**Senthil Murugan – 2015 Accomplishments – Draft 1**

In summary, all the works listed below helped to develop innovative methods and thorough analytical approaches that resulted in *gaining the trust* of business partners in providing business value and to *prepare a strong base for future* work. The collaboration efforts helped to *train, guide and develop the IT hub team members* to better position themselves to handle various high level analytical projects.

**1. Hong Kong – Price Elasticity & Optimal Pricing analysis – Arcoxia, Januvia/Janumet and Gardasil**

* This innovative work was extremely well received by HK MDs (David Peacock and Michelle Kehily) for its important business implications. The recommendations, presented at HK Pricing workshop, can generate additional revenue between 1 MM to 1.5 MM USD.
* This work provided the gateway and ground work to collaborate with Global Pricing Team (Tim Sleeth and Sean Hosp) to do such analysis for other appropriate bigger markets in the future.
* Experimented, designed and implemented a feasible segmentation and statistical modeling approaches to understand price elasticity and determine optimal revenue maximizing price points for various customers.
* Guided, reviewed thoroughly and coached Abhik (primarily), Renee and Francois to develop similar models for many products.
* Guided the team to develop math and approach behind account level web based pricing tool.

**2. Portugal – Remicade Pricing analysis**

* Studied Remicade Pricing for Portugal (Client: Global Pricing) to identify appropriate price in the declining market. Recommended and implemented a segmentation scheme to visualize the impact of pricing for different Remicade customers. Potential to expand this for other countries.

**3. Japan – Market Mix analysis – Januvia / Janumet**

* Most importantly, gained the confidence and appreciation of local business partners on our approach and thought process behind the market mix analysis.
* Recommended promotional budgets have an upside of tens of millions of USD.
* Developed and Implemented modeling and analytical approaches to address optimal spend levels for various promotions like details, special promotions, lectures and physician meetings.
* Identified actionable set of customers (GP – High Volume: + or – growth) to roll out promotions differently in order to increase sales and retain the customers.
* Specific contributions include innovations in determining shapes of PRC, segmentation schemes, analyzing small impact programs etc.

**4. China – Market Mix analysis – Singulair and Tienam**

* Informed allocation of $21 MM promotional budget. Implementation of results would generate additional $2.5MM USD.
* China finance team presented results to global finance and marketing heads. They appreciated the thoroughness of approach in proper attribution of revenue impacts of different promotions and planned to use this as reference material for other such analysis in the future.
* Designed and developed a detailed analysis procedure to quantify the ROI and revenue impact of investments in FTE, local symposia, hospital meetings and sponsorship meetings.
* Determined optimal spend levels to maximize revenue. Conducted sensitivity analysis on promotional spends to gain confidence on our recommendations.

**5. Canada – Impact of TV ads and Field Force Promotions - Zostavax**

* This analysis informs the 2016 promotional budget planning process. Guided and helped Abhik to analyze the impact and ROI of TV ads, details, rep award programs etc.
* Statistical modeling techniques went well beyond traditional least square regressions Examples include sandwich estimators, mixed models, fixed effects models etc.
* Innovations include integration of geography level models and physician level models for determining revenue impacts of various promotional programs.

**6. Other Mkt Mix analysis – Israel (Branchburg Hub) and China (Singapore Hub)**

* Provided guidance to various hub team members and reviewed the statistical modeling, interpretation of promotional impacts and positioning of results for Israel and China.

**7. AH UIN Rationalization - Italy and GLOBAL**

* Developed and Implemented OR methods (Mixed Integer Linear Program) to address AH product pack eliminations and maximize revenue under several business constraints.
* Completed the analysis first for Italy and then for all countries and reviewed the analysis with Italy MD (Mauricio), Manufacturing (Diane), AH Finance head (Aaron Rosenberg) and AH IT head (Dave Williams).
* The approach was considered innovative and relevant by the business partners. It was unique in terms of recommending optimal quantities to be manufactured or sold for the retained UINs.
* Collaborated closely, educated and guided a team of four analysts to complete the global analysis within very tight time frame.
* Recommendations, if implemented, may generate about $150MM USD in additional revenue. Currently collaborating with AH IT team to take the analysis forward.

**8. Supply Chain Simulation – POC, HCV and Women’s Health products (90 day challenge)**

* Learned discrete event simulation using Arena. Developed UG Cafeteria simulation prototype to demonstrate the concept to wider IT audience.
* Helped guide the analysis to first produce proof of concept approaches that helped to gain confidence and further projects from the MMD teams.
* Later helped Amir and Team to guide and shape the analysis with relevant scenarios and forecasting considerations for HCV launch product and Women’s Health products.

**9. Analytics 101 Training**

* Helped EICC by presenting training materials through about 10 two hour training sessions for GHH IT Client Facing and Technical teams. Presented along with Kevin and Antonio.

**10. Other Consulting Works**

* Russia – revenue realization from SMART growth SF impact analysis: Helped to device and verify simple approaches to quantify $4 MM USD realization from work done in 2013 - 2014.
* Consulted on Tender data analysis, Symposium impact analysis (not implemented due to compliance reasons) etc.
* Prepared relevant materials and presented some of our team’s work on EICC day, Machine Learning Summit, Team meetings, Business partners etc.
* Gained lot of perspectives and ideas on OR applications through INFORMS conference.