**Sample Only**

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**Project Name**: EZScoot

1. **How the calculations work**

The EZScoot model uses a set of input parameters to compute intermediate data, and then uses the intermediate data to produce a set of outputs. Input parameters are used to calculate the operating conditions for each individual Kiosk. Then a summary of all the operating conditions for all kiosks in the model is then calculated. Using the summarized operating conditions for all kiosks, the costs, revenues and scooter depreciations are calculated. The Kiosk summary, costs, revenues and depreciation serves as the basis for the computation of the financial state of EZScoot. Details of how the calculations work and some of the important formulas used in the model are discussed below.  
**Kiosk Summary Calculation**Based on the summary of the projected rentals, adjusted rentals, adjusted rental projection, projected number of scooters, adjusted number of scooters, Capacity and actual rentals for each kiosk location, a combined summary for all kiosks is calculated using the array addition formula: Kiosk1!Summary+Kiosk2!Summary+Kiosk3!Summary+Kiosk4!Summary +Kiosk5!Summary  
Capacity Utilization Rate is the value of the capacity of the kiosks that is actually being utilized over the modeled time frame. In the model, it is calculated using the formula: Utilization =ActualRentals/Capacity  
Walkaways are lost business due to unavailability of scooters for rentals at the kiosks. It is calculated using Walkaways = IF(AdjRentals > ActualRentals,AdjRentals -ActualRentals,0)  
The percentage Walkaways is calculated using: WalkawayPercent =IF(ActualRentals<>0,Up/ActualRentals,0)  
**Costs Calculation**This is the combination of all the costs associated with operating EZScoot. Relevant calculations are discussed below.  
Scooters Purchased is the number of scooters EZScoot needs to purchase as a result of increased demand for scooter rentals. The number of scooters purchased for each quarter is calculated by subtracting the number of scooters needed for the current quarter from the number of scooters needed for the previous quarter. If the number of scooters needed in the current quarter is less than the number of scooters needed in the previous quarter, no scooter is purchased. The excel formula to compute the number of scooters purchased is Scooters Purchased =IF(Up>C7,Up-C7,0)  
Scooter Costs is calculated based on a tiered discount. If the number of scooters to be purchased for the current time period is greater than 5, a per unit discount is applied.   
Scooter Costs = IF(D8<=5,(Inputs!ScooterCost\_1\_5\*D8),(Inputs!ScooterCostOver\_5 \* D8)). The Scooter Insurance Cost is the cost associated in insuring the scooters against theft or accidents. Just like the scooter costs, it is also based on a tiered discount. If insuring more than 20 scooters, a per unit discount is applied.   
Scooter Insurance Cost=IF(KioskSummary!SummaryAdjustedNoOfScooters>20, (Inputs!AnnualInsuranceCostPerScooter\_1\_20\*KioskSummary!SummaryAdjustedNoOfScooters/4), (Inputs!AnnualInsuranceCostPerScooterOver20\* KioskSummary!SummaryAdjustedNoOfScooters/4))  
Quarterly Total Costs is the quarterly sum of all costs associated with operating all kiosks every quarter. It is the sum of the Scooter, Scooter Insurance, Scooter Maintenance, Upfront Advertising, Advertising, Electricity, Kiosks Insurance, Legal, Kiosks, Managers, Employees and Pick Up Truck Costs. The calculation for the first quarter id done using Quarterly Total Costs =SUM(D7:D17)  
Capital Expenses are the expenses incurred in purchasing capital goods such as scooter and pick up truck every quarter. It is computed using CapitalExpenses =ScooterCosts+KiosksCosts+PickUpTruckCost  
Operating expenses are the expenses incurred during the operation of EZScoot. It is computed for each quarter using the formula OperatingExpenses=ScooterInsurance+ScooterMaintenance+AdvertisingCosts+Electricity+KiosksInsuranceCosts+LegalCosts+ManagersCosts+EmployeesCosts+UpfrontAdvertisingCosts  
**Depreciation Calculations**  
The depreciation calculation is done using the depreciation term to compute the depreciation rate for each quarter. A table that tracks the life of the scooters purchased every quarter was computed by using the following rules: When a scooter is sold, this tracking table adjusts the number of scooters using a FIFO method. In other words, the first scooters bought would be the first sold. This gives us the units eligible for depreciation for every quarter. Since the scooters were bought using a quantity discount, the value of scooter depends on whether the discount was applied or not. To correctly model this, we kept track of the scooter values for every quarter in the asset values table, that was adjusted when scooters were sold off. The depreciation rate for each quarter was then calculated. This was done using the method that ensured that assets do not get depreciated beyond the depreciation term. The depreciation expense was then individually calculated for assets purchased in each quarter. For every quarter, the depreciation expense for purchases made in the quarter and purchases made in prior quarters was added up to get the total depreciation expense. Intermediate calculations used in the depreciation calculation are discussed below.  
