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Beyond "Positive Risk": From Antecedents to Effects Conceptual distinction and coordinated management of risks and opportunities in complex management systems

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Abstract
This paper examines the tension within ISO terminology when the general definition of risk as the effect of uncertainty, including positive and negative deviations, is applied in management systems that require organizations to determine and address risks and opportunities. The documentary reconstruction distinguishes the safety tradition of ISO/IEC Guide 51:2014, in which risk combines the probability and severity of harm, from the deliberate broadening introduced by ISO Guide 73:2009 to include positive deviations and potential opportunities. Guide 73, now withdrawn and replaced for current vocabulary purposes by ISO 31073:2022, nevertheless separated sources, events, causes and consequences and allowed risk to be taken in order to pursue an opportunity. ISO 56000:2025 defines opportunity as a prospect afforded by circumstances for realizing value; ISO 14001:2026 distinguishes potential adverse and beneficial effects; ISO/FDIS 9001:2026 retains the inclusive risk definition but separates requirements, actions and forms of thinking and states in Annex A that risks and opportunities are distinct. The FDIS, at ISO stage 60.00 with publication planned for September 2026, is used as near-final technical evidence rather than as a universally applicable published solution [40], [50]. The model starts from the frame of reference and a factual basis of sources, events, causes, conditions, circumstances, resources, capabilities, decisions and changes. Two distinct analytical pathways examine possible adverse effects and favourable possibilities; risks, opportunities and mixed effects then converge in coordinated decisions and realized outcomes. Uncertainty is a cross-cutting epistemic dimension, while complexity is a condition of the system and its interdependencies that may generate complexity-related risk without being identical to it.

Keywords: *risk; opportunity; management systems; ISO Guide 73:2009; ISO 31073:2022; ISO/FDIS 9001:2026; risk-based thinking; opportunity-based thinking; risk source; event; cause; consequence; uncertainty; complexity; coordinated governance.*

Central thesis

The model starts from the frame of reference and from a factual basis comprising sources, events, causes, conditions, circumstances, resources, capabilities, decisions and changes, because none of these elements in themselves constitute either a risk or an opportunity. Two complementary and non-exclusive analytical pathways develop from this basis: the first examines possible adverse consequences and leads to the qualification of risks; the second recognizes or creates favourable possibilities grounded in circumstances and capabilities and leads to the qualification of opportunities. Both pathways may reveal mixed or non-significant effects and inform one another through the examination of trade-offs, distributional effects and associated risks without becoming semantically identical. Risks, opportunities and mixed effects converge in coordinated decisions and actions; realized outcomes generate new evidence, learning and conditions that update antecedents and the frame of reference. Uncertainty cuts across the model as a limitation of information, understanding and knowledge, while complexity describes the condition of the system and its interdependencies. If the two-sides-of-the-same-coin metaphor is used, the coin is the common decision situation and management system, not risk as a superordinate category.

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I. INTRODUCTION

Risk has become a cross-cutting concept in governance, management systems, project management, safety, innovation and conformity assessment, and risk-based thinking has produced an important development by encouraging organizations to consider in advance the factors that may compromise intended results. The complementary need to recognize and pursue favourable possibilities has progressively led many standards to

refer to opportunities as well, making it necessary to clarify whether opportunities should be treated as the positive component of risk or as a distinct category coordinated with risk within the same management system.

Contemporary ISO terminology retains a general definition of risk as the effect of uncertainty, allowing positive and negative deviations, while management system standards require organizations to determine and address risks and opportunities. ISO/FDIS 9001:2026 makes this tension particularly visible because it retains the inclusive definition in clause 3.7 but separates actions addressing risks from actions addressing opportunities in the requirements and Annex A, links the former to undesired effects and the latter to desired effects, and introduces two distinct forms of thinking within the same management framework [40].

The difficulty is not merely linguistic, because terminology guides what an organization searches for, documents, assesses and treats. When opportunity is assimilated to positive risk, analysis tends to focus on the distribution of outcomes and may overlook favourable circumstances, capabilities, resources, needs, time windows and courses of action that have to be recognized or created. Conversely, when risks and opportunities are managed in independent silos, the exposures associated with pursuing opportunities, the trade-offs and the interdependencies become less visible. The paper therefore proposes conceptual distinction accompanied by coordinated governance.

