Biobank Operation Feasibility and Facility Design

ProModel
VISUALIZE ANALYZE OPTIMIZE VAO

Vertical

Manufacturing | **Pharmaceutical** | Healthcare | Portfolio | Logistics | Financial | Government | Business

Genre

Case Study | **Project Review:** | White Paper | Technology Overview

Client

A leading global pharmaceutical firm

Situation

The firm spent approximately $2 million dollars in a recent one year period to purchase tissue, DNA/RNA, and biofluids in the appropriate form from external biobank vendors in order to supply project teams across the company with samples. The firm projected rising vendor costs that would result in an uncontrollable financial situation.

Additionally, management felt there may be a competitive advantage gained by developing an internal biobank operation that would provide benefits such as:

- Giving project teams rapid access to high quality, well-characterized tissues through a central resource for uses such as a substrate for identification and validation of Biomarkers.
- Enhanced intellectual property capture.
- Minimize duplication of tissue acquisition activities.
- Faster data driven decisions.
- Improved transparency and global organization access to high quality samples and data.

The Clinical Pharmacogenomics group was tasked to perform a feasibility analysis for the addition of a major internal biobanking operation. The firm engaged ProModel to help document the “to be” operational requirements and to provide a simulation solution to assist the team in designing the operation.

Objectives

In undertaking this project, the objectives were as follows:

- Determine the feasibility of implementing an internal biobank operation.
- Identify the equipment and staffing requirements based upon various projected demand scenarios.
- Document the processes of the potential new operation.
- Design the facility layout.

Solution

The project team, working in conjunction with ProModel, developed the following solution with two major deliverables:

- Detailed process maps of the proposed production processes for all DNA, biofluid, and tissue samples.
- A simulation solution that helped the company to profile the desired level of automation and staffing required to support low, medium, and high sample receipt demand profiles.

Results

The team concluded that internal biobanking offers the best long term solution for their needs due to it’s:

- Stability
- Cost Advantages
- Security of Intellectual Property
- Potential to positively affect program attrition through more robust research from an internal sample bank

The ProModel solution played a role in helping the firm come to this conclusion by providing the following:

- Assisted in developing the optimal layout and process design including the appropriate equipment and staffing configuration for the potential new facility.
- Provided an objective decision support capability which allowed the team to justify FTE operational requirements of 9 total staff versus initial projections of 12-14, where fully loaded FTE costs approach $250k. This is an annual cost avoidance of $750k-$1.25 Million.
- Helped the team organize known biobanking business intelligence into a consistent and logical methodology that directly supported the feasibility analysis.
- Illustrated to the team over-capacity demand situations that would justify additional capital investments or require alternative production logistics efforts.
- Helped the team understand the major impact of lost FTE productivity from sample receipt processing without an IT architecture and vial labeling strategy.

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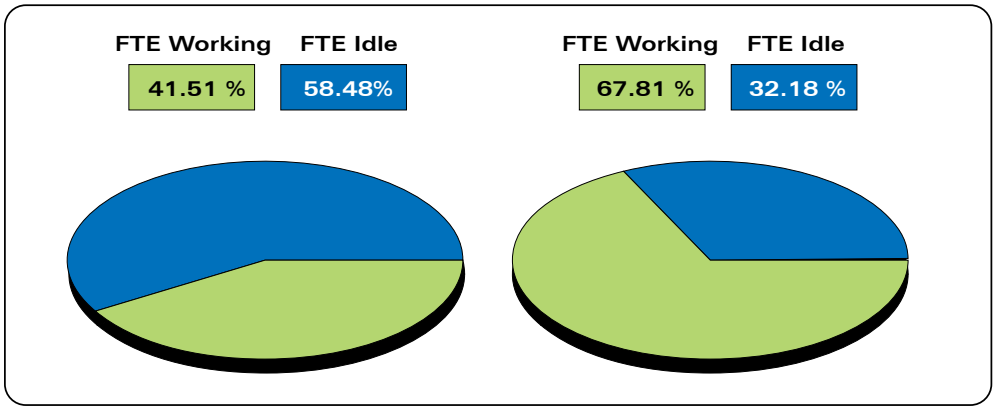
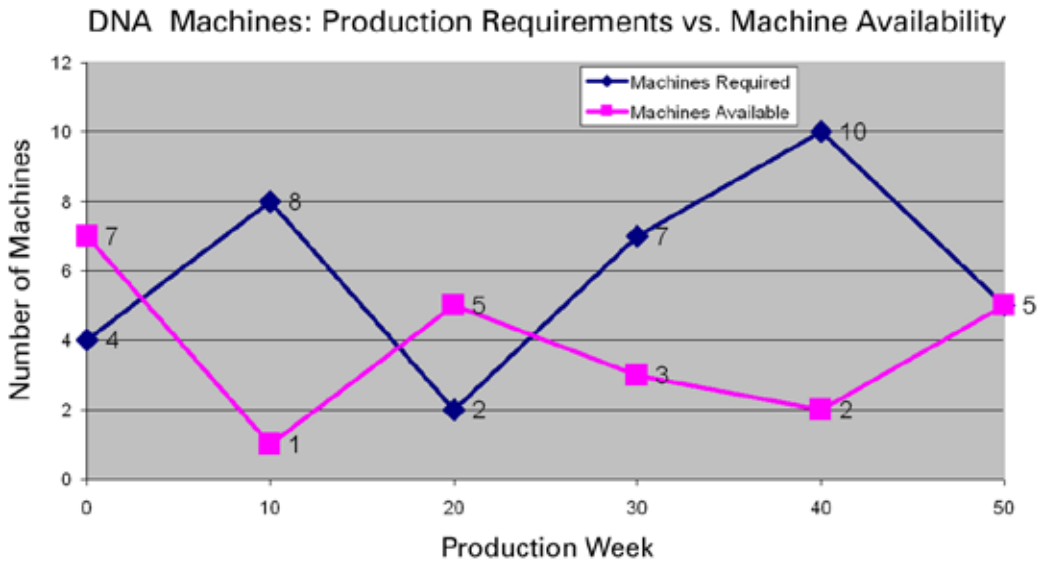
Results

Example output graphs used to help perform the analysis for determining the optimal equipment and staffing configuration.



The graph on the left illustrates an FTE pool utilization based on a given demand profile. Note the total utilization of 42% indicated by the green section of the pie chart. This scenario reflects too many workers given the demand.

The graph on the right approaching utilization of 70% (green) was more reasonable for this operation. This scenario represents a staff reduction of 2 compared to the graph on the left.



Example graph of production requirements for a given machine type versus the actual machine availability over time.

ROI Range