BS EN ISO 56008:2024

BSI Standards Publication

Innovation management — Tools and methods for innovation operation measurements — Guidance

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The UK participation in its preparation was entrusted to Technical Committee IMS/1, Innovation management.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Innovationsmanagement - Werkzeuge und Methoden für die Messung von Innovationsabläufen - Leitfaden (ISO 56008:2024)

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European foreword

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Foreword

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This document was prepared by Technical Committee ISO/TC 279, *Innovation management*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 389, *Innovation management,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Introduction

0.1 Why innovation operation measurements are critical for success

An organization's ability to innovate is recognized as a key factor for sustainability, competitiveness, economic success, increased well-being, and the development of society. However, one cannot understand and manage innovation operations without measuring them.

This document guides organizations on the design and implementation of measurements in managing their innovation operations. This document helps organizations think, design, implement, measure and take actions based on measurement results. It provides examples of innovation operation measurements, indicators and metrics, but does not prescribe any specific ones. It is a guidance standard applicable to innovation operations in organizations of all kinds, and sizes and for all types of innovation.

Innovation is characterized by novelty and value creation. Thus, by definition, it involves risk-taking in coping with the unknown and uncertain in a manner fundamentally different from that of established operational activities. Attempting to innovate without acknowledging the fundamentally non-linear, iterative, and high uncertainty-fraught nature of innovation operations invites costly errors, high probability of failure, and needless waste of time, material, and financial resources. Furthermore, in the light of our global and local challenges, as put forward in the UN Agenda 2030 for Sustainable Development, innovation is becoming more needed than ever. Hence, the need for organizations to be able to measure the value created by their innovation operations, their results and outcomes for themselves and their interested parties, while helping to determine the impacts (positive/negative, intended/unintended) they can have on the economy, society, and the environment with regards to the UN Sustainable Development Goals (SDGs).

Measurements, when designed, implemented, and reviewed properly, increase the success ratio of innovation operations. They participate in reducing uncertainty and validating key assumptions that are critical to the success of an innovation initiative (e.g. demand, feasibility, profitability, adaptability), while enabling evidence-based decisions for go/no-go/pivot/refine decisions along the innovation operations.

Measurements also help shape how organizations determine their objectives, generate, and maintain know-how, undertake tasks while monitoring the progress of projects/initiatives, operate with external factors, establish incentives, and assess the results, outcome, and impacts of their innovation operations.

A proper set of measurements contributes to an effective framework for strategic/tactical/operational decision making, planning, value-creation/impact assessment, and overall organizational learning. Such a set of measurements or innovation operation measurement framework, is useful at all levels of the organizations, from top management to people conducting innovation activities on the ground.

The quality of decision-making largely depends on how well the measurements are chosen, implemented, and interpreted. Therefore, organizations can consider the following questions:

— Why measure: Because measurements are essential for understanding the situation, making evidence-based decisions, and managing activities towards success.

— What to measure: Deciding on the indicators providing relevant information on either the situation or the system, or both.

— How to measure: Designing and selecting the appropriate metric for each indicator, i.e. formulae by which the indicator can be valued qualitatively or quantitatively; how to implement the measurement, i.e. select right tools, collect data and analyze it while considering the implied cost and benefits.

— Who should measure: Organizational entities related to the measurement processes and their roles (data retrieval, data synthesis, interpretation, responsibility, and accountability for the measurements).

— Who benefits: The measurements should be adapted to the needs and purpose of the persons implementing and interpreting them.

— When to measure: The appropriate time and duration for doing the measurement.

— Where to measure: In which part of the organization should the measurement be done.

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— How to interpret measurements' results and act following the measurements to correct the situation if necessary and to draw relevant lessons.

Measuring is a key management action and should address the following fundamental inquiries concerning the status, evolution, and performance of an organization's innovation operations:

— Are we doing the right things?

  Are we aligned with respect to the organization's mission, innovation vision, strategy, policy, and objectives? Are we addressing the most critical innovation opportunities for our organization? Have we gathered the necessary evidence to reduce the uncertainties that are critical to the success of our innovation operations?

— Are we doing these things in the right way?

  Do we have the necessary and sufficient leadership, resources, capabilities, effective processes, required support, and organizational structures to proceed towards success legally and ethically? Do we generate sufficient evidence for effective and efficient evidence-based decision-making?

— Are we succeeding?

  How well (or poorly) are we doing? Are we achieving sufficiently valuable results and outcomes, thereby increasing our relevance to interested parties? Do we understand the value and impact our innovations are creating on society, the environment, and the economy?

The way people and their activities are assessed and measured has a significant impact on their behaviour, thus requiring careful design of innovation operations measurements to ensure that the right behaviours are nurtured and supported.

There is no universally appropriate collection of innovation operation measurements. Each organization can consider its own dynamic context, the evolving needs, and expectations of its interested parties, its objectives, and its innovation initiatives to devise its own appropriate set of measurements or innovation operation measurements framework.

0.2 Benefits of innovation operation measurements

The benefits of implementing a systematic approach to measuring innovation operations involve the following:

— strategic positioning to focus the efforts and innovation resources on the desired outcomes while optimizing opportunities versus risk;

— enabling an evidence-based decision-making process for determining innovation operational issues, along with their progress, results, and outcomes;

— ensuring adequate and timely resource allocation for innovation operations;

— monitoring the expected progress of innovation operations and adjusting them in time for meeting objectives efficiently;

— generating needed evidence to manage innovation processes for go/no-go/ pivot/ refine decisions to advance innovation activities concretely;

— ensuring that innovation operations management is relevant, ethical, effective, and efficient;

— nourishing an innovation culture that targets value creation, and rewarding and recognizing innovators;

— providing reliable, relevant and useful data on value creation opportunities for attracting investments and the engagement of interested parties;

— ensuring that the innovation results contribute to value creation and the intended impacts of the organization's Innovation Management System (IMS).