The thesis is deliberately circumscribed and does not treat the content of ISO/FDIS 9001:2026 as a definitive or universally agreed theoretical solution. Following the close of voting, the project is at ISO stage 60.00, International Standard under publication, and is therefore the technical source closest to the forthcoming edition; it is not yet the published standard. The high degree of technical stability normally associated with this stage does not justify turning the FDIS architecture into a general definition applicable to every discipline, particularly because the document retains the tension between the inclusive definition of risk and the operational distinction adopted in planning. Clarification developed for the quality management system does not automatically amend general ISO vocabulary or determine the interpretation of every other management system [40], [50].

The central question is therefore how risks and opportunities can be considered together within a management system without being conceptually confused. In this setting, the metaphor of two sides of the same coin can have limited usefulness, provided that the coin is not identified with risk but with the common decision situation, the system and its objectives. Risks and opportunities are distinct yet related analytical perspectives on the same configuration; they are not necessarily mirror opposites, do not exclude one another and may coexist in relation to the same antecedent.

The proposed contribution takes the form of a multi-level model in which the frame of reference delimits objectives, interested parties, scope, time horizon and relevance criteria, while the factual basis includes tangible or intangible sources, events, causes, conditions, circumstances, resources, capabilities, decisions and changes. Two complementary but non-interchangeable pathways develop from this basis: analysis of possible adverse consequences and recognition or creation of favourable possibilities. The first leads to the qualification of risks, the second to the qualification of opportunities, while mixed or non-significant effects remain visible when polarities differ across objectives, interested parties or time horizons or fail to exceed the adopted thresholds. The three qualifications inform coordinated decisions and actions, from which realized outcomes arise and, through feedback, update antecedents and the frame of reference.

Uncertainty and limits of knowledge are not placed at the beginning of the sequence as the cause of an event. Consistently with ISO Guide 73:2009, ISO 31073:2022, ISO 9000:2026 and ISO/FDIS 9001:2026, uncertainty primarily concerns deficiency of information, understanding or knowledge related to an event, its consequences or likelihood; the model cautiously extends this dimension to evidence, assumptions, causal relations, assessments and decisions. Complexity, defined in ISO/TS 22375:2018 as a condition of a system composed of autonomous yet interrelated and interdependent parts interacting in multiple and non-linear ways, is not a stage of the process and is not identical to risk. It may nevertheless generate complexity-related risk and, in specific informative methods in Annex B, include dimensions of unpredictability, ambiguity or non-transparency. The model remains an analytical construction developed by the authors and does not replace applicable definitions or requirements.

II. METHOD, CORPUS AND ANALYTICAL CRITERIA

The study adopts a comparative conceptual and terminological analysis in which definitions are examined not only as isolated statements but also in relation to notes, requirements and application passages, with attention to the function assigned to each term, the level at which it is located and its explicit or implicit relationships with other concepts. The purpose is not to determine which discipline possesses the only correct definition, but to establish whether the normative corpus contains compatible or divergent models and which elements support a distinction between risks and opportunities.

The principal normative corpus comprises ISO/IEC Guide 51:2014 [1], ISO Guide 73:2009 [2], used as a withdrawn historical source, ISO 31000:2018 [3], ISO 31073:2022 [4], ISO 37000:2021 [5], ISO 14001:2026

[6], ISO 9000:2026 [7], ISO 56000:2025 [8], ISO 21502:2020 [9], ISO 21504:2022 with historical comparison to the 2015 edition [10], ISO/TS 22375:2018 [11], UNI 11865:2022 [12] and the Harmonized Structure [14]. ISO/CD 9001.2:2025 [13] is retained only as a historical antecedent, while the principal analysis of the future ISO 9001 is based on ISO/FDIS 9001:2026 dated 1 June 2026 [40]. ISO/TMB Resolution 16/2025 [15] is used to delimit deviations from the fundamental definitions of the harmonized structure.

