



**Department of Computer Science and Engineering**  
Premier University

# CSE 305: Software Engineering & Information System Design

Title: CT-03 Assignment

**Submitted by**

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**Remarks**

## Cost Analysis

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

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:

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

$$\begin{aligned}\text{Total Costs} &= \$155,000 \text{ (Initial)} + \$12,000 \text{ (Ongoing Year 1)} \\ &= \$167,000\end{aligned}$$

$$\text{Total Benefits (Year 1)} = \$780,000$$

$$\text{ROI} = \frac{780,000 - 167,000}{167,000} \times 100 \approx 466.47\%$$

**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.