# SNS COLLEGE OF TECHNOLOGY

**Coimbatore-35**
**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+'
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Chennai

## DEPARTMENT OF AEROSPACE ENGINEERING

## 19ASZ301– ROBOTICS & AUTOMATION IN SPACE

III YEAR VI SEM

UNIT 1 –INTRODUCTION TO AUTOMATION

TOPIC – ROI Automation

# ROI DIFFERENCE

## Soft ROI
Qualitative Returns

- Upgraded brand reputation
- Improved visibility, transparency, and accountability
- Better team collaboration
- Closer adherence to policies
- Higher morale and better company culture
- Happier customers
- Higher employee satisfaction
- Better supplier relationships

## Hard ROI
Quantitative Returns

- Time saved per task/request
- Overall process cost savings
- Productivity and output
- Rate of workflow approval/rejection
- Office operational costs (printing, paper, maintenance, storage)
- Labor reduction (e.g. data entry roles)
- Fraud-related cost savings
- Remedial cost savings
- Cost savings related to early dis-counts

# CALCULATE OF ROI

# ROI

### 🤖 ROI in Robotics Automation

ROI (Return on Investment) in robotics automation measures the financial return from deploying robotic systems compared to the total cost of ownership. It helps determine whether investing in robots for tasks like welding, assembly, packaging, or inspection is economically justified

### 📌 Breakdown of Costs

1. Capital Investment
   - Robot arm and end-effectors
   - Vision systems or sensors
   - Controllers and safety systems
2. Implementation Costs
   - Installation and integration
   - Programming and system design
3. Ongoing Costs
   - Maintenance and spare parts
   - Training operators and technicians
   - Energy consumption

### 💡 Key Gains from Robotics Automation

1. Labor Savings: Fewer manual tasks = lower recurring labor costs
2. Increased Throughput: Robots work 24/7 without fatigue
3. Improved Quality: Higher precision and repeatability reduce rework
4. Reduced Downtime: Predictive maintenance via sensors
5. Enhanced Safety: Fewer accidents, less liability
6. Lower Scrap and Waste: Especially in welding and precision assembly

### 🧠 Example Scenario

A factory installs a robotic welding system.

- **Total Cost** (robot + setup + training): ₹20,00,000
- **Annual labor cost saved**: ₹7,00,000
- **Increased productivity value**: ₹3,00,000
- **Annual maintenance and energy**: ₹1,00,000

**Net Annual Benefit** = ₹7,00,000 + ₹3,00,000 – ₹1,00,000 = ₹9,00,000

$$\text{ROI} = \left(\frac{9,00,000}{20,00,000}\right) \times 100 = \mathbf{45\%}$$

**Payback Period** = ₹20,00,000 / ₹9,00,000 ≈ **2.22 years**


Thank You