Scientific, professional and conceptual literature is used selectively: Aven is cited for the plurality of risk definitions and the role of events, consequences, uncertainty and knowledge [17], [18]; Slovic highlights the limitations of treating risk assessment as a purely scientific enterprise [34], while Hansson characterizes risk statements as both fact-laden and value-laden [35]. Ramoglou and Tsang advance a realist account of opportunities as propensities [36], Alvarez and Barney distinguish discovery and creation theories [37], Gibson introduces the concept of affordance [38], and Volkoff and Strong develop it in organizational research to describe real possibilities that arise from relationships and are actualized by actors [39]. Chen Ning Yang's essay on Einstein is used to connect opportunity, perception and creation without turning physical relativity into a management theory [41], while the reference to Protagoras and the sophists remains confined to the relationship among perspective, language and qualification [32], [33]. The review has been extended to Knight, Savage, Kahneman and Tversky, Dixit and Pindyck, Shane and Venkataraman, and contemporary philosophy of risk. Ancient texts associated with Plato, Aristotle, Socrates and Epictetus are subject to a stricter criterion: no unattributed aphorism is used, and modern categories are not retroactively assigned to authors who did not formulate them.

The analysis applies ten connected criteria by considering the conceptual level—fact, source, antecedent, event, consequence, qualification or outcome—and the mode of existence of the object examined, which may be current and observable, possible but unactualized, prospectively represented, or already realized. It also distinguishes factual and evaluative components, polarity in relation to the frame of reference, temporal status, the role of uncertainty and assumptions, the hierarchical relationship among risk, opportunity and threat, consistency between general definitions and operational language, source status and, finally, the quality of evidential grounding and the capacity for intersubjective review.

Direct quotations are limited to wording necessary to verify definitions, notes and conceptual relationships. For each source the paper distinguishes definitions, notes, requirements, informative annexes, examples and inferences developed in this paper. ISO/IEC Guide 51:2014 is verified against the official Online Browsing Platform text; ISO Guide 73:2009 against the complete bilingual ISO text reproduced in PD ISO Guide 73:2009, the UK implementation; and ISO 21504:2022 against the complete official text reproduced in BS ISO 21504:2022, the UK implementation. The 2015 edition of ISO 21504 is retained only for historical comparison. ISO/FDIS 9001:2026 is treated as a final draft close to publication, not as a current International Standard.

III. FROM HARM MANAGEMENT TO RISK AS AN UMBRELLA CATEGORY

3.1 The safety tradition

In the safety tradition, ISO/IEC Guide 51:2014 distinguishes harm, hazard, hazardous event and hazardous situation and defines risk as the combination of the probability of occurrence of harm and the severity of that harm. Probability includes exposure to a hazardous situation, occurrence of a hazardous event and the possibility of avoiding or limiting harm. Within this domain, risk is structurally related to adverse consequences and the expression positive risk is inconsistent with the technical function of the definition.

Guide 51 aims to achieve tolerable risk for people, property and the environment throughout the life cycle of products and systems. It demonstrates that the adverse meaning of risk is not merely a linguistic residue but an established and discipline-specific normative architecture. The paper does not generalize this definition to every field; it uses the source to show that ISO vocabulary is neither historically nor sectorally uniform.

3.2 The deliberate broadening introduced by ISO Guide 73:2009

ISO Guide 73:2009 deliberately broadened the concept. Its Introduction stated that, in addition to managing threats to objectives, organizations were developing integrated approaches to improve the management of potential opportunities; its vocabulary was therefore broader than that of Guide 51, which was confined to undesirable or negative consequences. This is direct documentary evidence of the intentional semantic extension, although Guide 73 is now withdrawn and ISO 31073:2022 is the current vocabulary source.

Risk was defined as the "effect of uncertainty on objectives" and Note 1 included positive and/or negative deviations. Notes 3–5 distinguished potential events, consequences, likelihood and deficiency of information, understanding or knowledge. Guide 73 also separated sources, events, causes and consequences in risk identification and risk description; it defined a risk source as an element that, alone or in combination, has the intrinsic potential to give rise to risk, noting that it may be tangible or intangible. It defined an event as an occurrence or change of circumstances and a consequence as the outcome of an event affecting objectives. It did

not define opportunity autonomously, but risk treatment included taking or increasing risk in order to pursue one. This combination already reveals tension between risk as an umbrella category and opportunity as a distinct object of action.

