Project:SciDept

**Sample Only**

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Document: User Guide

Revision No.: 3.1

The “SciDept” Model is designed to project the twelve year cost of creating and running a new science department for a local university. The two largest source of the revenue to fund this investment are the restricted endowment and the sponsored funding. The key expense drivers will be the costs of the faculty, lab operation, space and administrative cost.

The user guide is divided into four sections:

1. Location and meaning of input parameters and input stream
2. Location and meaning of outputs
3. Guide to visual cues and naming conventions
4. Step-by-step use of the model

**1. Location and meaning of input parameters and input streams**

All input parameters and input streams are located in the worksheet called “InputsParameters.” All the following worksheets in the model are linked to the “InputsParameters” worksheet such that any changes in this worksheet will automatically affect the remaining sheets that use this data. All parameters are organized according to the worksheet they will be used for. Below is the explanation of each parameter in “InputsParameter” worksheet.

Faculty Growth:

* Senior Faculty Recruitment Stream – This parameter indicates the hiring stream for senior faculty staff including the chair over a 12 year period
* Junior Faculty Recruitment Stream – This parameter indicates the hiring stream for Junior faculty over a 12 year period

Faculty Salary Inputs:

* Faculty Salary Assumptions – Annual salary for staff including the Chair, existing faculty, senior recruits and junior recruits
* Percentage Hard Salary & Fringe Budgeted – Percentage of Salary and Fringe not covered by the grant
* Other Data:
1. Fringe – Benefit percentage
2. Annual Salary & fringe Inflation – Inflation rate per year

Space Inputs:

* Lab (wet) Space – Lab space required over the course of the 12 year period by staff; this includes shared equipment and space as well
* Dry Space – Office and admin space required over the course of the 12 year period
* Other Data:
1. Renovation Cost/NASF (wet space) – Renovation cost of the wet space
2. Renovation Cost/NASF (dry space) – Renovation cost of the dry space
3. Annual Maintenance Costs ($/sqft) (wet space) – Annual maintenance cost for the wet space
4. Annual Maintenance Cost ($/sqft) (dry Space) – Annual maintenance cost for the dry space
5. Construction and Maintenance Inflation – Inflation rate to adjust the construction and maintenance costs
6. Renewal (years) – Number of years after which a major renovation will be required
7. Renewal Investment (% of original renovation cost)- Percent of subsequent renovation cost as a percent of original renovation cost
8. % Eligible for Debt Financing – Percentage of the cost that is eligible for debt financing
9. Annual Debt Service – Annual interest rate for debt financing
10. Payment Periods – Debt payment period

Lab Operations Inputs:

* Senior Faculty Lab Cost – This consists of year 1 Animal Costs, Lab Personnel cost, and other costs like travel, publications, etc. Also includes the inflation rate for each of these costs to appropriately calculate the inflation adjusted costs in years 2 through 12
* Junior Faculty Lab Costs Stream – Lab cost for junior staff over the 12 year period
* Start-Up Costs – This consists of start-up packages for the chair, senior staff and senior and junior recruits with the corresponding draw down percentages
* Department Equipment Investment – Yearly cost of equipments to be purchased over the course of the 12 year period
* Other Data:
1. Depreciation (Years) – Equipment depreciation period
2. Debt Financing Threshold – Minimum expense required for financing
3. % Eligible for Debt Financing – Percentage of the investment that is eligible for debt financing
4. Debt Service – Interest rate for debt financing
5. Equipment Financing period – Number of years the equipments will be financed for

Administrative Inputs:

* Department Administrative Costs – Admin cost as a percentage of non-space cost (i.e., faculty benefits and lab operations costs)

Sponsored revenue Inputs:

* Sponsored Research Assumption – Input to calculate revenue by senior and junior faculty’s sponsored research based on the average grant submitted, average grant amount and average success rate annually
* Other Data:
1. Federal Indirect Rate (Facility) – Facility indirect grant expressed as a percentage of the direct grant received by senior and junior faculty
2. Federal Indirect Rate (Administrative) – Admin indirect grant expressed as a percentage of the direct grant received by senior and junior faculty
3. Grant Inflation – Inflation rate for the grant amounts

Endowment Revenue Inputs:

* Endowed Professorships – Market value at year 1 of the Chair and senior staff endowments; amount to be invested to generate revenue for the department
* Other Data:
1. Endowment Return – return projected on the invested cash
2. Distribution Rate – Percentage of return that can be used to run the department

**2. Location and meaning of outputs**

All of the output streams of the model are provided in the “Summary” worksheet. This worksheet has the data necessary for the University to determine if it is feasible to add a new department. The worksheet is designed to show the projected annual revenue, expenses and required investment over the 12 year period. User should understand that the “Summary” worksheet is simply an output that has resulted from the inputs and calculations conducted in other worksheets; thus, no changes in the values should be made on this worksheet. Below are the meanings of each of the outputs displayed in this worksheet.

