**Senthil Murugan**

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**OBJECTIVE:** Partner with brand portfolio leadership and lead commercial insights and analytics.

**CAREER HISTORY**

**2008 to Present Merck & Co., Upper Gwynedd, PA**

Director – Data Science - Impact Assessment & Investment Optimization (2018 - Present)

Associate Director – Investment Analytics and Decision Sciences – US and Global (2013 - 2018)

Senior Specialist / Project Manager – Commercial Analytics and Decision Sciences (2010 - 2013)

Manager - Global Business Analytics (GBA) (2008 – 2010) – Schering-Plough Pharmaceuticals

**1999 to 2008 IQVIA / Cegedim Dendrite, Bedminster, NJ** - Senior Scientist / Consultant

**EXPERIENCE**

More than two decades of experience in pharmaceutical commercial insights, analytics and promotional investment strategy spanning 15 years with Merck. Worked with multiple top and medium sized pharmaceutical manufacturers and in multiple therapeutic areas. Analytical expertise in marketing promotions, omnichannel campaign planning, targeting, segmentation, sales force sizing, call planning, market access, market research and reporting.

**Director - Data Science - Impact Assessment & Investment Optimization *Merck***

***Management***

* Demonstrated 7+ years of experience in influencing and collaborating with Senior Commercial BU leadership and US Chief Marketing Officer.
  + - * US BUs, Finance and marketing teams include Oncology, Vaccines, Chronic Care and Hospital / Specialty.
* Responsible for delivery of sales impact measurements and guiding optimal brand budget allocations.
  + - * Inform marketing mix and optimal marketing promotion investment of about $1.1 Billion per year.
      * Lead sales impact analysis of HCP promotions, Consumer promotions and Patient support programs
      * Expertise in developing data and insight approaches and advanced analytics methods.
* Lead, develop and coach a team of about 6 to 8 employees and several consultants for 8 years.
  + - * Organize/setup teams, communicate clear goals, track regularly, and ensure success in achieving goals.
      * Prioritize project, manage work performance and conduct effective performance reviews.
      * Train, inspire and motivate the team to deliver by listening to and supporting individual needs.
      * Helped to setup, hire and train Offshore Merck team in Pune, India.
* Ensured achievement of company, team, brand goals and ROIs through investment in people, systems, and processes. Responsibilities include vendor management, analysis designs and summarizing and presenting results.
* Identify and manage team budgets to deliver on goals and fund employee development initiatives.

***Functional Areas of Responsibility***

* **Health Care Provider (HCP) Personal, Digital & Consumer Media Promotions [$700M+ budget]**
  + - * Measure sales impact / ROI and Provide sales maximizing investment guidance for each vendor & channel of promotions both during profit planning and ongoing executions. *Includes key brands of* ***ALL US Merck BUs.***
      * HCP Channels include details, samples, speaker programs, alerts, third party vendor emails, headquarter emails, eDetails, field emails, point of care, display and paid search.
      * Consumer Channels: TV, Display, Online / Streaming Video, Social, Paid Search, Point of Care and Adherence.
      * Guided multiple campaign planning and omnichannel strategies to maximize revenue and customer experience.
      * Guided investments through Marketing Mix, Adhocs, Pilot design/analysis and Promotion Response curves.
      * ***Specialty:*** Brands of focus include Bridion, Simpony, Isentress, Delstrigo etc.
      * ***Oncology:*** Guided marketing budgets and promotion strategies for Keytruda, leading PD1 inhibitor, from its launch to current multiple indications and tumors. Expanded portfolio to Lenvima, Lynparza and Welireg.
* **Patient Support Programs [~$200MM+ spend]**
  + - * Design, Evaluate and Guide promotional investment decisions for Coupons, EVouchers, Samples and Vouchers of Key brands within Chronic Care and Hospital / Specialty BUs.
* **Strategic Initiatives**
  + - * Next Best Engagement (NBE) – Core member from inception to implementation of multiple brand NBE models. Guide max digital touchpoints and model development by ZS.
      * DOMINO – Conceptualized, designed, and implemented budget allocation process for Oncology [~$700MM]
      * Health Map – Guide net conversion analysis for consumer promotions using consumer level media exposures
      * Content Hyper Personalization – Predict the value of content personalization to business.
* **Data, Models and Simulations**
  + - * Extensive hands-on experience in working with wide variety of pharmaceutical datasets.
      * Understand the utility and use vast varieties of data sources both in Specialty and other BUs.
      * Extensive hands-on and management experience in varieties of Marketing Mix type statistical models, Test/Control analysis, Pilot designs, Machine Learning methods.
      * Advocated for customer experience best practices through personas, customer journeys, patient pathway simulations, system dynamics and agent-based simulations.
      * Hands-on experience with SAS, R and Python in multiple environments such as AWS cloud eco-system.
* **Market Access**
  + - * Managed analytics and reporting related to contracting / discounting strategies and impact of 340B.
      * Utilized physician level managed care access scores from identifying targets to assessing promotional impacts.
* **Performance Reporting / Market Research / Forecasting**
  + - * Managed delivery of reports to answer both ad-hoc key business questions and standard performance tracking.
      * Utilized consumer and HCP market research reports to identify targets, plan campaigns and calibrate ROIs.
      * Provided key brand promotion related inputs to forecasting team and utilized forecasts to develop multiple brand budget computations, optimizations and setting campaign goals.