The broadening did not eliminate earlier sector-specific definitions, as shown by Aven [18], who reconstructs conceptual families in which risk is associated, depending on context, with loss, the combination of probability and consequence, an uncertain event, uncertainty, or the effect of uncertainty on objectives. A general definition may coordinate vocabulary, but it does not automatically erase established technical and linguistic uses, which re-emerge when the term is applied in management systems.

3.3 The paradox of the pair "risks and opportunities"

The Harmonized Structure retains the abbreviated definition of risk as the effect of uncertainty, allowing positive or negative deviations, while clause 6.1 of management system standards uses the pair risks and opportunities. This creates an interpretative bifurcation: under one reading risk is an umbrella category and opportunity is its positive manifestation; under the other, risk and opportunity are coordinated categories and risk operationally refers to the possibility of adverse effects. The coexistence of these readings is the principal source of the ambiguity examined.

ISO/FDIS 9001:2026 does not eliminate this tension. Clause 3.7 defines risk as the effect of uncertainty, states that the deviation may be positive or negative and adds that risk is sometimes used where only negative consequences are possible. In clauses 6.1.2 and 6.1.3, however, risks are linked to undesired effects and opportunities to desired effects; Annex A also states that risks and opportunities are distinct and may be determined and addressed through separate processes [40].

The FDIS therefore shows that systemic coherence does not require semantic identity. A single management system may integrate risk-based thinking and opportunity-based thinking, use a common basis of context, objectives and information and, at the same time, maintain distinct objects, criteria and actions. The paper treats this architecture as relevant evidence without presenting it as a universal settlement of the risk-opportunity relationship, because the umbrella definition remains, Annex A is informative and the text is still a final draft.

Necessary distinctions

A risk source, event, cause, consequence, condition or change does not automatically coincide with risk and does not automatically constitute an opportunity. The historical terminology of ISO Guide 73:2009 distinguishes sources, events, causes and consequences in risk description, while ISO 31073:2022 also defines threat and opportunity autonomously. In the proposed model, risk is a prospective qualification concerning the possibility of adverse effects and is not identical to an observed fact or realized harm. Opportunity is a favourable possibility grounded in circumstances and capabilities and is not identical to an isolated favourable element or a benefit already achieved. Uncertainty is not identical to the event and primarily concerns deficiency of information, understanding or knowledge related to an event, its consequence or likelihood; within the model it also concerns evidence, assumptions, causal relations, assessments and decisions. Complexity is not identical to either risk or uncertainty, although it may generate complexity-related risk and may include, in specific informative methods, dimensions of unpredictability, ambiguity or non-transparency.

IV. NORMATIVE EVIDENCE FOR DISTINGUISHING AND COORDINATING RISKS AND OPPORTUNITIES

4.1 ISO 31073: event, consequence, threat and opportunity

ISO 31073:2022 retains in 3.1.1 the general definition of risk as the effect of uncertainty on objectives. Note 1 states that an effect is a deviation from the expected, positive, negative or both, and may address, create or result in opportunities and threats; Note 3 adds that risk is usually expressed through risk sources, potential events, consequences and likelihood. The vocabulary therefore preserves the inclusive construction while analytically distinguishing the elements involved in assessment.

An event, defined in 3.3.11 as the occurrence or change of a particular set of circumstances, may have several occurrences, causes and consequences; it may also consist of something expected not happening or something unexpected happening and, under Note 3, may constitute a risk source. The text does not state that the event is identical to risk or assign intrinsic polarity to it. A known regulatory deadline or a planned decision may be an event, while uncertainty concerns its effects.

A threat, under 3.3.13, is a potential source of danger, harm or another undesirable outcome. Opportunity, under 3.3.23, is a combination of circumstances expected to be favourable to objectives; Note 1 describes a positive situation in which gain is likely and a fair level of control exists, while Note 2 recognizes that an opportunity for one party may be a threat to another. These notes anchor opportunity in a favourable and relational configuration, rather than in harm or benefit already realized.