The number of scooters that are eligible for sale for each quarter is calculated by using the difference between the number of scooters needed for the current quarter and the number of scooters needed for the previous quarter, if the there is a reduction in the number of scooters needed for the current quarter. The excel formula to compute the number of scooters eligible for sale is ScootersEligibleForSale=IF(Up<C4,C4-Up,0)  
The cumulative number of scooter eligible for sale for each quarter is found by using cumScootersEligibleForSale=Lt + Up  
The proceeds from the sale of all scooters eligible for sale is calculated through the array multiplication of the number of scooters eligible for sale and the scooter sale price. The scooter sale price is an input parameter. The formula is ScooterSaleProceeds=ScootersEligibleForSale\*Inputs!ScooterSalePrice  
The expenses incurred as a result of depreciation is computed by calculating the sum of the depreciation of the scooters for each quarter, and factoring in the sales of the scooters that are eligible for sale for that quarter. For the first time period, it is calculated using the excel formula: DepreciationExpense = SUM(C93:C104)  
**Cash In Calculations**   
The proceeds from the rental of the scooters for each quarter is calculated by multiplying the rental cost by the summarized actual rentals for all kiosks. The formula is Rental Sales=Inputs!RentalCost\*KioskSummary!ActualRentals  
The total cash coming into EZScoot each quarter is computed by adding the proceeds from the rentals of scooters for all kiosks to the proceeds from the sale of excess scooters. The formula is: Total Cash in=RentalSales+ScooterSaleProceeds  
**Expenses Calculations**Income tax is factored into the calculation of the expenses incurred in operating EZScoot. The Income tax expense is calculated as follows: IncomeTaxExpense=IF((TotalCashin- (Operatingexpenses+DepreciationExpense))>0, (TotalCashin- (Operatingexpenses+DepreciationExpense))\*Inputs!IncomeTaxRate,0)  
The total expenses before expenses arising from interests on borrowed money for each quarter is the sum of the operating expenses, the depreciation expenses and the income tax expenses. The formula is TotalExpensesBeforeInterest=Operatingexpenses + DepreciationExpense + IncomeTaxExpense  
The total expenses incurred every quarter is computed as the sum of the total expenses not including interests expenses and the Interests payable at the end of that quarter. The excel formula is TotalExpenses =TotalExpensesBeforeInterest + InterestPayableAtQtrEnd  
**Financing Activities Calculations**As EZScoot’s business moves from one quarter to another, depending on how well the business is performing, it may need to borrow money to finance its activities. The amount financed for each quarter is calculated by first determining if it needs to borrow money. If the sum of starting balance for the current quarter and the net cash earned in the previous quarter is less than or equal to zero, then it must borrow money. The amount borrowed is the sum of the starting balance and the net cash earned minus the cash reserve. The excel formula to compute that is:   
Amount FinancedinQtr=IF(StartingBalance+NetCashearnedinQtr > 0, 0, -(StartingBalance + NetCashearnedinQtr - Inputs!CashReserve))  
The total outstanding loan amount is the amount borrowed that is yet to be paid. For each quarter, it is calculated by taking the sum of the Liabilities from the previous quarter and the amount financed for the current quarter. For the second modeled time period, it is computed using TotalLoanOutstanding = Up+C38  
The amount financed incurs interests. This interest is calculated by doing the array product of the total outstanding loan and the interest rates for each time period. The formula is InterestPayableAtQtrEnd={TotalLoanOutstanding\*Inputs!InterestPerQtr}  
The Loan payment is the amount paid with the goal of reducing or eliminating EZScoot’s debt. It is computed using the formula: LoanPayment=IF(StartingBalance + NetCashearnedinQtr<Inputs!CashReserve,0,MIN(StartingBalance+NetCashearnedinQtr-Inputs!CashReserve,C38)). To compute EZScoot’s liabilities for each quarter, the loan payment is subtracted from the sum of the total loan outstanding and the interest payable at the end of that quarter. The formula is: Liabilities=TotalLoanOutstanding+InterestPayableAtQtrEnd-LoanPayment  
Net Income for each time period is calculated using:

