



هيئة أبوظبي للزراعة والسلامة الغذائية
ABU DHABI AGRICULTURE AND FOOD
SAFETY AUTHORITY

Return on investment of implementing ISO 17025

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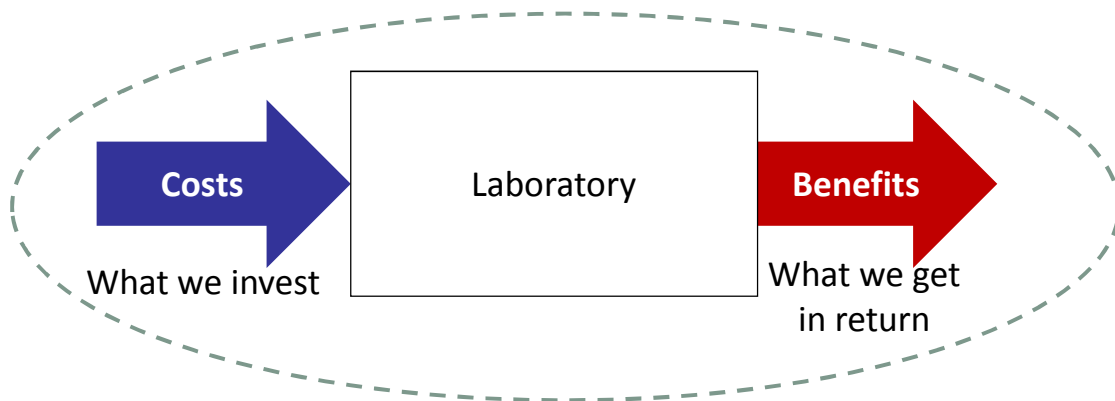
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Return on Investment

ROI is the performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments (*Investopedia*).



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ROI financial formula

$$\text{ROI} = \frac{\text{Return} - \text{Investment}}{\text{Investment}} \times 100$$

ROI is reported in one of two ways: the cost -benefit ratio and the ROI percentage.

ROI vs cost benefit analysis

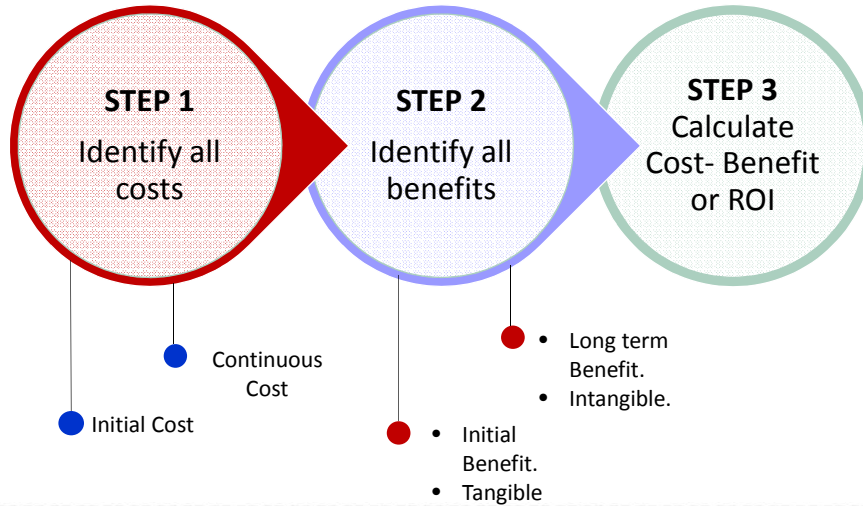
Return on Investment:

Return-on-investment analysis usually relies on short-term financial returns and often ignores the intangible benefits and impact.

Cost-Benefit analysis:

In a cost-benefit analysis, all nonmonetary costs and benefits, including these social impacts, are assigned a monetary value. Allows consideration of all costs and benefits over a long period of time.

Quantify ROI



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Identify all costs

ISO/IEC 17025:2017 list of requirements

1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	General requirements	3
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4.2	Confidentiality	3
5	Structural requirements	4
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6.2	Personnel	5
6.3	Facilities and environmental conditions	6
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7.5	Technical records	13
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Identify all costs

Cost	Initial	Yr 2	Yr 3	Yr 4
Cost tend to fall over time:				
Software and Laboratory Data Management System	\$\$\$	\$\$	\$	-
Supplies and Equipment	\$\$\$	\$\$	\$	\$
Training	\$\$\$	\$	-	-
Consultant Costs	\$\$\$	-	-	-
Accreditation Initial Assessment Fees	\$\$\$	-	-	-
Continuous cost:				
Calibrations	\$	\$	\$	\$
Preventive Maintenance	\$	\$	\$	\$
Proficiency Testing	\$	\$	\$	\$
Accreditation Assessment Fees	\$	\$	\$	\$

