



2015 Performance Plan for Senthil Murugan

Employee Information

First Name	Senthil	Location	UPPER GWYNEDD, PA OFFICE
Last Name	Murugan	Country	USA
Job Title	Assoc. Dir, Quant. Sciences-(56153131)	Manager	Paul Kallukaran
Personnel Sub Area	Info Technology-Z004	Job Code	56153131

Year End Review

MANAGER NOTE: Click "Save and Close" and disregard the "Finalize Form" button at the bottom of the screen. Click the "Send to Signature" button at the bottom of the screen which will become visible when Year-End discussions can begin.

Relative Performance Category

Upper 10-20%

Performance Objectives

Financial Performance

Advance towards a best-in-class Analytics Practice to measurably improve decision making.

Completed

A) Support various Go-To-Market initiatives with a value realization goal of \$300 MM.

B) Develop analytical processes and solutions for various business initiatives that provide revenue/ productivity improvements across the commercial value chain: Pricing, UIN Rationalization, Sales Operations & Execution and Integrated customer and marketing strategies

C) Develop quantitative models to optimally allocate marketing and sales resources by country, franchise that maximizes the Merck portfolio. Incorporate business constraints based on brand and customer needs as appropriate.

D) Create a list of future opportunities where predictive analytics can enable decisions based on data insights.

E) Measure the value realized for key projects.

Individual Objective Category

Unrated

Priority Details

Objective Name	Advance towards a best-in-class Analytics Practice to measurably improve decision making.	Objective Description	<p>A) Support various Go-To-Market initiatives with a value realization goal of \$300 MM.</p> <p>B) Develop analytical processes and solutions for various business initiatives that provide revenue/ productivity improvements across the commercial value chain: Pricing, UIN Rationalization, Sales Operations & Execution and Integrated customer and marketing strategies</p> <p>C) Develop quantitative models to optimally allocate marketing and sales resources by country, franchise that maximizes the Merck portfolio. Incorporate business constraints based on brand and customer needs as appropriate.</p> <p>D) Create a list of future opportunities where predictive analytics can enable decisions based on data insights.</p> <p>E) Measure the value realized for key projects.</p>
Start Date	01/01/2015	Due Date	12/31/2015
Status	Completed		

Other Details

Accomplishments

Progress Notes	<p>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.</p>	Completion Date	12/31/2015
Progress Notes	<p>1. Hong Kong – Price Elasticity & Optimal Pricing analysis – Arcoxia, Januvia/Janumet and Gardasil</p> <ul style="list-style-type: none"> • Most importantly, gained the confidence and appreciation of local 	Completion Date	12/31/2015

	<p>business partners on our approach and thought process behind the market mix analysis.</p> <ul style="list-style-type: none"> • 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. 		
Progress Notes	<p>2. Portugal – Remicade Pricing analysis</p> <ul style="list-style-type: none"> • 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. 	Completion Date	12/31/2015
Progress Notes	<p>3. Japan – Market Mix analysis – Januvia / Janumet</p> <ul style="list-style-type: none"> • 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. 	Completion Date	12/31/2015
Progress Notes	<p>4. China – Market Mix analysis – Singulair and Tienam</p> <ul style="list-style-type: none"> • Informed allocation of \$21 MM 	Completion Date	12/31/2015

	<p>promotional budget. Implementation of results would generate additional \$2.5MM USD.</p> <ul style="list-style-type: none"> • 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. 		
Progress Notes	<p>5. Canada – Impact of TV ads and Field Force Promotions - Zostavax</p> <ul style="list-style-type: none"> • 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. 	Completion Date	12/31/2015
Progress Notes	<p>6. Other Mkt Mix analysis – Israel (Branchburg Hub) and China (Singapore Hub)</p> <ul style="list-style-type: none"> • Provided guidance to various hub team members and reviewed the statistical modeling, interpretation of promotional impacts and positioning of results for Israel and China. 	Completion Date	12/31/2015
Progress Notes	<p>7. AH UIN Rationalization - Italy and GLOBAL</p> <ul style="list-style-type: none"> • Completed the analysis first for Italy and then for all countries and 	Completion Date	12/31/2015

reviewed the analysis with Italy MD (Mauricio), Manufacturing (Diane), AH Finance head (Aaron Rosenberg) and AH IT head (Dave Williams).

- 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.

Progress Notes	8. Supply Chain Simulation – POC, HCV and Women's Health products (90 day challenge)	Completion Date	12/31/2015
	<ul style="list-style-type: none"> • 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. 		

Progress Notes	9. Other Consulting Works	Completion Date	12/31/2015
	<ul style="list-style-type: none"> • 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. 		

Innovation

Drive innovation in all facets of our business as the basis of our core strategy and competitive advantage.

Completed

A) Develop two new innovative solutions to address business problems.