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0.3 Structure of this document

This document is structured to present measurements concerning innovation operations within an organization. In addition to the Introduction (Clause 0), Scope (Clause 1), Normative references (Clause 2), and Terms and definitions (Clause 3), this document contains six clauses as shown in Figure 1. An introductory Clause 4 provides the fundamentals of innovation operation measurements. Clause 5 provides guidance on measurements related to the context, leadership, planning, and supporting elements of the organization that will trigger or impact innovation operations. Three central clauses provide guidance on measurements for innovation operations at the innovation process (Clause 6), innovation initiative (Clause 7), and innovation portfolio (Clause 8). Clause 9 is dedicated to continual review and improvement of the set of measurements and/or the innovation operation measurement framework. Additionally, Annexes A to E provide detailed examples of indicators and metrics related to Clauses 5 to 8 respectively.

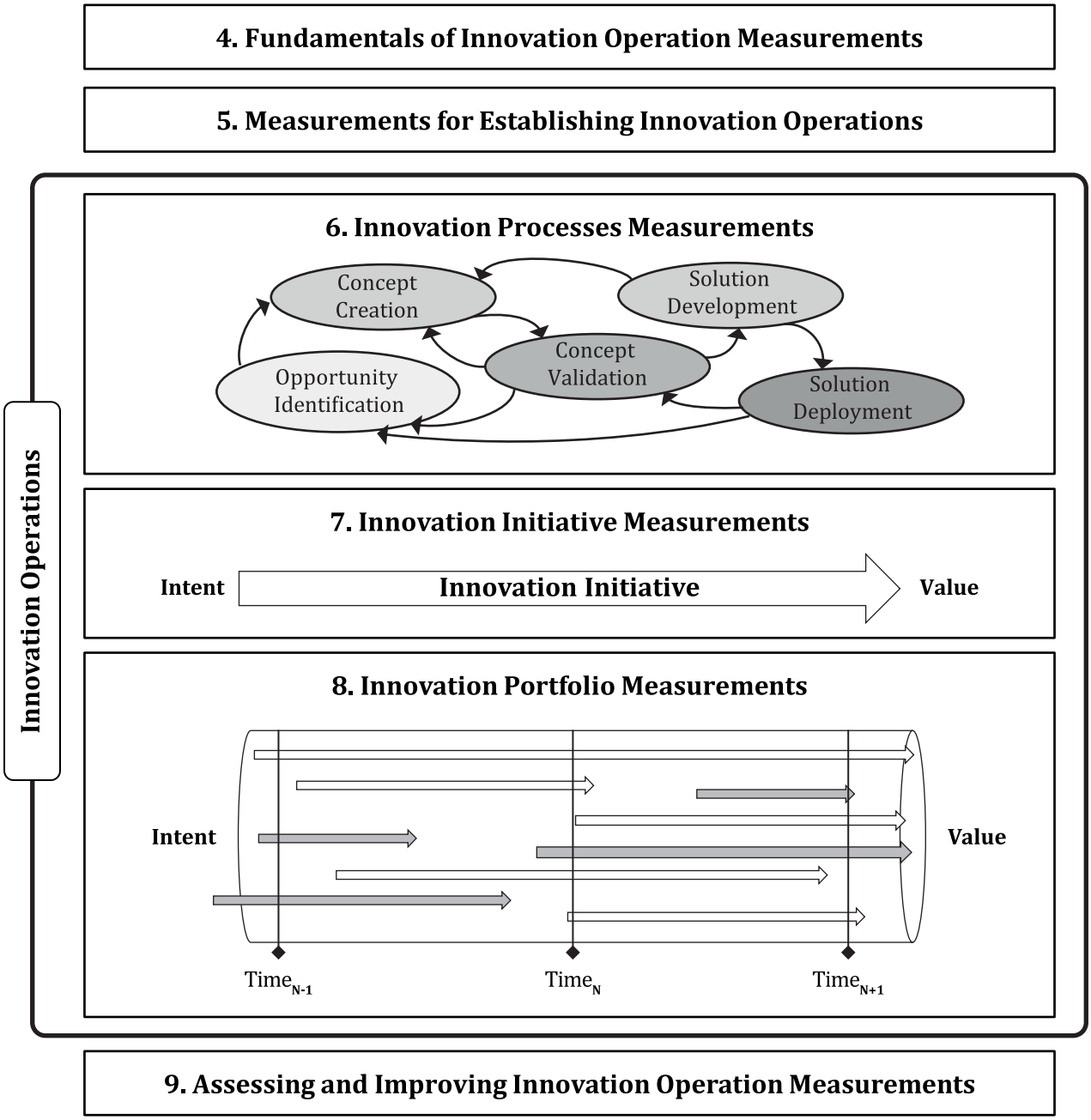

Figure 1 — Core clauses of ISO 56008 (this document)

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The core ISO 56008 clauses on innovation operation measurements are as follows:

— Clause 4 *Fundamentals of innovation operation measurements* – provides guidance on the role of measurements in addressing the uncertainties and risks of innovation activities, the high-level processes involved, and the leadership, strategy, and planning for effective innovation measurements. This clause also gives guidance in determining what to measure and how to measure it, the design of innovation metrics, and the support required. Clause 4 also includes the basics of data gathering, analysis, learning, and corrective actions engendered by measurements.

— Clause 5 *Measurements for establishing innovation operations* – provides guidance on the measurements required to understand an organization's external and internal context, including the needs and expectations of interested parties. This clause aims to help to ensure the alignment of innovation operations with business objectives, the adequacy of innovation leadership, the organization's needed culture, and the effectiveness of innovation planning and support. Such measurements also help gather evidence on the relevant internal-and-external issues and the areas of opportunity for potential value redistribution and value realization that will trigger or impact the course of innovation operations.