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Cost (Investment)

	Items	Range	Median
ISO/IEC 17025 Implementation	Software (LIMS)	\$0 - \$460,000	\$44,627
	Calibrations	\$1,241 - \$41,650	\$10,927
	Proficiency Testing	\$0 - \$9,000	\$3,327
	Supplies and Equipment	\$100 - \$49,576	\$15,300
	Staff cost	\$0 - \$442,697	\$164,000
	Preventive Maintenance	\$0 - \$300,857	\$60,788
	Training	\$0 - \$155,600	\$12,715
ISO/IEC 17025 Accreditation	Consultant Costs	\$0 - \$35,500	\$3,000
	Accreditation Initial Assessment Fees	\$1,300 - \$16,518	\$7,250
	Accreditation Assessment Fees	\$1,300 - \$17,201	\$6,000
Total annual cost/lab		\$67,000 - \$1,358,064	\$311,485

Source: Laboratory Costs of ISO/IEC 17025 Accreditation: A 2017 Survey Report (APHL)

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Cost (Investment)

Staff : 60 Full-Time (Technical).
 Sample Number : 123,214 samples/year.
 Testing method in accreditation scope : 12 initial- 40 (2018).

	Items	Cost
ISO/IEC 17025 Implementation	Software (LIMS)	\$273,000
	Calibrations	\$67,235
	Proficiency Testing	\$36,318
	Supplies	\$924,380
	Preventive Maintenance	\$377,044
	Training	\$49,200
	Consultant Costs/Pre-assessment	\$29,103
ISO/IEC 17025 Accreditation	Accreditation Initial Assessment Fees	\$52,212
	Accreditation Assessment Fees	\$31,993
Total cost		\$1,840,485 (initial)

Source: ADAFSA

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Identify all benefits (Return)

Benefits (Return)

Tangible

Easy to measure and assign a monetary value

- Increased profit.
- Reduced cost of re-testing.
- Reduced cost of equipment break-down.

Intangible

Difficult to measure and assign a monetary value

- National and international recognition.
- Increased confidence in testing.
- Avoid impact as a result of invalid results.

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Identify all benefits (Return)

- ISO/IEC 17025 standard contains requirements for laboratories to enable them to demonstrate they operate competently, and are able to generate valid results.

Benefits (Return)

BENEFITS OF ISO/IEC 17025

National and international recognition

Reduced costs of re-testing

Better laboratory resource management

Increased confidence in testing

Increased profits

Validity of test methods and reliable data

change in culture (better prepared problem solving, continual improvement and removal of functional barriers)

Identify all benefits (Return)

Benefits	Yr1	Yr2	Yr3	Yr4	Benefits	Yr1	Yr2	Yr3	Yr4
Data accuracy and timeliness	\$	\$	\$	\$	Effective use of internal resources	\$	\$	\$	\$
Reduced Turnaround time	\$	\$	\$	\$	Labor savings	\$	\$	\$	\$
Better, faster decisions	\$	\$	\$	\$	Avoid unnecessary treatment	\$	\$	\$	\$
Increase in employee satisfaction	\$	\$	\$	\$	Process improvement	\$	\$	\$	\$
Increase in customer satisfaction	\$	\$	\$	\$	Supply chain- standardization	\$	\$	\$	\$
Reduction in wastes	\$	\$	\$	\$	Higher inventory turns	\$	\$	\$	\$
Reduction in equipment failure	\$	\$	\$	\$	Reduction in capital expense	\$	\$	\$	\$
Additional and unnecessary diagnostic testing	\$	\$	\$	\$	Animal health complications	\$	\$	\$	\$
Failure to provide the proper treatment	\$	\$	\$	\$	Preventing delay in correct diagnosis	\$	\$	\$	\$

Approaches to calculating benefits (Return)

