based solutions included, but were not limited to: (i) longer-term hospital capacity planning in a province in North America (POC), (ii) optimal service vehicle decarbonization for minimizing emissions into disadvantaged communities (deployed & awarded a 2022 CIO 100), and (iii) optimal grid management to reduce risk of wildfire ignition from the operation of electric transmission and distribution network (deployed & awarded a 2023 Chartwell Best Practices). He led a team in a POC for a client (distributing electricity and natural gas) to use GPT 3.0 for generating regulatory proceedings with the Client's public utility commission (PUC) in which we learned how to fine tune GPT 3.0 so that it could generate counter arguments in the proceedings with the PUC. In addition to developing and delivering AI solutions, Benny designed data and AI solutions that included, but were not limited to: (i) an intelligent virtual laboratory for enabling material scientists at a Fortune 100 material science company to use data and AI technologies for accelerating development and commercialization of new materials by digitally designing new materials thus reducing the number of lab experiments and (ii) an integrated solution for managing & optimizing all stages of capital projects incl. the use of LLM for accelerating site acquisition, contracting, and permitting during pre-construction.

While Benny was in industry, as a practitioner at Exxon Mobil for 13.4 years (in its Upstream, Downstream, Chemical, and Midstream), two of the data, analytics, and AI-based solutions he created received US and European patents. The first solution was for robust well trajectory planning in drilling oil and gas wells (US 8,892,407 B2 on Nov. 18, 2014) that was implemented in a proprietary drilling and completion application. The second solution involved method and apparatus for optimizing a performance index of a bulk product blending and packaging plant (US 8,447,423 B2 on May 21, 2013 and EP 2 507 672 B1 on Jan 6, 2016) that was used to simultaneously plan production, inventory, and capacity at 35+ lubes oil and grease manufacturing plants across the globe.