B) Drive Innovation and Technology Leadership – Explore/Experiment new models and technologies that could enable new business opportunities or productivity improvements for the Commercial business or Merck broadly.

Individual Objective Category

Unrated

Priority Details

Objective Name	Drive innovation in all facets of our business as the basis of our core strategy and competitive advantage.	Objective Description	A) Develop two new innovative solutions to address business problems.
			B) Drive Innovation and Technology Leadership – Explore/Experiment new models and technologies that could enable new business opportunities or productivity improvements for the Commercial business or Merck broadly.
Start Date	01/01/2015	Due Date	12/31/2015
Status	Completed		

Other Details

Accomplishments

Progress Notes	1. Hong Kong – Price Elasticity & Optimal Pricing analysis – Arcoxia, Januvia/Janumet and Gardasil • 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.	Completion Date	12/31/2015
Progress Notes	2. 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. • The approach was considered innovative and relevant by the business partners. It was unique in	Completion Date	12/31/2015

terms of recommending optimal quantities to be manufactured or sold for the retained UINs.

People

Staff / Consultant Management

Completed

A) Provide support for Analytics 101 training sessions to train client facing and technical IT personnel.

B) Lead skill development within the EICC–Commercial Analytics team and communicate a clear vision on strategies and priorities.

1) Communicate key project priorities; assign clear roles for each of the key priorities.

2) Monitor progress toward the key milestones.

C) Motivate people to have immense interest in the problems we are solving for the business.

D) Provide close oversight of the development of top performers. (Metric: informal survey of high performers).

E) Ensure key individuals are trained on data sciences and expand the Data Sciences capability inclusive of support from GIC.

Individual Objective

Category

Unrated

Priority Details

Objective Name Staff / Consultant Management

Objective
Description

A) Provide support for Analytics 101 training sessions to train client facing and technical IT personnel.

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Start Date 01/01/2015

Due Date 12/31/2015

Status Completed

Other Details

Accomplishments

Progress Notes	1. Hong Kong – Price Elasticity analysis – Arcoxia, Januvia/Janumet and Gardasil • 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.	Completion Date	12/31/2015
Progress Notes	2. Many projects listed as part of Financial Performance objective required training, development, motivation and clear direction setting for people involved in the projects. This includes: Genpact consultants, Branchburg, Singapore and Prague IT hub members.	Completion Date	12/31/2015

People

Work as One IT

Completed

Collaborate by looking across all of IT for people with strengths and capabilities that can help achieve our objectives. Communicate accomplishments and best practices that embody the principles of One IT, accelerate collaboration, and improve performance metrics. Connect and build new partnerships and relationships that demonstrate our commitment to external customers and our engagement with colleagues across the business.

I will do this by:

- Working across organizational boundaries as if they do not exist
- Proactively build your cross IT network by reaching out, introduce yourself and meeting others in person or via the community

Individual Objective

Category

Unrated

Priority Details

Objective Name	Work as One IT	Objective Description	Collaborate by looking across all of IT for people with strengths and capabilities that can help achieve our objectives. Communicate accomplishments and best practices that embody the principles of One
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IT, accelerate collaboration, and improve performance metrics. Connect and build new partnerships and relationships that demonstrate our commitment to external customers and our engagement with colleagues across the business.

- I will do this by:
- Working across organizational boundaries as if they do not exist
 - Proactively build your cross IT network by reaching out, introduce yourself and meeting others in person or via the community

Start Date	01/01/2015	Due Date	12/31/2015
Status	Completed		

Other Details

Accomplishments

Progress Notes	1. 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.	Completion Date	12/31/2015
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Progress Notes	2. Projects listed as part of Financial Performance objective involved extensive cooperation with IT and Business teams of several countries across the organization: These projects include: Hong Kong – Price Elasticity & Optimal Pricing analysis – Arcoxia, Januvia/Janumet and Gardasil; Portugal – Remicade Pricing analysis; Japan – Market Mix analysis – Januvia / Janumet; China – Market Mix analysis – Singulair and Tienam; Canada – Impact of TV ads and Field Force Promotions – Zostavax; AH UIN Rationalization - Italy and GLOBAL; Supply Chain Simulation – POC, HCV and Women’s Health products (90 day challenge) .	Completion Date	12/31/2015
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Take 40 hours of personal development training; ensuring that at least 20 hours are focused on digital business models, innovation and cutting edge IT.

Individual Objective
Category

Unrated

Priority Details

Objective Name	Personal Development	Objective Description	Take 40 hours of personal development training; ensuring that at least 20 hours are focused on digital business models, innovation and cutting edge IT.
Start Date	01/01/2015	Due Date	12/31/2015
Status	Completed		

Other Details

Accomplishments

Progress Notes	<ul style="list-style-type: none">• Learned discrete event simulation using Arena. Developed UG Cafeteria simulation prototype to demonstrate the concept to wider IT audience.	Completion Date	12/31/2015
	<ul style="list-style-type: none">• Gained lot of perspectives and ideas on OR applications through INFORMS conference.		