Net Income=IncomeBeforeInterestExpense + InterestPayableAtQtrEnd  
The Cumulative Net Income, the running sum of the Net Income for each quarter is computed by adding the net income for the current quarter to the cumulative net income for the previous quarter. The excel formula is Cum Net Income=Up+Lt  
The assets is computed by using the formula: Assets =-CapitalExpenses + EndingBalance-ScooterSaleProceeds  
The equity is the difference between the Assets and the liabilities. It is calculated using:  
Equity=Assets-Liabilities

1. **How to locate input, output and intermediate data**

The model has a worksheet for input data, seven worksheets for intermediate data, and one worksheet for output data. The input data is located in the Inputs worksheet; intermediate results data are located on the following worksheets: Kiosk1, Kiosk2, Kiosk3, Kiosk4, Kiosk5, KioskSummary and Costs, and the output data including charts are located in the Outputs worksheet. In addition, some charts can also be found in the KioskSummary worksheet.   
**Charts.**The model outputs the following relevant charts:   
1. Financial State of EZScoot: This chart is located in the Outputs worksheet. It shows the variation of EZScoot’s Assets, Liabilities, Equity and Stakeholder’s investments over the modeled time period. It’s data sources include Inputs!InitialInvestment, Outputs!Investments, Outputs!Assets, Otputs!Liabilities and Outputs!Equity.  
2. TotalRevenues Vs TotalExpenses: This chart is located in the Outputs worksheet. It shows how EZScoot’s TotalRevenues and TotalExpenses vary over the modeled timeframe. It’s data sources are Outputs!TotalExpenses and Outputs!TotalCashIn.  
3. Rental Characteristics: This chart is located in the KioskSummary worksheet. It shows the variation of EZScoot’s Projected Rentals, Adjusted Rentals projection and Actual Rentals for all kiosks over the modeled time period. It’s data sources are KioskSummary!ActualRentals, KioskSummary!SummaryAdjustedNoOfScooters and KioskSummary!ProjectedNoOfScooters.  
4. Utilization: This chart is located in the KioskSummary worksheet. It shows how scooter’s utilization for all kiosks varies over the modeled timeframe. It’s data source is KioskSummary!UtilizationRate.

1. **Guide to Visual Cues**

The model uses a visual cue to make locating data easier. That visual cue is color coding scheme. The color coding scheme used in the model is as shown below:

|  |  |
| --- | --- |
| **Color  Scheme** | **Meaning** |
|  | Used to visually denote an input parameter or stream |
|  | Used to visually denote a calculated field |
|  | Used to visually denote an input parameter or stream that is intended to be changed to accommodate multiple scenarios |
|  | Used to visually denote and emphasize an important calculated field |
|  | Generally used for titles |
|  | General background of the workbook. No special meaning |

1. **How to make changes**

The model could be extended through the addition of kiosks or the inclusion of additional costs as input parameters. For the addition of kiosks, new worksheets would simply be created to accommodate the new kiosks. Each new worksheet should follow the same format as the existing kiosks worksheets such as Kiosk1 or Kiosk2. Each new worksheet should be named KioskX where X is the number representing the number of the kiosk. After the worksheets are added, the input sheet will need to be modified to include the rental volume projection for the newly added kiosks. Specifically, the named range Input!RentalVolProj should be extended to include the projected rental volume for the newly added kiosks. Also, the Kiosk summary (KioskSummary) worksheet’s array formula for computing intermediary data (=Kiosk1!Summary + Kiosk2!Summary + Kiosk3!Summary + Kiosk4!Summary + Kiosk5!Summary) will need to be modified to include the newly added kiosks. To add additional cost elements, simply add them to the Input sheet. The intermediary data for the additional cost line item representing the newly added costs will need to be added to the cost summary section of the costs worksheet.