Clause 3.3.32 on risk treatment completes the picture by including taking or increasing risk in order to pursue an opportunity. The wording presupposes two distinct objects: the opportunity is what is pursued,

whereas risk is the exposure deliberately accepted or modified. ISO 31073 consequently contains a tension between the umbrella definition of risk and an applied structure in which event, threat, opportunity, decision and treatment perform different functions.

4.2 ISO 56000:2025: opportunity as an occasion for realizing value

ISO 56000:2025 provides one of the formulations most consistent with the proposed distinction. Clause 3.6.3 defines opportunity as an "occasion offered by a set of circumstances for value realization". Opportunity is therefore a favourable circumstance that may be recognized, assessed and transformed through decisions and actions. It is not defined as a positive effect of uncertainty or as a risk occurrence.

The standard also distinguishes opportunity from benefit and realized value. An insight may reveal opportunities; a concept proposes a way to address them; innovation requires value to be manifested through the introduction, adoption or use of a solution. Decisions, initiatives, investment, experimentation, validation and learning therefore stand between opportunity and outcome. A benefit is an outcome; an opportunity is a favourable possibility that has yet to be transformed.

The principle "Managing uncertainty" confirms the separation at the operational level, because the standard distinguishes opportunity exploitation from risk management and places those activities within an opportunity portfolio, where balancing opportunity exploitation and risk management increases the potential for value realization. Planning the innovation management system likewise requires actions addressing opportunities and risks, while operational activities identify opportunities, create and validate concepts and develop solutions, demonstrating that integration is procedural without becoming semantic identity.

ISO 56000 also emphasizes the relativity of value by recognizing that an innovation may realize, redistribute or destroy value and may produce positive and negative impacts for different interested parties, thereby reinforcing the view that polarity is not an intrinsic property of an antecedent or solution but depends on the subject, criterion and time of assessment.

4.3 ISO 14001:2026: the clearest published separation

ISO 14001:2026 provides the most direct published terminological separation. Clause 3.2.10 defines "risks and opportunities" as potential adverse effects, i.e. risks, and potential beneficial effects, i.e. opportunities. Within the discipline-specific text, the terms are assigned to different directions and the expression "positive risk" is not used.

Annex A also clarifies the applicable sequence. Clause A.6.1.1 explains that planning is intended to enable the organization to achieve intended outcomes, prevent or reduce undesired effects and pursue continual improvement; it also permits aspects and impacts to be analysed through a process separate from that used for risks and opportunities or through an integrated process. Methodological integration therefore does not remove the distinction between categories.

Clause A.6.1.2 distinguishes environmental aspects from impacts, which are changes to the environment, adverse or beneficial, resulting wholly or partly from aspects. A significant aspect may produce one or more significant impacts and may subsequently result in risks and opportunities that need to be addressed. This sequence makes the antecedent, environmental effect and managerial qualification visible.

Clause A.6.1.4 extends the analysis to internal and external context and recognizes that contextual issues, aspects and compliance obligations may create risks and opportunities. Its examples of favourable possibilities include adopting emerging environmental requirements to enhance competitiveness and introducing technology financed by public grants. Opportunity is thus connected to identifiable conditions and courses of action, while potential adverse effects remain subject to distinct assessment.

4.4 ISO/FDIS 9001:2026: operational distinction, systemic coordination and residual tension

ISO/FDIS 9001:2026, dated 1 June 2026 and submitted to the final ballot identified in the document, provides particularly significant technical evidence because its Foreword lists among the principal changes a clearer separation of risks and opportunities and separate consideration of actions addressing each category [40]. The paper nevertheless treats it as a final draft rather than as the published standard: proximity to the final stage increases its documentary value but does not justify presenting every wording as definitively approved or the issue as settled for all management systems.