— Clause 6 *Innovation processes measurements* – provides guidance on the measurements necessary to: support the identification of opportunities, the creation and validation of concepts, and the development as well as deployment of solutions. These measurements should enable better decision-making and advance innovation activities concretely from one innovation process to another based on evidence-gathering and hypotheses validation. Additionally, this clause provides guidance on the measurements needed to detect problems, decide on adequate corrective/improvement actions, and ensure the progress of the organization's innovation processes.

— Clause 7 *Innovation initiative measurements* – provides guidance on the measurements to be considered during the course of an innovation initiative in order to reduce uncertainties, detect issues, manage risks, undertake corrective/proactive action (including the abandonment of an initiative), and ensure progress towards achieving intended results.

— Clause 8 *Innovation portfolio measurements* – provides guidance on the measurements needed for assessment, management, and decision-making regarding the organization's portfolio(s) of innovations.

— Clause 9 *Assessing and improving innovation operation measurements* – provides guidance on improving the effectiveness and efficiency of the set or framework of measurements to reflect changes in the organization and its external context, along with changes to its innovation objectives and its activities, or in the case of inadequate choices of either measurements or metrics, or both.

Annexes A to E offer detailed examples of key questions to be asked, indicators and metrics related to various innovation operations measurements.

Details on an IMS can be found in ISO 56002. Details on innovation management assessment can be found in ISO/TR 56004. For details on specific innovation management tools or techniques, see ISO 56003, ISO 56005, ISO 56006 and ISO 56007. For common innovation management terminology see ISO 56000.

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Innovation management — Tools and methods for innovation operation measurements — Guidance

1 Scope

This document provides guidance for the definition, implementation, evaluation, and improvement of the measurements necessary to effectively manage innovation activities in an organization. It establishes the fundamentals of innovation operation measurements and guides their application towards four areas:

— measurements for establishing and launching innovation initiatives;

— measurements for innovation processes;

— measurements for innovation initiatives;

— measurements of innovation portfolios.

This document is applicable to:

— organizations that are seeking to define and implement an innovation operations measurement approach;

— organizations and interested parties seeking to improve the areas of accountability, transparency, and evidence-based assessment of innovation operations;

— customers, investors, and other interested parties, seeking confidence in the organization's innovation operations management and its results;

— providers of training in innovation operations and measurements, including assessment of and consultancy for achieving results;

— experts in innovation operations evaluation and impact assessment, favoring the use of a harmonized international guidance standard;

— innovation policy makers and program managers who are looking to obtain evidence of progress and desired outcomes of innovation activities supported through public policies and programs.

All of the guidance provided within this document is generic and intended to be applicable to:

— all types of organizations regardless of sector or size, whether they be private, public, not-for-profit, governmental or societal;

— all types of innovations (e.g. product, service, process, model, and method) ranging from incremental to radical;

— all types of time horizons, from short-term to long-term evaluation and measurement.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 56000, *Innovation management — Fundamentals and vocabulary*

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 56000 and the following apply:

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp;

— IEC Electropedia: available at http://www.electropedia.org.

3.1
composite metric
metric (3.13) whose values are defined by a mathematical formula involving other metrics

Note 1 to entry: A composite metric can be created by weighted combinations of two or more metrics, with the weights chosen to emphasize the perceived relative significance of some of the components.

EXAMPLE Culture of Innovation Metric can be calculated as 0,25 x (percentage of people submitting valuable ideas) + 0,15 x (percentage of collaborations without complaints) + 0,35 x (percentage of communicated lessons drawn from failure) + 0,25 x (percentage of people rewarded for innovation).

3.2
evaluation
process of comparing results of analysis to established criteria

Note 1 to entry: Evaluation can be done to determine effectiveness, efficiency, performance, conformity or value.

Note 2 to entry: Evaluations determine the appropriate actions required.

3.3
framework
system of rules, ideas or principles that are used to plan or decide something

3.4
impact
significant effect resulting from a process or activity

Note 1 to entry: Impact can be positive and negative, intended or unintended.

3.5
improvement
activity to enhance performance

Note 1 to entry: The activity can be recurring or singular.

Note 2 to entry: Improvement can be a corrective action happening after *evaluation* (3.2).

Note 3 to entry: Improvement with regard to innovation *operations* (3.15) is a revision of operations and controlling the adequacy of the measurement framework.

Note 4 to entry: Improvement can apply to *metrics* (3.13) as well.

[SOURCE: ISO 9000:2015, 3.3.1, modified — Added Notes 2 to 4 to entry.]

3.6
indicator
specific information on a state, condition or *impact* (3.4)

Note 1 to entry: An indicator can be quantitative or qualitative.

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3.7
innovation operation
operation (3.15) with regard to innovation

Note 1 to entry: Innovation operations are all the activities performed to achieve innovations.

Note 2 to entry: Within the context of innovation management, innovation operations encompass innovation activities, innovation processes, innovation initiatives and innovation portfolios.

3.8
innovation operations measurement
measurement (3.12) with regards to *innovation operations* (3.7)

Note 1 to entry: Innovation operation measurements are all the different types of measurements that are necessary and useful for the efficient and effective management of innovation operations.

3.9
innovation operation measurements framework
framework (3.3) with regard to *innovation operations measurements* (3.8)

Note 1 to entry: The innovation operations measurements framework is a system of guidelines that help to consider interrelated *indicators* (3.6), *metrics* (3.13), *measurements* (3.12), processes and policies that are used to make data-driven decisions about the management of innovation operations.

Note 2 to entry: Measurement framework is a way of structuring measurements around the strategy, goals and objectives of the innovation management system (IMS).

Note 3 to entry: This is a system built by each organization to express and interpret its state of innovation operations to guide its data-driven decisions.

