

MS&E 108: Examples of Past Industrial Projects

These projects were chosen from among others to serve as examples because they were of an appropriate scope and addressed problems well-suited to our program.

Customer Retention at XX

XX is currently beginning to phase out its XXXX model server. The intent is to transition its current XXXX model customers to the YYYY model server. Our project will focus on creating a customer retention plan that will allow XX to retain as many clients as possible, and minimize the number of those who migrate to other server manufacturers. XX faces the potential loss of future revenue due to declining market share as customers fail to transition over from the XX to another XX server. They seek to minimize the time it takes to put customers on the path to transition.

RCCA (Root-Cause-Corrective Action)

XX is noticing quality issues with its components as a result of outsourcing. For this project we hope to determine the source of these quality issues, and their manifestations as they relate to XX. To do so we plan to find background information through research of case studies that will be used to determine the correct approach to this problem. In addition to background information, we plan to interview current engineers to determine where the problems arise with respects to quality and outsourcing and how it can be rectified. In the end we plan on delivering to XX a proposal detailing how to better manage its partner relationships and a pamphlet outlining preventative measure for outsourcing quality issues specific to the company.

The Cannibalization Effects of Investment Software

XX is considering selling the software they have created to produce statistical data on various funds. Before they proceed, however, they want to determine if the various firms who purchase this software will begin to make the same investment decisions; in other words, they wish to see if the data output by this software will lead firms into creating similar optimal trading strategies. They have asked us to determine the cannibalization effects of their investment software by developing multiple optimal trading strategies based on the data produced (as if we were multiple clients of this software) and then researching the market to determine how many firms will most likely build similar optimal trading models and to what extent these similar trading patterns will affect the market.

XX The Supply Chain Configurator: Helping diverse business units work in concert to optimize new product introductions

We are working with XX'S Supply Chain Strategy and Logistics Department to both analyze and improve the existing flow of information within the company. By building a "Supply-Chain Configurator," Team 6 hopes to greatly improve the dissemination of information related to New Product Introductions (NPIs) to various XX departments, thus overcoming the obstacles presented by sub-optimizing strategies of individual units. In essence, the Supply Chain Configurator we will create will be the initial form of a

universal 'questionnaire' sent to all relevant departments upon an NPI. This would yield important information for XX: what precise information to send to which interested departments, when, and by what means. Currently, individual business units at XX do not have a clear picture of what is best for the company as a whole; rather, each is motivated by different metrics. By constructing the Supply Chain Configurator, Team 6 hopes to align these various metrics of individual departments for the betterment of XX. While the final form of the Configurator will be coded and perhaps set up on the internet, Team 6's job concerns primarily the gathering/analyzing of information and the construction of a universal, sound Configurator, not coding.

Improving Internal Logistics

The R&D lab of XX, located in Sunnyvale, CA, has been experiencing a workflow management problem for the last year and a half. Each week, over 100 tests for the chips and processors are submitted by the Logistics Group to the Engineering Group. With the numerous procedural requirements of working in "clean rooms," the set-up time, queuing, and authorization procedure for each test significantly hinder the entire process. As a result, engineering tests are currently being submitted at a rate that cannot be supported. In addition, engineers are frustrated by the long setup process. We are going to examine the process from both quantitative (cycle time, turnover rate) and qualitative (relationship between Logistics and Engineering) perspectives, with the goal of making the process more efficient and the relationship between the two said groups more amiable.

Inventory Management

XX is a division of XXX Corporation, a medical equipment manufacturer. XX manufactures a line of videoscope cameras that are tightly sealed. They currently have one important welding operation performed by an outside subcontractor. This project will assess the costs and benefits of subcontracting the welding versus XX purchasing welding machinery to perform the welds. In addition to inventory and cost issues, we will analyze training, organizational issues, and competitive manufacturing strategy issues.

Project Purple

This project is aimed at exploring opportunities to reduce customer lead times at XX. In particular, we will be focusing on the New Product Introduction phase of customer lead time for the "Purple" Storage product yet to be released. We anticipate that through interviews and 3rd party research we can assemble a platform from which to make recommendations and evaluations on possible changes to workflow and information sharing on Project Purple.

Process Mapping and Improvement At XX

XX Power Products has experienced a year of unprecedented growth that is expected to continue for the foreseeable future. The planning processes supporting the company's delivery of product have been unable to manage the increased demand, impacting delivery performance, a key element of customer satisfaction. We intend to study the production process to improve it by reducing bottlenecks, WIP and cycle time.

Improving Information Flow for Traveling Sales Engineers

XX is a startup company that has recently gone public and is now in a stage of rapid growth. They are distributing cable TV service to a very wide spread international market, which includes offices in Beijing, Paris, and California, with an employee base of just 200 people. Team members are constantly traveling as a result, and this is creating a great need for some method of reliable information distribution. The company has an internal "intranet" site that can be accessed by all employees, but this currently does not access their shared sales hard drive in the home office. In addition, company team members are often traveling so much that they have little time to interact with each other to exchange ideas. XX would like our group to examine their current information distribution system, and make recommendations about how they can keep traveling sales employees better connected to their data and each other.