Clause 3.7 retains the harmonized definition of risk as the effect of uncertainty and specifies that the effect is a positive or negative deviation. Note 2 locates uncertainty in the partial or complete deficiency of information, understanding or knowledge concerning an event, its consequences or likelihood; Notes 3 and 4 further distinguish potential events, consequences and probability in the characterization of risk. The FDIS does not provide an autonomous definition of event or opportunity in clause 3 and therefore does not support identifying the event with risk, the consequence with risk, or uncertainty with the event.

At requirement level, clause 6.1.1 preserves joint determination of risks and opportunities in relation to context and objectives, whereas clauses 6.1.2 and 6.1.3 separately require the organization to determine, analyse and evaluate risks capable of producing undesired effects and opportunities capable of producing desired effects. The distinction continues in monitoring and management review, where the effectiveness of actions addressing risks and opportunities is considered separately. Annex A.6.1.1 summarizes the approach by explaining that, in quality management, risk is frequently understood as the effect of uncertainty capable of negatively affecting intended results, while opportunity is understood as circumstances that make beneficial effects possible; the same passage states that the two categories are distinct and may be determined and addressed through separate processes.

Annex A.6.1.3 further links opportunities to assessment of context, interested-party needs, capability, capacity, competence, monitoring results and indicators, and identifies changing market conditions, emerging technologies and regulatory requirements as possible sources. In parallel, Note 2 to clause 6.1.2 includes taking risk in order to pursue an opportunity among possible risk responses. These passages support a relationship in which opportunity is what may be pursued and risk is the exposure associated with the decision, within common planning. The FDIS therefore confirms the compatibility of conceptual distinction and coordinated management, but it neither removes the tension in the general definition nor transforms a discipline-specific solution into universal terminological agreement.

4.5 UNI 11865:2022: the upside/downside model and its internal tensions

UNI 11865:2022 represents a different model because its informative Annex B describes risk as a neutral concept and distinguishes downside risk, upside risk and an extended perspective, thereby treating positive and negative consequences as sides of risk. For this reason, the standard provides a useful counter-example to the paper's proposal and demonstrates the full application of the inclusive ISO 31000 paradigm.

The same UNI 11865 nevertheless contains elements that reveal the difficulties of this approach. Note 3 to definition 3.24 states that, to avoid misunderstanding and ambiguity, the expression "risks and opportunities" may be replaced by "risks associated with opportunities and threats". This proposal recognizes that opportunity and threat may be treated as conditions with which risks are associated, rather than as two signs of risk.

Clause 3.29 defines opportunity autonomously as a combination of circumstances favourable to objectives. It states that taking or not taking an opportunity are both sources of risk and that an opportunity may be understood as a source of potential benefit. Here too, opportunity precedes the associated risk and remains distinct from the realized benefit. Upside risk therefore coexists with a construction that makes the thesis of this paper possible.

UNI 11865 also states that not all uncertainty gives rise to risk and describes uncertainty as contextual information. A result better than expected is not necessarily an opportunity: if it is due to accidental and uncontrolled circumstances, it may reveal a planning error and even create difficulties. The positive sign of a deviation is insufficient to qualify an opportunity.

4.6 Project and portfolio management: a terminological laboratory

ISO 21502:2020 follows a construction opposed to the paper's proposal by defining an opportunity as a risk occurrence with a favourable impact and a threat as a risk occurrence with a negative impact. It nevertheless distinguishes benefit, meaning created advantage or value, from opportunity and treats an issue as an event that has already occurred. The standard is therefore a useful terminological counter-model while confirming the need to distinguish event, outcome, benefit and management qualification.

The current ISO 21504:2022 defines benefit as created advantage, value or another positive effect; outcome as change resulting from use of an output; portfolio component as a project, programme, portfolio or other related work; and strategic alignment as the result of selecting and adjusting portfolio components to contribute to strategic objectives. It does not provide an autonomous definition of opportunity, but its operative text explicitly treats opportunities and threats from a strategic perspective. Clause 4.1 states that organizational strategy should be used to identify, document and evaluate opportunities and threats; selected opportunities and threats can be examined and justified in business cases and can lead to portfolio components whose outcomes, outputs and deliverables are expected to realize benefits. Clauses 4.2.1 and 4.2.4 add that new opportunities or threats may be evaluated, selected, prioritized and authorized, can arise from strategy, customer requests, evolution of offerings or internal improvements, and can initiate or modify portfolio components or lead to strategy being redefined. The current edition therefore directly confirms their upstream strategic role while preserving the distinction among opportunities or threats, portfolio components, outcomes and benefits; the 2015 edition is retained only as a historical comparison.

