Department of Computer Science and Engineering
Premier University

CSE 305: Software Engineering & Information System Design

Title: CT-03 Assignment

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Remarks

Cost Analysis

Cost Category	**Amount**
Initial Investment	
Software License	$50,000
Hardware Upgrades	$10,000
Implementation Costs	$20,000
Training Costs	$5,000
Utilities Cost (Yearly)	$1,500 $\times 12 = \$18,000$
Marketing Costs	$40,000 (Approximately)
Other Costs	
Maintenance and Support (Yearly)	$10,000
Data Storage (Yearly)	$2,000
Total Development Cost	**$155,000**

Table 1: Cost Analysis

Benefit Analysis

1. Increased Sales

A 10% increase in annual revenue:

$$\text{Present revenue} = \$1{,}000{,}000$$

$$\text{Increase} = 0.10 \times 1{,}000{,}000 = 100{,}000$$

2. Customer Satisfaction

50% of new customers become regular customers:

$$\text{New customers contributing} = 0.50 \times \text{new customers} \times 5000$$

3. Reduced Labor Costs

Replacing 3 workers, each paid $30/hour: Assuming 40 hours/week, 52 weeks/year:

$$\text{Savings per worker} = 30 \times 40 \times 52 = 62{,}400$$

$$\text{Total Savings} = 62{,}400 \times 3 = 187{,}200$$

4. Increased Brand Value

Assuming a 25% increase in brand value will contribute additional revenue. This is difficult to quantify exactly but may contribute to customer loyalty and new customer acquisition.

5. Adjust for Dollar Rate Decrease

Each year, the value of the dollar decreases by 15%. This affects both costs and benefits, but we'll assume it's more relevant to the recurring costs.

Payback Period Calculation

Cash Flow Description	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Cost	$155,000	$12,000	$12,000	$12,000	$12,000
Benefit	$0	$780,000	$780,000	$780,000	$780,000
Net Cash Flow	($155,000)	$768,000	$768,000	$768,000	$768,000
Cumulative Cash Flow	($155,000)	$613,000	$1,381,000	$2,149,000	$2,917,000

Table 2: Payback Period Calculation

Payback Period Determination

The cumulative cash flow becomes positive after the first year, therefore the payback period is:
Payback Period: 1 Year

ROI Analysis

The ROI (Return on Investment) can be calculated using the following formula:

$$\text{ROI} = \frac{\text{Total Benefits} - \text{Total Costs}}{\text{Total Costs}} \times 100$$

$$\begin{aligned} \text{Total Costs} &= \$155{,}000 \text{ (Initial)} + \$12{,}000 \text{ (Ongoing Year 1)} \\ &= \$167{,}000 \\ \text{Total Benefits (Year 1)} &= \$780{,}000 \\ \text{ROI} &= \frac{780{,}000 - 167{,}000}{167{,}000} \times 100 \approx 466.47\% \end{aligned}$$

ROI for Year 1: 466.47% and Payback Period: 1 Year

This analysis shows that the investment in the software system will be fully recovered within 1 year, with a high ROI of 466.47% by the end of the first year.