***Collaboration***

* Developed close, trusted and highly effective working relationships with Brand and Senior leadership by identifying key issues, delivering, and advocating key insights through data and analytics leadership.
* Partnered with multiple Agile collaboration teams.
* Collaborate extensively with Brand teams, Finance, Market Research, Forecasting, Digital Engagement, Media, NBE, Commercial Legal, Operations, IT, Contract Optimization, Sales Force Optimization, Targeting etc.
* Manage and/or collaborate with multiple vendors such as Datazymes, Crossix, Initiative, Solved, IQVIA, Symphony, ZS etc. to execute various initiatives.

**Associate Director, Global Go-To Market Analytics *Merck***

***Global Promotional Impact, ROI, Market Mix and Sales Force Sizing Analysis***

* Managed, Executed and Presented various Go To Market initiatives for:
  + - * SF Sizing: Russia (12 Franchises), Brazil (3 Franchises), Hong Kong (7 Products).
      * Details / Meetings / Lectures / TV: China (2 Products), Japan (Januvia), Canada (Zostavax TV & Reps)

**Commercial Analytics and Decision Sciences *Merck***

***Consumer and Physician Promotion Response, ROI, Marketing Mix, Pilots and Budget Allocations [$300M+]***

* Measured ROIs of TV and Print campaigns. Designed and implemented channel level optimal allocations. Identified pilot sizes, test regions, test and control physicians for several pilots.

***Vendor Management and Collaboration***

* Managed and collaborated with multiple vendors such as Nielsen, ZS, IMS Health, HCL, Genpact, Mu-Sigma, Evolution Road, Draft FCB and Wolters-Kluwer Health.

***Promotion Responsiveness Clustering and Simulations***

* Designed and developed data simulation and agent based simulation to guide sales and marketing strategies.

**Global Business Analytics / Decision Sciences *Schering-Plough / Merck***

* Developed and Managed Targeting and Call Plans for multiple field forces - customer centric & fixed product.
* Sales force sizing and optimal resource allocations of sales force promotions
* Developed and managed Marketing Mix models and ROI assessments for multiple HCP and consumer channels.

**Analytics and Consulting *Cegedim Dendrite / IQVIA***

* Responsible for multiple sales force design, sizing, call planning and optimal resource allocation initiatives for Odyssey Pharmaceuticals, Johnson & Johnson, Pfizer, Bristol-Myers Squibb (BMS) etc.,
* Executed multiple physician and consumer marketing promotion response and ROI analysis for Cell Tech, GSK (Levitra coupons and vouchers, patient level data analysis), Wyeth, Pfizer, Abbott and Sanofi-Aventis.
* Promotions studied include Coupons, Multiple Digital Channels, Details, Samples, DTC digital and traditional channels etc., for a wide variety of therapy areas.

***Market Research, Longitudinal Prescription Data (LPD) Analysis and Reporting for 10+ pharma manufacturers.***

* Recommended key takeaways through LPD metrics for GlaxoSmithKline, FDA, Bayer, Schering-Plough etc.
* Part of small team that initially defined rules, developed and delivered various LPD metrics that are now in common practice across the industry.

**EDUCATION**

* **Central Connecticut State University, CT, USA**

M.S. – Data Mining. *Award:* *Graduate Academic Award* 2007 - Top in the graduate program.

* **Indian Institute of Technology (IIT), Madras, India**

M.S. – Machine Dynamics. *Score: GATE* – 96th percentile in the country.

* **Madurai Kamaraj University, Tamilnadu, India**

B.E. - Mechanical Engineering. Top 5% of class.

**MODELING AND PLATFORM EXPERIENCE**

**Modeling:** Regression models like linear, non-linear, mixed models, random and fixed effects, time series cross section models, neural networks, semi-parametric, non-parametric and local regressions, generalized additive models, TreeNet, Lasso.

**Optimization:** Linear, non-linear, multiple integer programming and genetic algorithms.

**Machine Learning:** Deep Learning, Clustering methods like k-means, hierarchical, SVM and custom. Decision trees, discriminant analysis and a wide range of statistical and machine learning models.

# **Languages / Scripts:** SAS, R, Python, SQL, Java and few others.

**Database:** AWS Redshift, Mongo DB, Oracle, Access DB, Teradata, SQL Server 2000, DB2.

**Other Tools:** Excel, PowerPoint, SAS JMP/EM, Arena, AnyLogic, JBuilder, SQL Navigator.

**PUBLICATIONS**

Presented and authored / co-authored multiple innovative articles in PMSA and PBIRG conferences. Topics include:

* Measuring responsiveness of integrated multichannel marketing programs
* Uncovering physicians' adoption patterns of newly launched products
* Effects of Medicare Part-D and identifying high-potential physician targets
* New method to identify targets during the early phases of product launch
* Robust framework for various types of resource optimization problems using evolutionary algorithms