Project management literature confirms the persistence of the issue. Hillson [20] observes that the introduction of upside risk did not remove the prevalence of the negative perspective. Ward and Chapman [30] propose

replacing project risk management with uncertainty management because the term risk directs attention towards threats and discrete events. Jaafari [21] calls for integrated management of risks, uncertainties and opportunities. Olsson [24] finds that opportunity management is not adequately covered by the risk management process. The proposed solutions differ, but they converge on the need not to reduce opportunity to a positive label attached to risk.

4.7 Governance: taking risk to pursue an opportunity

ISO 37000:2021 retains the general definition of risk, but its governance language distinguishes key threats and opportunities and states that an organization may deliberately take risk in order to take advantage of opportunities. The relationship presupposes two different objects: opportunity is what may generate value; risk is the exposure accepted in pursuing it.

The distinction is consistent with organizational behaviour, because entry into a new market may constitute an opportunity, whereas investment, timing, regulatory conformity, reputation and operational capability represent risks associated with pursuing it. Confusing the opportunity with positive risk makes the difference between what must be created or enabled and what must be controlled less transparent.

Table 1: Comparison of normative models and relevance to the thesis

Document	Prevailing relationship	Relevance to the thesis
ISO/IEC Guide 51:2014	Risk as a combination of probability and severity of harm; hazard, hazardous event and harm are distinct.	Documents the safety tradition and the adverse meaning of risk within its domain.
ISO Guide 73:2009 (withdrawn)	Deliberate broadening: risk as effect of uncertainty on objectives, with positive and negative deviations; opportunity referenced in treatment but not autonomously defined.	Explains the historical origin of the inclusive paradigm and the tension between umbrella risk and pursued opportunity.
ISO 31073:2022	Current vocabulary: general risk; source, event, consequence, threat and opportunity distinct; pursuing opportunity may involve risk.	Supports distinction among levels and the decision relationship between opportunity and associated risk.
ISO 56000:2025	Opportunity as a prospect afforded by circumstances for realizing value; risk management and opportunity exploitation distinct yet coordinated.	Separates opportunity, initiative, solution, value and benefit and strengthens the favourable pathway.
ISO 14001:2026	Potential adverse effects = risks; potential beneficial effects = opportunities.	Direct published evidence of semantic separation in the environmental domain.
ISO/FDIS 9001:2026	Inclusive risk definition but distinct requirements, two forms of thinking and separable processes; risk may be taken to pursue opportunity.	Near-final evidence that conceptual distinction and common governance are compatible, not a universal settlement.
ISO 9000:2026	Inclusive definition and risk-based thinking considering benefits, harms and missed opportunity.	Shows that the tension remains within quality vocabulary.
UNI 11865:2022	Upside/downside model, but autonomous opportunity definition and risks associated with opportunities and threats.	Useful counter-model documenting internal difficulties of the inclusive paradigm.
ISO 21502:2020	Opportunity as a favourable risk occurrence; benefit distinct.	Terminological counter-model retaining temporal distinctions among event, issue and benefit.
ISO 21504:2022 / historical 2015	2022 treats opportunities and threats as strategic inputs to be identified, documented and evaluated and capable of generating business cases or portfolio components; benefit and outcome remain distinct. The 2015 edition is retained only historically.	Current evidence that opportunities and threats precede portfolio components and benefits and can modify strategy or portfolio content.
ISO/TS 22375:2018	Complexity as a system condition; high complexity may generate complexity-related risk; informative Annex B includes specific uncertainty/non-transparency dimensions.	Distinguishes complexity from risk while clarifying possible interactions.

4.8 Essential normative traceability matrix

The matrix reports short textual formulations, the nature of each passage and the limit of the inference. Extracts do not replace official documents and are used to distinguish what standards directly state from the paper's analytical development.