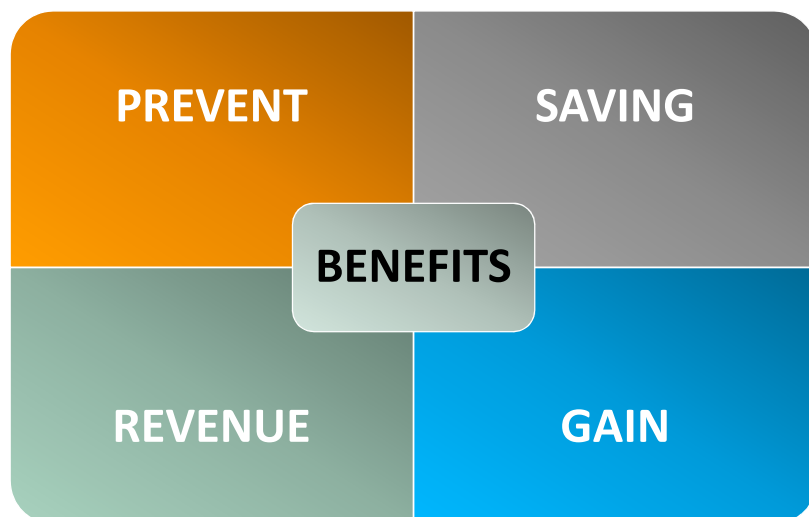
Indirect approach

- Measuring the impact- estimate the total costs of invalid results released to the customer (false positive/false negative) and to show the potential benefits of efforts to prevent such cases. Impact on public health, animal health, economy, reputation etc.
- Measuring the cost of not implementing each QMS requirements (e.g. not calibrating and maintaining equipment, not using quality controls, no staff training etc.).

Direct approach

- Measuring the increase in customer satisfaction.
- Measure Turnaround time.
- Measuring the decrease in wastes.
- Measuring the number of re-testing.

Approaches to calculating benefits (Return)



CASE 1: Positive impact of implementing QMS

Experience in implementing a quality management system in a tuberculosis laboratory, Kisumu, Kenya

Quality indicator	Before QMS implementation	After QMS implementation
Contamination rates	15.2%	5.3%
Waste from product expiry	6.1	1.3
EQA performance for microscopy, culture, DST and Xpert	90–100%	90–100%
Client satisfaction survey	Not done	98%

Source: S. Musau *et al*, 2015

CASE 2: Negative impact of not implementing QMS

Inter-laboratory comparison revealed false positive results in Lab A1

MERS-CoV Real Time PCR

Sample No.	Targeted Results (Original)	Lab A1	Lab A2	Lab A3	Lab A4
A1	Positive	Positive	Positive	Positive	Positive
A2	Negative	Positive	Negative	Negative	Negative
A3	Positive	Positive	Positive	Positive	Positive
A4	Negative	Positive	Negative	Negative	Negative
A5	Positive	Positive	Positive	Positive	Positive

Source: ADAFSA

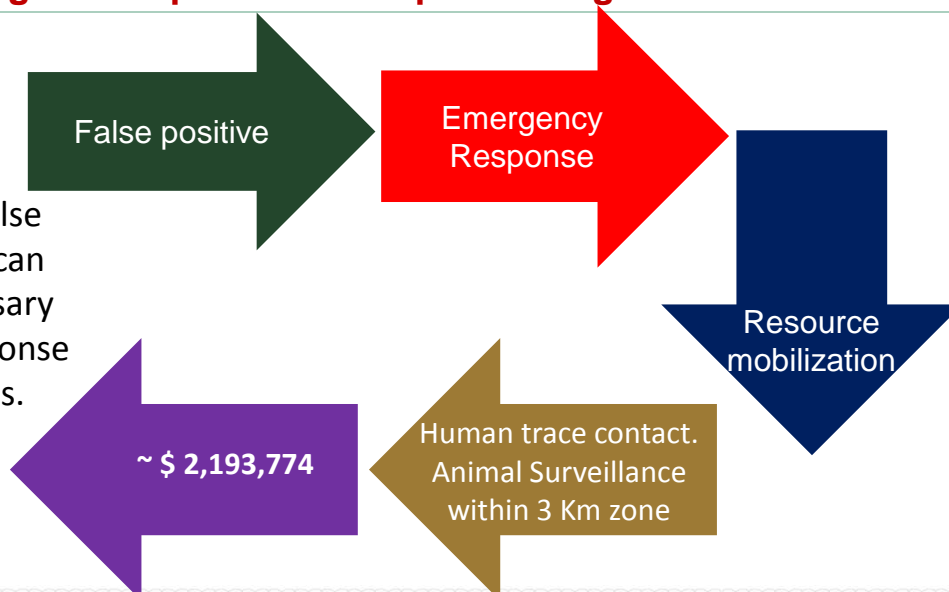
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CASE 2: Negative impact of not implementing QMS

Undiscovered false positive results can trigger unnecessary emergency response and financial loss.



Source: ADAFSA

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Conclusion

- Initial QMS implementation costs tend to fall over time.
- Quality drives towards continual improvement.
- Benefits of implementing QMS can be measured with different approaches.
- Benefits of QMS exceeds the cost of implementation.
- There are no guidelines or standards for the type and list of data to be collected for cost and benefit calculations and approaches for presenting ROI evaluations for QMS in veterinary laboratories.
- There is a need to formalize conversion of benefits into a numerical cost saving value.

Thank you