3.10
innovation scorecard
assessment of the organization's innovation performance

3.11
input
resources, such as people (with their skills and attitudes), finance, data or knowledge (tacit or codified) that are put into a system, organization, *innovation operation* (3.7) or process

3.12
measurement
process to determine value

Note 1 to entry: The difference between measurement and measure as nouns is that measurement is the act of measuring, and measure is the *result* (3.18) of the measurement.

3.13
metric
defined measurement method and scale

Note 1 to entry: The speed of implementation can be the *indicator* (3.6), but the actual metric would be the amount of time from project initiation to project completion.

3.14
monitoring
determining the status of a system, a process or an activity

Note 1 to entry: To determine the status, there can be a need to check, supervise or critically observe.

Note 2 to entry: Monitoring is the function of using *measurements* (3.12) to observe and track innovation *operations* (3.15) at the levels of activities, processes, initiatives, and portfolios.

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3.15
operation
performance of practical work or something involving the practical application of principles or processes

Note 1 to entry: An operation is also an activity planned to achieve something.

Note 2 to entry: An operation is an act or process of working, doing something, being in action or having an effect.

3.16
outcome
effect of *outputs* (3.17) (e.g. effect of innovations on firm performance) that follow as a *result* (3.18) or consequence

3.17
output
results (3.18) produced from a process or activity

3.18
result
something that occurs as a consequence, issue or conclusion

Note 1 to entry: A result is the output (3.17), outcome (3.16) or impact (3.4) of an operation (3.15).

4 Fundamentals of innovation operation measurements

4.1 Principles of innovation management and innovation operation measurements

The use of measurements for innovation operations is an intentional and thoughtful attempt to reduce uncertainty. It is necessary to recognize the critical differences between measuring a stable routine process versus measuring either a non-linear or non-sequential innovation process, or both.

Measurement is the basis for all evidence-based decision-making and planning, along with corrective actions, program adjustments, learning for improvement and changes in behaviour. Good measurements and monitoring of relevant indicators drive toward success by focusing on relevant aspects of innovation, reducing uncertainties, while improving communication. This success is based on an accurate assessment that enhances the innovation efforts success factors while avoiding errors and subjective judgment.

The following principles, derived from the IMS, provide a foundation for implementation of innovation operation measurements and can enable:

— realization of value, by being consistent with the organization's strategic direction for the creation of short-term and long-term value;

— future-focused leaders, by leveraging measurements to identify impactful trends, identify strategic opportunities, drive high quality trial and error innovation activities, and increase innovation performance;

— strategic direction, by being driven by the intended outcomes and innovation objectives, and enabling an evidence-based innovation operation management;

— culture, by enabling the development of organizational culture, innovation competencies, and inspiring ethical innovation-oriented behaviour;

— exploiting insights, by producing understandable, timely, sufficient, and actionable knowledge that is effective, efficient, and reliable for making evidence-based decisions, increasing objectivity;

— managing uncertainty, by balancing opportunities and risks in innovation operations minimizing waste of resources and efforts;

— adaptability, by enabling shared learning and agility; and

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— systems approach, by being reviewed regularly to reflect learning while adapting to changing situations and updated innovation objectives and priorities of the IMS.

When undertaking innovation operations, organizations can consider:

— measuring items such as the quality of the process, along with the critical opportunities and risks related to the different milestones needed to be achieved to advance an innovation initiative;

— goals and the scope of innovation activities;

— impacts of leadership and innovation strategy;

— the adequacy of planning and measurement design;

— the capacity to manage the portfolio;

— needed support and risks in innovation operations;

— their capacity to capture the data to transform all the learning into the actions needed for value creation.

4.2 Innovation operation measurements process

Measurement is an essential part of processes to evaluate the progress of an activity, detect problems and enable timely management decisions for achieving intended objectives while avoiding undesirable effects. To this end, the organization can do the following:

a) Understand the intended effect of innovation activities on the organization, its stakeholders and other interested parties.

b) Design and determine the criteria for selecting appropriate indicators and implementing measurements for ensuring progress of innovation activities, as well as managing risks associated with them as follows:

   1) effectiveness in achieving intended objectives, with timely decisions for adjusting (enhancing, delaying, or even closing) innovation activities;

   2) efficiency in using allocated resources, with associated decisions on reducing waste while providing proper support;

   3) unintended effects impacting the organization, its routine operations, and its stakeholders and other interested parties;

   4) assuring all measurements are explicitly appointed to a person who is responsible for the quality, interpretation, analysis, and integration in the organization's data repositories.

c) Support decision making along each of the lifecycle stages of innovation activities as follows:

   1) helping define potential scenarios affecting innovation activities;

   2) generating evidence based on established criteria that are deemed critical to the success of innovation activities;

   3) acquiring and communicating learning about the organization, its strategy, its resources, its activities, and its opportunities and threats.

d) Provide knowledge for the evaluation and improvement of the innovation operations and their evolution.

The high-level process for addressing the organization’s innovation operations management framework should follow the cyclical Plan-Do-Check-Act (PDCA) methodology, with attention to changes in the organization’s context and its objectives:

— the organization can continuously monitor its context and update its strategy, redirect its innovation focus and reprioritize associated activities if necessary;

— leaders can decide what to measure and select the appropriate indicators;

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— the measurement process to be applied (e.g. what, how, who, when) then needs to be established or updated;

— the resulting set of indicators, measurements, monitoring arrangements and practices should be communicated and deployed effectively throughout the organization;

— finally, as needed, the organization's leaders should evaluate the effectiveness of its innovation operation measurements and adjust them accordingly.

4.3 Innovation operation measurement framework, indicators and metrics

4.3.1 General

The innovation operation measurements can be set up based on the organization's innovation objectives. The purpose of measurements is to obtain evidence-based information concerning innovation operation activities and their results and outputs.

