CSE471

System Analysis and Design

Assignment : 02

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Assignment 2
No.01

System Request For Employee Management System.

Project Sponsor	Mr. Edward
Business Need	(i) Managing the employees in a better way. (ii) It is needed to better measure, analyze and manage employees' working hours and deploy human resources more effectively. (iii) It is needed to manage complex employee scheduling and project management. (iv) To get the most out from their employees.

Business Requirements

(i) Different login system for manager & employee.

(ii) It should be able to calculate salary, increment, bonus and annual appraisal for the employee in automated process.

(iii) It should be able to send payment amount to employee Bank account upon the approval of manager in automated process.

(iv) It should be able to digitize the employee leaves and physical resources allocation requests. Employee can send requests

Business Requirements (continued)	through EMS and manager can approve the requests with a single click and by generating a approval slip employees can avail them. (v) Manager can add new employee, add new project, can check the progress. and can evaluate the project performance of a employee. (vi) Employees should be able to submit their project. (vii) A leaderboard of Employee performance has to be there to encourage the employee to perform better so that they can receive bonus payment.

Business Values:	(i) Ease of employee management has immense value (ii) Increase of productivity which ~~can~~ lead to increase in sale of 10,00,000 BHT. (iii) As they can analyze the data more efficiently from the EMS, they don't need to hire 3rd party Data Analysts which has reduced a cost of 2,00,000 BHT monthly. (iv) ~~As~~ Maintenance cost got reduced by 1,00,000 BHT per month.

Special Constraints	(i) EMS software has to be more user friendly. (ii) If it is not built in user friendly way, the training cost can raise high. (iii) It needs to be hosted in cloud server as the number of employee and user is quite high.

NO.02

(a) Fields of Costs:

(i) Development Costs:

- Server
- Development Labor
- Software License
- Printer

(ii) Operational costs:

- Operational Labor
- Hosting Server
- Digital Payment Gateway.

(b) Fields of Benefits:

- Increase in Sells
- Reduced cost of manual Data Analysis
- Reduced cost of manual works.

No.03 & No.04

Year	2020	2021	2022	2023	Total
development Costs					
Server	2,50,000				
development Labor	1000000				
Software Licence	30000				
Server Software	10000				
Printer	20000				
Total development Cost	1310000	0.00	0.00	0.00	
operational costs					
Operational Labor	100000	100000	100000	100000	
Hosting Server	25000	25000	25000	25000	
Digital Payment Gateway	50000	50000	50000	50000	
Total operational costs	175000	175000	175000	175000	
Total Costs	1485000	175000	175000	175000	
Profit Rate	5% / Year				
PV of Total Costs	1414285.714	158730.1587	151171.5797	143972.9331	1868160.386
PV of All Costs	1414285.714	1573015.873	1724187.1452	1868160.386	

Year	2020	2021	2022	2023	Total
Benefits					
Increase In Profit	500000	600000	700000	80000	
Reduced cost of manual Data Analysis	200000	200000	250000	250000	
Reduced cost of manual Workers	150000	150000	20000	20000	
Total Benefits	850000	950000	1150000	1250000	
PV of Total Benefits	809523 · 8095	861678 · 0045	993413 · 2383	1028378 · 093	3692993 · 145
PV of all Benefits	809523 · 8095	1671201 · 814	2664615 · 052	3692993 · 145	
Yearly Profit (Benefit - Cost)	(635000)	775000	975000	1075000	
Yearly NPV	(604761 · 9045)	702947 · 8458	842241 · 6586	884405 · 1599	1824832 · 759
Cumulative NPV	(604761 · 9045)	98185.941	940427.6	1824832.759	
ROI	97.681%				
BEP	1.86 years.				

The above calculations to find out ROI and BEP have been done by following Discounted Cash Flow Method.

P.T.O

calculation details of finding out ROI and BEP:

Generalized Formula to find out present Value (PV) of anything, $PV = \frac{\text{Cash Flow Amount}}{(1+\text{Interest Rate})^n}$

n equals the number of years/ periods.

Yearly NPV = PV of Total Benefits - PV of Total Costs.

Cumulative NPV = PV of all Benefits - PV of All Costs.

We know, Generalized Formula to calculate ROI,

$$ROI = \frac{\text{Total Benefit} - \text{Total cost}}{\text{Total cost}}$$

For our case using discounted cash flow method, this formula turns to,

$$ROI = \frac{\text{PV of All Benefits} - \text{PV of all costs}}{\text{PV of all costs}}$$

$$= \frac{3692993.145 - 1868160.386}{1868160.386}$$

$$= 0.97681$$

$$= 97.681\%$$

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We know, Generalized formula to calculate BEP,

$$BEP = \text{Number of years of negative cash flow} + \frac{\text{That year's net cashflow} - \text{That year's cumulative Cash Flow}}{\text{That year's net cashflow}}$$

For our case, using discounted cash flow method, this formula turns to,

$$BEP = \text{Number of years cumulative NPV is negative} + \frac{\text{Yearly NPV of 2021} - \text{Cumulative NPV of 2021}}{\text{Yearly NPV of 2021}}$$

$$= 1 + \frac{702947.8458 - 98185.941}{702947.8458}$$

$$= 1 + 0.8603225807$$

$$= 1.8603225807$$

$$\approx 1.86 \text{ years.}$$