Cost/revenue Structure for an Application Service Provider

XX is an application service provider that provides both business to business and business to consumer services. XX needs to be able to make informed decisions regarding pricing, product development and market segmentation. To do this, XX needs to figure out how much its different user types are costing the company. More specifically, XX needs to know the effect of each service they offer on cost, and how their costs change with user type and volume. In addition, they need to be able to identify and prioritize all relevant components of user cost.

Saturday Operations Improvement Plan

Our group sought to uphold the quality tradition of XXX--continuing to provide complete Saturday delivery service to each of their customers--while improving the efficiency of Saturday operations. We determined how XXX could best improve the sorting of packages, delivery and pick-up routing, and staffing issues while still providing perfect Saturday service to customers. We looked specifically at the Menlo Park Center, one of several facilities in the Bay Area. We developed methods for the Menlo Park facility that improve the scheduling of Saturday routes using our optimization, cost analysis, and organizational behavior skills, as well as our knowledge of current and future technologies.

Inventory Management

XX, a leading manufacturer and distributor of bicycle helmets, parts, and accessories, has asked us to help them reduce costs. According to their balance sheet, the two largest contributions to total assets are accounts receivables (A/R) and inventory; inventory comprises almost \$40 million, or approximately 16%-20% of their total assets. In assessing the various components of their balance sheet, XX and its holding company, XXXX, determined that inventory levels were too high and comprised too much of their total assets. Additionally, with the closure of two warehouses in 1998, the remaining warehouses were nearing capacity, making inventory a pressing issue. To reduce costs, increase warehouse space, and free capital tied up in inventory, it seems logical to assess whether or not inventory levels can be reduced.

Next Day Air Recovery Operations

The current sorting operation, located at the Sunnyvale facility, is running in excess of capacity and XXX is investigating opening a small remote facility in the Santa Clara area to alleviate this capacity issue. We performed a cost benefit analysis to decide the feasibility of the remote and created an Extend simulation to investigate the internal operations of the remote. We delivered to XXX a list of which trucks should go to the remote, including a forecast of what times they will arrive, recommendations for the sorting process, and general operating recommendations.

Manpower Planning Project

Positioned at the very top of the supply chain for the semiconductor industry, XX is subject to extremely wide variations in revenue. These are also accompanied by wide variations in the size of their workforce -- there had been two huge layoffs in the three years preceding the project due to declining revenues. Originally, the goal of our project was to create a model that would predict XX's hiring needs, specific to forecasted business conditions, and would allow XX to create a flexible, scalable workforce. Over the course of this project, however, we learned that some of XX's own business units were already implementing such models, with varying degrees of sophistication and success. We then re-focused our efforts, examining the source of communication barriers in the company and suggesting ways to improve information sharing and leverage HR's abilities to enable business groups to make informed staffing decisions.

Project "Octopus" content expansion and accuracy

XX is an established, popular destination for fans of live music. In order to achieve its vision of becoming the category leader in concert information, XX must increase its coverage from approximately 25% of concert information today to more than 90%--and this data must adhere to 99.9% accuracy standards. The senior project team will be charged with assessing our data aggregation organization and process, as well as creating a QA/auditing system which will measure the accuracy of the data and flag potential problems.

Competitive Analysis Process for XX

XX is a start up within XXXX focused on simplifying healthcare to create informed and confident consumers. There are many different competitors in this space and we need to understand our competition and keep informed of their progress on an ongoing basis.

This project would include:

- Adapt and modify competitive analysis methodologies used throughout XX and Industry Best Practices to determine a methodology to analyze our competition

- Developing an ongoing business process to keep our competitive information current

- Conducting the first competitive analysis using the proposed methodology and process, including identifying learnings to improve the process going forward.

User-Experience and Engagement Optimization

Description: XX is a new website from XXX that helps aspiring business owners get up and running quickly and successfully. This free site provides key getting started steps -

complete with recommended tools to accomplish each step - and a new business community where users can connect with others new entrepreneurs as well as business experts to find answers to their most pressing questions. In this project, team members would work to identify, implement, and analyze opportunities to improve the user-experience and engagement of XX visitors and community members.

Possible activities include:

- Analyzing our site statistics with ClickTracks in order to get a clear picture of our users, their engagement levels, and how they use the site in its current state.

- Identifying possible areas of improvement on our site.

- Providing input and feedback for current and potential design ideas, based on their findings.

- Implementing and analyzing A/B testing and multivariate testing on the different design ideas to understand the optimal navigation and home page components for the XX site.

Deliverables: Recommendations on how to improve user-experience and engagement based on their findings.

Order Processing and Inventory Management

Study XX's order processing and inventory management systems. This involves reviewing two software alternatives (and locations for storing inventory), manual order processing, and analyzing how the two different systems track sales to comply with the myriad of state regulations. We are currently using one system, with a related warehouse and software system and have the option to use another utilizing our in-house POS and inventory management software. We have most of the data for both alternatives and the project would encompass determining which one gives us the most efficient logistics and lowest cost.