The innovation initiatives and the various types of uncertainties associated with them should be considered. Uncertainties which are neither recognized nor measured can become fundamental risk factors for all related innovation operation activities.

4.3.2 Frameworks for innovation operation measurements

The framework for innovation operation measurements links the domains of innovation management with considerations of preparation and inputs for each innovation activity, the progress and efficiency of that activity, and the outputs and outcomes at the conclusion of that activity, as shown in Figure 2.

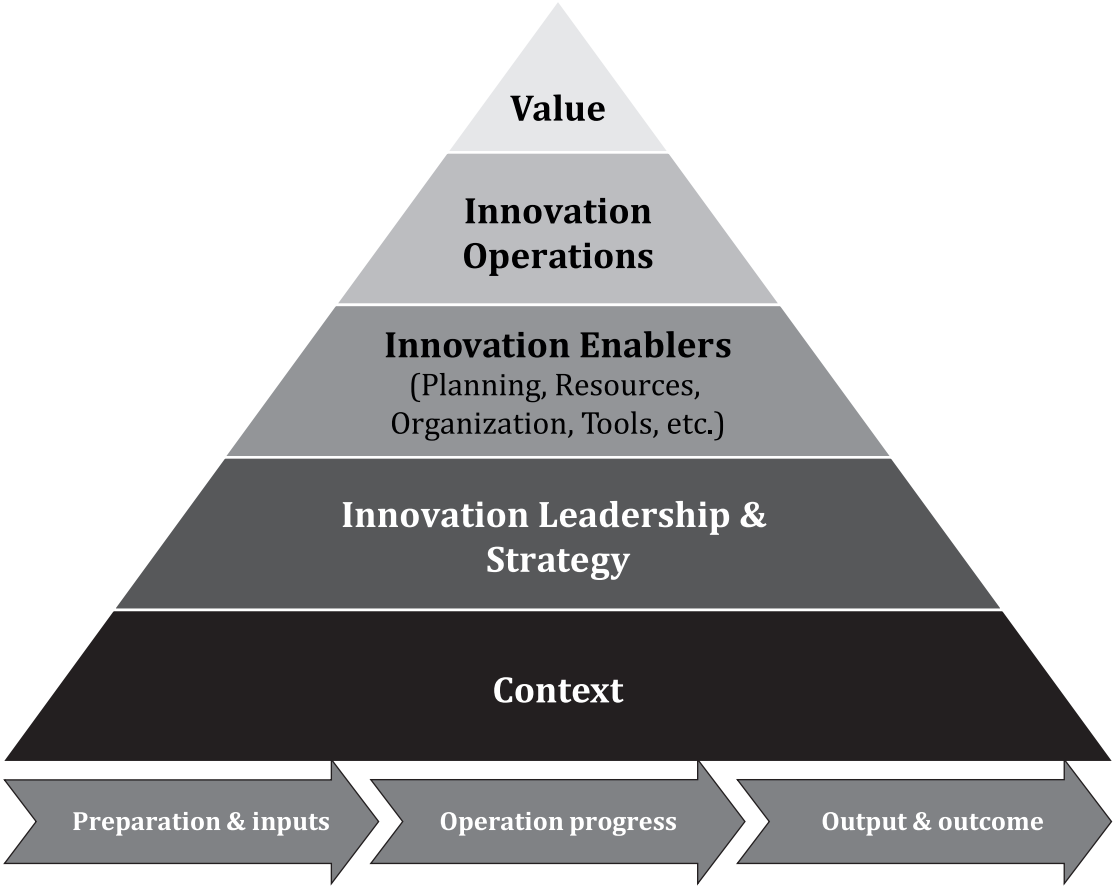

Figure 2 — Framework for innovation operation measurements

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Organizations can select indicators for innovation operations and design measurements considering the specific domains appropriate with their innovation strategy, along with the objectives of their innovation initiatives as follows:

— context of the organization (COTO) comprises both the internal context that defines the organization as it is, the external context (customers, stakeholders and other interested parties, interaction models and comparative position vis-a-vis similar organizations) and how it drives its culture and collaboration;

— leadership for innovation in the organization, with the associated vision, strategy, planning;

— innovation enablers provided by the organization, for example, its operational management, its resources (e.g. its people and partners, their capabilities, facilities, tools, software, and how they are structured);

— innovation operations undertaken by the organization;

— value resulting from innovation efforts (e.g. economic, social, environmental).

4.3.3 Innovation indicators

The organization should identify those aspects of innovation operations that indicate if efforts are succeeding or failing. Lagging indicators, those that look at historical trend data to assess current situations, can address for example, preparations and inputs for the activity, its progress to date, costs incurred, outputs and outcomes achieved. Leading indicators, those that are future results-focused and potentially predictive, should be chosen to inspire action towards the realization of specific goals and behaviours in support of the organization's strategy and its innovation objectives.

Determining the right innovation indicators requires asking key questions about relevant aspects of innovation activities and their management, including:

— are the innovation strategy and selected innovation initiatives aligned with the organization's vision, mission and objectives;

— how effective is the planning and support for innovation initiatives;

— how effective and useful are the preparations, resources and inputs necessary for innovation initiatives;

— what is the progress of innovation processes, leading from inputs to outputs and outcomes;

— what are the results of innovation processes: outputs and outcomes, impacts and feedback to other innovation processes.

4.3.4 Innovation metrics

Measurement methods and measurement scales should be designed such that metrics and measurements:

— are unambiguous and easily understood;

— are reliable, relevant and valid;

— do not impede the innovation activities they measure;

— enable the organization to set meaningful targets;

— enable and facilitate the necessary management decisions regarding if and how to pursue innovation activities;

— are not too expensive in resources and time.

