

INTRODUCTION

Return on investment (ROI) is a commonly used calculation to determine the value and payback on an investment:

$$\text{ROI} = \frac{\text{Benefit} - \text{Cost}}{\text{Cost}}$$

ROI is a common tool for cost benefit justification and is typically used in industry to justify the purchase of equipment or the investment to support services and infrastructure. In addition to its use as a decision-making tool for personal financial investments, business decisions, and capital purchases, it is an effective tool for demonstrating the value of safety and ergonomic improvements. More and more operations managers are asking for the ROI of ergonomic improvements as a measure of the value of a workplace change.

Humantech recommends that engineers and ergonomics subject matter experts use ROI to demonstrate the amount of value resulting from individual workplace improvements and an ongoing ergonomic improvement process. The equation we recommend is:

$$\text{ROI} = \frac{\text{Benefits (Productivity + Quality + Employee Engagement + Injury/Illness)} - \text{Cost}}{\text{Cost}}$$

COST

Investments in ergonomics include the cost of purchased equipment and tools, cost of services, and the cost of people's time. Equipment costs include both capital and expensed purchases, plus the cost of additions and modifications to existing equipment. Service costs might include contracted consulting and design services, or cost of outsourced services. People costs take into account the amount of time spent in supporting activities, such as conducting assessments, leading improvement projects, designing improvements, attending training, and managing the program. All costs are measured in monetary units so, for the U.S., they are dollars. To determine people costs, one must determine the fully burdened hourly rate of the employee(s) conducting the tasks.

BENEFITS

Four measures of benefit are part of the ROI equation and these are based on the most common objectives of ergonomics programs: productivity improvement, quality improvement, employee engagement/retention, and injury/illness prevention. Not all organizations or improvement projects measure all four benefits. The equation allows organizations to enter only the information they have access to or want to include.

The benefit measures are:

- **Productivity:** Measured as the cost savings of reduced cycle time (takt time, throughput) achieved through elimination of non-value-added motions as a result of ergonomic improvements.
- **Quality:** A measure of the cost savings associated with reduction of scrap, rework, damaged goods, impact of delayed or missed product shipment, or organization-determined quality defects. The measure is the calculated cost of quality performance gains tied to ergonomic improvements.
- **Employee engagement/retention:** Typically a consideration of, and available from, the Human Resources department, retention is based on the turnover of employees and the average cost for turnover (administration of the exit process of one employee plus the recruiting, hiring, onboarding, and training of a new employee). Employee engagement, while tougher to measure, can be measured through systems such as the Gallup Q12 Employee Engagement Survey.
- **Injury/illness:** Cost avoidance of medical treatment, compensation costs, and return-to-work are the most common measures for ergonomics used by organizations. In the ROI equation, this value should include the costs of only those injuries and illnesses attributed to exposure to musculoskeletal disorder (MSD) risks. The value should include both direct and indirect costs. Direct costs are those tracked and recorded through injury management, Workers' Compensation, and return-to-work costs. Within the U.S., this information is available through the insurance provider. Indirect costs include the cost of time spent by management and claims managers on addressing incident investigation, administrative tasks, and return-to-work activities. Other indirect costs include the time spent by other employees or temporary employees to cover for an injured employee, or the time lost when an injured employee is working under medical restrictions. Insurance carriers can provide guidance on estimating indirect costs.

SINGLE WORKSTATION TO COMPREHENSIVE PROCESS

The recommended ROI equation is scalable; it can be used to calculate ROI on ergonomic improvements at a single workstation, and it can be used on a larger scale to calculate ROI of an integrated ergonomic improvement process. The only difference between the two is in collection of the cost and benefit data. In our 2014 benchmarking study, we engaged several organizations to provide measures of their program costs and benefits. Using a spreadsheet to collect data on all four costs, convert time into a rate, and collate the dollars, we were able to demonstrate the value (ROI) of an organization's ergonomics process. One finding from the study is that a majority of ergonomics process owners do not track, or have access to, the cost data needed to calculate ROI.

CONCLUSION

ROI is a common calculation used by businesses to assist in decision making and to measure performance. The same equation can be effectively used to demonstrate ROI of ergonomic improvements and processes. An ongoing challenge is for organizations to plan ahead and collect the cost and benefit data specific to ergonomics.

ENDORSEMENT

This position statement was accepted by Humantech's Senior Leadership on May 25th, 2016.

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