Quality/Compliance

Ensure highest standards of quality and conduct all activities in an ethical and compliant manner.

Completed

A) Ensure compliance with all applicable laws, regulations and policies.

B) Minimize the business impact of cybersecurity threats and other IT incidents.

Individual Objective
Category

Unrated

Priority Details

Objective Name	Ensure highest standards of quality and conduct all activities in an ethical and compliant manner.	Objective Description	A) Ensure compliance with all applicable laws, regulations and policies. B) Minimize the business impact of
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cybersecurity threats and other IT incidents.

Start Date 01/01/2015

Due Date 12/31/2015

Status Completed

Other Details

Accomplishments

Progress Notes	All projects listed as part of Financial Performance objective ensured compliance with all laws, regulations and policies.	Completion Date	12/31/2015
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Signature

Manager: Paul Kallukaran

03/04/2016

Impact: Senthil was a significant contributor in the development and implementation of pricing analysis for Hong Kong. This innovative work was extremely well received by the managing director for its important business implications. The recommendations, presented at the pricing workshop, have potential to generate additional revenues between \$1-\$5 MM. This work also provided the framework for the Global Pricing Team to apply similar analytics methods for the Top 10 Markets.

Inspire: Senthil is always willing to take on new challenges and constantly looks for ways to apply his business and statistical skills in analyzing data and developing various mathematical techniques that assist customers in making data informed decisions. He is quick in providing the necessary information to his customers and they appreciate the quick turnaround on projects.

Innovate: Senthil has shown the capability to manage multiple critical projects with challenging deadlines and has always delivered high quality work on time and error free. His willingness and courage to take on difficult problems and find quick solutions to business issues has been a great asset to the team. Senthil is always willing to accommodate last minute requests from customers to evaluate alternative scenarios. He was instrumental in developing multiple solutions across a broad domain of areas: Remicade pricing analysis, Japan &

China marketing mix analysis, Canada impact of TV advertising, , Rationalization of UIN's for Animal Health and consulting on several analytical models across markets/business areas.

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Senthil conducted marketing mix analysis for Japan & China for the diabetes and asthma franchises. He was responsible for developing several mathematical modelling approaches based on the complexity of data, the business constraints and scenarios that needed to be evaluated. He managed, executed and presented the analysis and provided recommendations to the finance team with a potential to realize a revenue impact of \$3-\$10 MM.

Most importantly he gained the confidence and appreciation of local business partners in Japan on the approach and thought process behind the market mix analysis. The team in china appreciated the innovative methodology he implemented for proper attribution of revenue impacts of different promotions and plans to use this as reference material for other products in the future.

Senthil was also was a significant contributor in analyzing the impact and ROI of TV ads, details, rep award programs for Zostavax in Canada. He implemented statistical modeling techniques that went well beyond traditional least square regressions. E.g. sandwich estimators, mixed models, fixed effects models etc. Other Innovations included integration of geography level models and physician level models for determining revenue impacts of various promotional programs.

He also developed an innovative optimization model that enables the rationalization of UIN's for the Animal Health business that maximizes net revenue. The project resulted in the MD for Italy utilizing the models to evaluate all Animal Health products for his country. This analysis was implemented for all countries and reviewed with Italy MD, Manufacturing/ Financed/ IT senior leaders in Animal Health. The recommendations, if implemented, have potential to generate approx. \$150MM USD in additional revenue.

Senthil also learned discrete event simulation and developed a simulation model of our cafeteria to demonstrate the concept to wider IT audience. He also helped guide a new analyst that was responsible for developing simulation models of the manufacturing process for HCV and Women's Health. He also assisted in conducting training for IT by presenting training on application of analytics in the commercial areas.

Key strengths:

Senthil is detail oriented and asks good questions and is always looking for innovative approaches to address business problems.. Among his greatest strengths are his diligence, creativity and persistence. Senthil is careful and consistently produces quality output. He thinks "outside of the box" to devise solutions to problems that cannot be approached using standard approaches. He is tenacious, refusing to give up in the face of daunting challenges in the course of the projects in 2015. Senthil had to manage multiple projects and resources and demonstrated strong leadership by delivering on all the commitments. He had to communicate clearly and concisely at an executive level to describe the work and did these activities despite aggressive timelines and competing priorities.

Key areas for development:

Senthil has developed a great deal in terms of negotiating scope/timelines with, and communicating his results to senior leadership. I believe that Senthil will become even more effective if can delegate more of the tasks to other resources thereby giving him the opportunity to focus on many other potential business problems and continue to collaborate more frequently with other analytical teams. I would not consider this an area in which he has any deficit, but simply an area in which he could continue to grow given the opportunity. Another area for Senthil to expand his capabilities is in conveying the results from his analysis to balance the details of the modelling work versus the overall business insights/recommendation.