Composite (layered) metrics may be used to assess multi-faceted indicators. Composite metrics may be calculated as suitably weighted sums of simpler, more direct metrics of specific aspects of the indicator. The weights can be selected to emphasize those metric components associated with priority aspects of the indicator and stand to lead to the most desired changes, for example in individual or collective behaviours.

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Measurements should consider the intent and preparations for an innovation activity, the progress and efficiency of the activity and the results (i.e. the outputs and outcomes) of the activity, as illustrated in Figure 3 below.

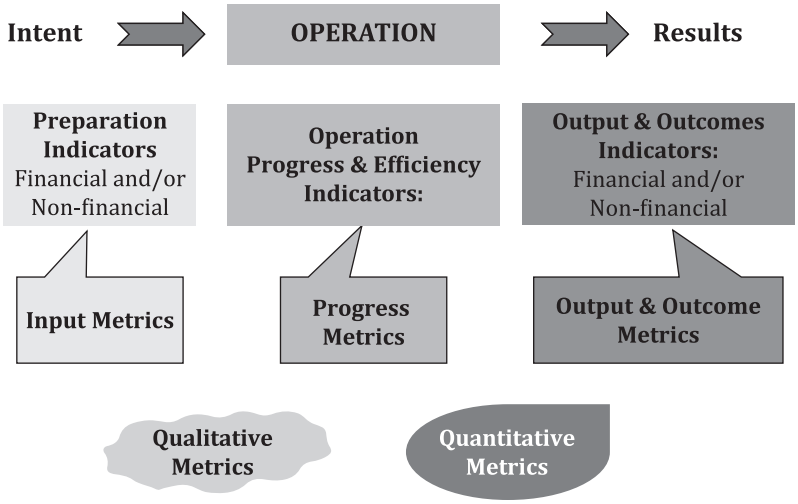

Figure 3 — Input, process and outcome indicators and metrics

Quantitative indicators are represented numerically in appropriate units of measurement. However, not all measurements can be assessed numerically. Important aspects, such as strategy, culture and management often require qualitative indicators with metrics based on questions (and surveys). For example, this can often allow other interested parties to understand complex measures in a simpler way for decision-making, planning or outreach purposes.

Annex A provides several examples of important indicators and several examples of metrics associated with these indicators.

4.4 Leadership and strategy for innovation operation measurements

4.4.1 Leadership

Organizational leaders should demonstrate awareness and commitment towards an innovation operations measurement approach. The organization can do the following:

a) Establish innovation strategy and objectives that translate the organization's top management concerns and goals.

b) Approve high-level measurements to assess innovation operation performance during management reviews. This ensures that innovation management achieves its outcomes.

c) Assign responsibilities and authority for measurement roles to ensure that findings are adequately communicated and understood.

d) Promote awareness of the importance of innovation operation measurements to help employees understand the rationale, processes and consequences.

e) Ensure the resources and capabilities required for innovation operation measurements are properly qualified, tool-enabled, available on time, and consistent with changes in innovation programs.

f) Foster a culture supporting innovation by aligning innovation measurements with performance evaluations and rewarding mechanisms to support it throughout the organization.

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4.4.2 Innovation operation measurement strategy

An appropriate strategy is required to ensure that measurements are focused on meaningful aspects of innovation activities and are conducted in ways that provide reliable, replicable, verifiable data as well as appropriate and timely corrective actions. The innovation operation measurement strategy should consider that the number, complexity and costs of measurements is in proportion to the importance, uncertainties and risks associated with each specific innovation initiative. The organization should use measurements that are truly useful without adding unnecessary costs and delays to innovation processes.

As shown by Table 1, the innovation measurement strategy supports the above mentioned objectives and issues by addressing:

— strategic issues that concern the direction of the organization;

— tactical issues concerning the management of the organization's innovation portfolio and the need to adjust it dynamically;

— operational issues to ensure adequate progress is being made in the organization's innovation operation activities.

The measurement strategy can also be viewed from different perspectives, e.g.:

— the relevance of innovation, i.e. the proper focus of innovation targets;

— the enablement of innovation within the organization, ensuring it has the commitment, capabilities, competencies, culture and processes to innovate effectively and efficiently;

— the value results of innovation.

Table 1 — Perspectives of innovation operation measurements

Perspective level	Being relevant	Enabling the operation	Creating value
Strategic	Given our context, are we addressing the strategic opportunities for value creation and risk management?	Are we organized and executing innovation operations capable of meeting strategic objectives effectively and efficiently?	Are we pursuing effective value creation innovation operations aligned with the strategy?
Tactical	Are we addressing the key objectives of our innovation strategy?	Do we have an entrepreneurial culture and the necessary and sufficient resources?	Have we increased our innovation capabilities and manage emerging risks?
Operational	Are the target customers (buyers and/or users) interested in our innovation solutions?	Are the operational processes properly deployed and managed; and are the teams fully resourced and focused?	Have we met our innovation targets on time effectively and efficiently?

4.5 Planning and designing innovation operation measurements

4.5.1 Innovation operation measurements plan

The organization should design a plan to monitor, measure, analyze, prioritize and report on innovation operations in a timely manner, with the goal to maximize innovation success and value while integrating innovation operation measurements within the innovation management process towards strengthening its capabilities by:

— managing risks and minimizing wastage based upon well-timed measurements, decisions and adjustments;

— establishing the objectives for each innovation operation measurement metric and indicator;

— determining the criteria for selecting innovation key questions, indicators and associated metrics;

— recommending the expected targets of performance, along with procedures to follow if targets are not met;

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— allocating necessary, sufficient and timely resources;

— evolving measurements in alignment with changes in the organization's objectives, processes and needs.

The innovation operation measurements plan can include an indication on what to measure, who will do the measurements, how to do them, where and when to do them, and to whom they should be reported for action.