1. Annual Revenue – Annual revenue from endowment distribution and sponsored grant over the 12 year period; the detailed calculation for annual endowment distribution and sponsored grant were conducted in the “EndowRev” and “SponsoredRev” worksheets, respectively. This output stream is named “TotalRevenue”
2. Annual Expense – Annual expense of running the new department over the 12 year period. The total expenses are categorized into four groups: space expense, administrative cost, lab operations expense and faculty. The individual components of the expense calculations were done in the “Space,” “Admin,” “LabOps” and “FacSal” worksheets. This output stream is named “TotalExpense”
3. Annual Required Investment – Annual investment the University will have to invest for the next 12 years to run the new department; the required investment is calculated as the difference between “Total Expense” and “Total Revenue.” This output stream is named “RequiredInvestment”
4. Cumulative Revenue – Cumulative revenue from endowment distribution and sponsored grant over the next 12 years. This output stream is named “CumTotalRevenue”
5. Cumulative Expense – Cumulative space, administrative, lab operations and faculty expenses over the next 12 years. This output stream in named “CumTotalExpense”
6. Cumulative Total Required Investment – Cumulative required investment over the next 12 years; required investment defined as expenses in excess of the revenue stream. This is the most important output for the University as it gives an idea of how much the investment in the new department will cost in total within the specified time horizon. This output stream is named “ReqCumInvest”

**3. Guide to visual cues and naming conventions**

The following coloring and naming conventions are used in the model

Colors

|  |  |
| --- | --- |
| Light Yellow | Used to visually denote the input parameters; these inputs can be changed to make adjustments to initial assumptions (i.e., inflation rate, number of recruits, etc.) |
| Grey | Used for titles |
| Light Orange | Used to visually denote the input parameters that can be changed to run a number of scenarios |
| Lime | Used to visually denote the calculated fields |
| Pale Blue | Used to visually denote the output streams on the summary page |
| Double Line Cell Border | Used to indicate the cell containing the initial value for a formula used by the rest of the row |

 Naming Conventions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Admin | Administrative |  | Jr | Junior |
| Ann | Annual |  | Maint | Maintenance |
| Cum | Cumulative |  | PY | Per Year |
| Dept | Department |  | Renov | Renovation |
| Eqpt | Equipment |  | Sal | Salary |
| Exp | Expense |  | Sr | Senior |
| Fac | Faculty |  | Tot | Total |
| Invest | Investment |  | Op | Operation |

**4. Step-by-step use of the model**

The model is structured to give users the flexibility to run a couple of scenarios mainly by manipulating the revenue stream. In the “InputsParameters,” you will see three cells that are highlighted in orange – average success rate of senior faculty’s research grant, average success rate of junior faculty’s research grant and endowment return. The best case scenario can be run by manipulating the inputs so that the average success rate of research grant and the endowment return are both high. On the other hand, the worst case scenario can be run by decreasing the average success rate of research grant and the endowment return. Below is the guide to change the scenarios and their impact in the required investment of the University:

* High research grant and high endowment return – First, increase the average success rate of the senior and junior faculty to receive research grant in the “InputsParameters” worksheet. This parameter is named “GrantSuccessAvg.” Then, change the value of “Endowment Return” in cell named “EndowmentReturn.” These changes will increase the sponsored and endowment revenues in “SponsoredRev,” “EndowRev” and “Summary” worksheets. As a result, the required investment shown in the “Summary” worksheet will decrease.
* Low research grant and low endowment return – First, decrease the average success rates in parameter “GrantSuccessAvg,” followed by changing the “EndowmentReturn” in the “InputsParameters” worksheet. This will decrease both the sponsored and endowment revenue and result in a higher required investment in the “Summary” worksheet.
* A combination of high success rate in research grant and low endowment return and vice versa can be run depending on the users view on what may be a realistic scenario.

This flexibility that has been built into the model will be very useful in making the decision about whether or not the University should invest into the new department. The model will allow the user to get an idea of the range of required investment both annually and cumulatively over the next 12 years. The decision for such a large investment should only be done after a thorough evaluation of the implications given what the user believes is a realistic set of assumptions. As mentioned above, the model does allow the user to make adjustments to other inputs (light yellow cells in “InputsParameters”) as well if the views on inputs like inflation, debt service, number of recruits, etc. change given the relatively long investment horizon of this project.