4.5.2 Design of innovation operation measurements

Organizations are well served by designing their innovation operation measurements in an iterative process described by the following steps, as illustrated in Figure 4.

1) Define the goal of innovation operation measurements in alignment with the organization's innovation objectives and strategy.

2) Analyze the uncertainties, problems, threats and opportunities.

3) Consider the consequences of implementing potential metrics for the selected indicators.

4) Formalize the chosen metrics, including the sources of information, the methods of calculation, people, funds, and schedule to monitor, measure, analyze and report.

5) Establish challenging and yet achievable performance targets in the innovation activities' progress.

6) Recommend and communicate effectively the measurement action plan framework.

7) Explore the usage of the measurements (and their impact on behaviours and innovation progress).

8) Adopt and use the finalized set of metrics.

9) Monitor and evaluate the measurement results and compare them with expectations.

10) Reconsider the choice of metrics (informed by lessons learned) in order to improve the measurements.

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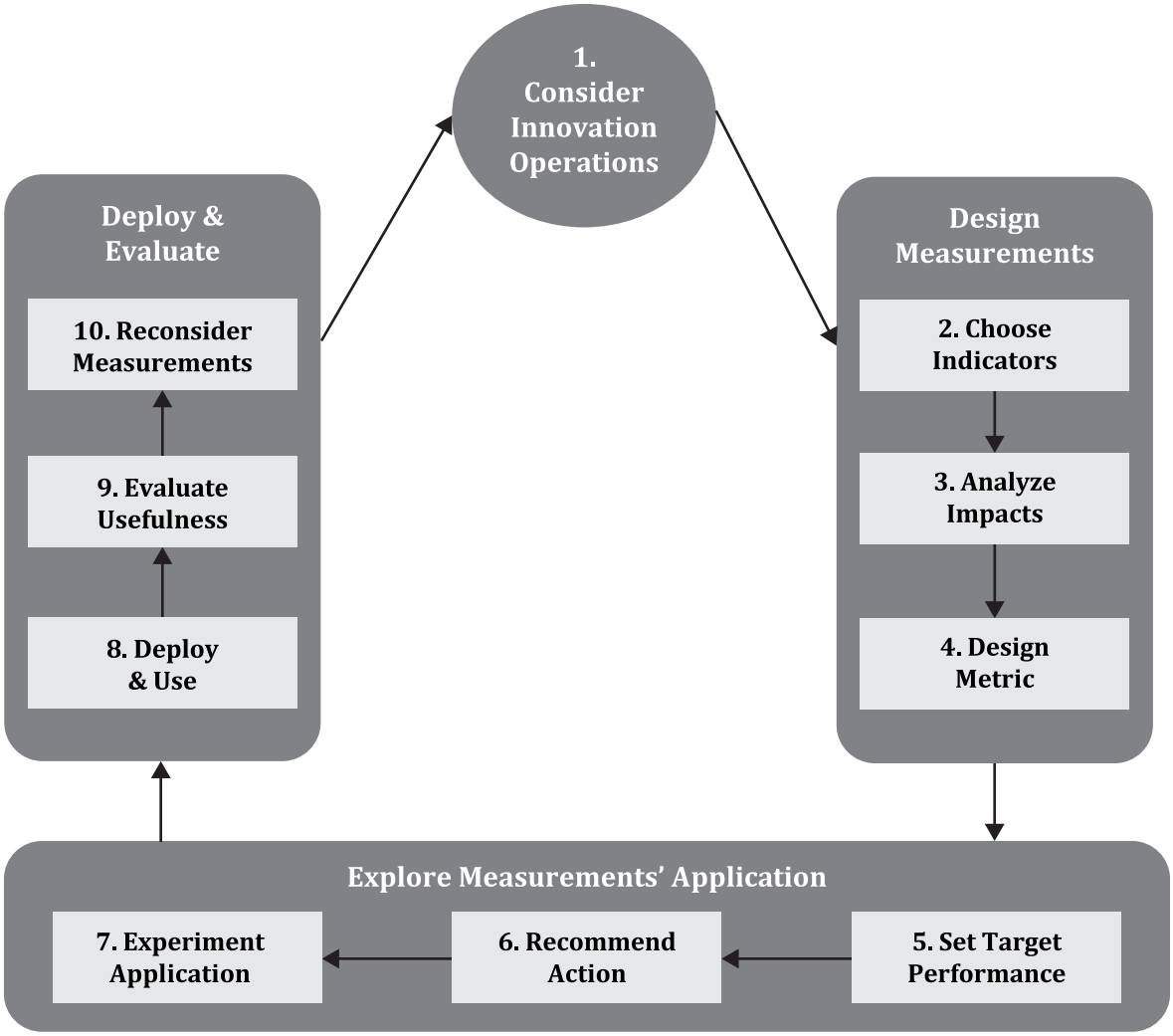

Figure 4 — Process of identification, exploration, usage, review and adjustment of innovation measurements

4.6 Support for innovation operation measurements

Successful deployment and implementation of an innovation operation measurement approach requires that organizations:

— have available resources, including financial or non-financial, that ensure its effective application;

— attract and retain people capable and with the needed competencies to adequately perform the selected measurements;

— allocate the time needed for effecting the measurements (collecting and analyzing data, reporting results, and taking corrective action) together with schedules of the times for measuring;

— identify, capture, absorb and use the knowledge relevant to each innovation operation measurement;

— communicate the results obtained and, if relevant, share the lessons learned;

— establish infrastructure for data management in planning and measuring innovation operations.

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4.7 Data collection and action

4.7.1 General

The organization can:

— build and maintain an updated catalog of indicators that includes the quantitative and qualitative factors specifically relevant to innovations in that organization;

— have well-defined processes to measure innovation events, management, resources, and results at appropriate points in time to capture the evolution of innovation activities;

— follow established knowledge management approach to collect, codify, store and access the measurement data.

4.7.2 Gathering measurement data

The organization can establish and use measurements within an innovation operations measurement framework that ensures:

— correct use of data, including data quality, protection, traceability, reliability and integrity is achieved;

— formulae, scales and thresholds for each measurement are replicable, accurate and verifiable;

— collection frequency and time horizons are predefined (i.e. daily, weekly, monthly, quarterly, yearly or multiple years) to enable impact analysis;

— stakeholders and other interested parties impacted by data measuring are informed about the intended measurements and the times of data collection;

— measurement frameworks enable evaluation of the innovation initiatives' outcomes and impacts;

— manually collected measurements (non-automated) are provided adequate resources.

4.7.3 Analyzing measurement data

Measurement analysis focuses on using quantitative and qualitative methods and tools to describe the situation and the need for further action and learning. The organization can consider, among other factors:

— what will be measured, how measurements will be conducted, and the types of analysis to be performed (quantitative, qualitative or mixed methods);

— evaluation criteria for determining the usefulness, efficiency and value of each measurement;

— gaps that exist in the current collection methods and systems to determine if new tools can be acquired;

— type of reporting: descriptive, diagnostic or predictive.

To perform effective measurement analysis, organizations can:

— monitor for source data errors and perform any needed data cleansing;

— validate the meanings of measurements and their findings by using comparisons and verifiable methods;

— extract, transform and load data into data repositories, thereby integrating with the existing data and business intelligence processes and structures;

— organize and visualize data using logical groupings to facilitate analysis, learning and decision making;

The organization may test the effectiveness of measurements in terms of their accuracy and usefulness by:

— comparing measurements at different times to determine trends, if feasible;

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— relating measurements at either a given time or statistically, or both;

— proposing, testing and validating causal relationships.

4.7.4 Measurement-based corrective action

Organizations can establish, as part of the innovation operation measurements planning process, the expected performance targets together with pre-defined corrective actions or contingency plans in case the pre-established performance targets are not met. In those cases, the organization can determine the following:

a) Why did the activity deviate from the expected performance:

   1) was it an issue with the measurement itself (in which case the measurement can be re-considered); or

   2) was it that the innovation activity really did not achieve the desired target (in which case the activity may need to be examined, with the goal of identifying its root cause)?

b) What are the potential consequences if the activity does not achieve its target level of performance?

c) How can the situation be remedied, who is responsible for the remedial action, and by when (what date) could the remedies take effect?

d) Can the underperforming activity be redesigned, or simply eliminated? If so, what are the consequences?

NOTE Organizations that manage these issues effectively are quick to undertake the necessary actions and thus to increase the resulting value capture and creation.

4.7.5 Measurement-based learning and improvement

The organization can ensure that a process exists for learning from each measurement. The organization can address all aspects of innovation activities, e.g. the people responsible for them, the matching of objectives to realities. The organization which aims to achieve effective innovation-focused learning, can ensure that:

— communication regarding the learnings is broadly encouraged and shared throughout the organization;

— collaboration between groups, individuals and leaders responsible for innovation is practiced;

— constant emphasis is placed on meaningful performance evaluation criteria;

— data visualization shows improvement (or not) and conveys alignment (or not) with strategic vision;

— measurement approaches always remain flexible and are updated as the learning occurs.

5 Measurements for establishing innovation operations

5.1 General

The organization can choose, implement, and analyze measurements that enable timely evidence-based decisions for establishing meaningful innovation initiatives in alignment with the reality of the organization's internal and external context. The measurements should consider the needs and expectations of its interested parties, effective leadership, culture, planning, and the support required to meet the innovation objectives. Determining the relevant indicators and metrics can be based on the following:

a) understanding potential impacts on the effectiveness and efficiency of the organization's innovation activities and the innovation portfolio;

b) timely knowledge of the situation;

c) challenges faced by the organization at that time.

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Organizations can decide on the frequency, number and depth of measurements while balancing the costs of undertaking such measurements versus the risks and opportunities affecting their innovation activities.

5.2 Context measurements for establishing innovation initiatives

The organization should design measurements to understand the impact of its changing context, including the past and present situation, ongoing and future potential trends and current and subsequent changes to determine innovation initiatives in response to priority threats and opportunities.

In determining the relevant indicators and metrics to assess external or internal contexts (as well as the needs and expectations of interested parties), decisions should be based upon the timely understanding of potential impacts, in conjunction with reducing uncertainties and managing risks towards enhancing the effectiveness and efficiency of the organization's innovation activities.

Measurements to understand the context can be applied prior to establishing major innovation initiatives. They can be applied as often as needed, considering the speed of changes, the likelihood and potential impacts of trends and the cost/benefit analysis of doing the measurements.

To determine the relevant indicators and metrics concerning understanding its external context, the organization can ask key questions regarding the:

— economic situation, including financial and non-financial capital,

— social trends,

— political and regulatory context,

— technological developments,

— environmental concerns,

— competitive impacts, and

— market conditions.

Measurements for understanding internal context impacts on establishing innovation initiatives can be derived from key questions concerning

— leadership drive for innovation,

— financial situation,

— adequacy of organization processes and structure,

— organization culture,

— availability of resources and necessary competencies,

— required infrastructure and tools, and

— intellectual property (IP) assets.

To understand the potential influence of its interested parties for establishing its innovation initiatives, allocating resources and building stronger relationships, the organization can undertake measurements aimed at obtaining relevant information, such as:

— most innovation relvant stakeholders and other interested parties, including their value expectations;

— interactions within the organization's value chain or ecosystem;

— regulatory and legal compliance requirements and ethical considerations;

— effectiveness of communication channels and responses to interested parties.

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