Source and clause	Nature	Essential wording	Use and limit in the paper
ISO/IEC Guide 51:2014, 3.9	Definition	"combination of the probability of occurrence of harm and the severity of that harm"	Supports the safety tradition; not generalized to all MSS.
ISO Guide 73:2009, Introduction	Historical rationale	Vocabulary broader than Guide 51 to improve management of potential opportunities.	Documents intentional broadening; withdrawn source.
ISO Guide 73:2009, 1.1 Notes 1, 3–5	Definition and notes	Risk as effect of uncertainty; positive/negative deviations; events, consequences and likelihood distinct.	Explains the umbrella paradigm and analytical levels.
ISO Guide 73:2009, 3.5.1–3.5.1.3	Definitions and process	Identification and description comprise sources, events, causes and potential consequences; risk sources may be tangible or intangible.	Supports the factual basis and distinction between source or event and risk; does not prescribe an MSS

Source and clause	Nature	Essential wording	Use and limit in the paper
			sequence.
ISO Guide 73:2009, 3.8.1 Note 1	Treatment note	"taking or increasing risk in order to pursue an opportunity"	Distinguishes accepted exposure from pursued opportunity.
ISO 31073:2022, 3.3.23 and 3.3.32	Definition and treatment	Opportunity as favourable circumstances; taking or not taking it may be a risk source.	Current vocabulary for the opportunity-risk relationship.
ISO 56000:2025, 3.6.3 and 3.7.7	Definitions	Opportunity as a prospect afforded by circumstances for realizing value; value as gain from satisfied needs.	Separates favourable possibility from realized value.
ISO 14001:2026, 3.2.10	Definition	Potential adverse effects = risks; potential beneficial effects = opportunities.	Direct separation limited to the environmental domain.
ISO/FDIS 9001:2026, 6.1.2–6.1.3 and A.6.1	Requirements and informative Annex	Risks with undesired effects; opportunities with desired effects; distinct categories and separable processes.	Near-final source, not yet published and not universal.
ISO/TS 22375:2018, 3.1 and 4	Definition and principles	Complexity as a condition of interdependent parts and non-linear interactions; high complexity may generate related risk.	Distinguishes system condition from adverse implication.
ISO 21504:2022, 3.2, 3.5, 4.1, 4.2.1, 4.2.4	Definitions and guidance	Opportunities and threats are strategic inputs; selected items can lead to business cases and portfolio components, while benefit and outcome remain distinct.	Direct current support for their upstream role; the standard does not define opportunity autonomously.
ISO 21504:2015, 3.2.4 and Figure 1	Historical comparison	Opportunities/threats as strategic inputs upstream of components and benefits.	Historical comparison only; current support is provided directly by ISO 21504:2022.

Table 2: Essential normative traceability matrix

V. EVENTS, CONDITIONS AND CONSEQUENCES: RECONSTRUCTING THE SEQUENCE

5.1 An event does not in itself constitute a risk or an opportunity

ISO 31073 defines an event as the occurrence or change of a particular set of circumstances. The earlier ISO Guide 73:2009 also stated that risk identification and description comprise sources, events, causes and consequences and that an event may consist of something not happening. ISO/FDIS 9001:2026 does not define event autonomously but distinguishes event, consequence and likelihood in the notes to risk. A regulatory deadline, planned decision or observed change therefore belongs to the factual basis; its qualification as risk or opportunity depends on implications within the adopted frame of reference.

Because not all opportunities arise from a single event, an unused competence, available technology, partnership relationship, geographical position or unmet need may constitute a favourable condition. ISO 21504:2022 likewise identifies strategy, customer requests, evolution of offerings and internal improvements as possible sources of opportunities and threats. The model must therefore start from a category broader than event and include conditions, circumstances, aspects, decisions and changes. Event remains central when it describes what occurs, but it does not exhaust the field of antecedents.

Positive or negative qualification is not an absolute property of an antecedent. New legislation may increase compliance costs while favouring organizations that are already prepared. A technology may improve efficiency and accessibility while introducing dependencies, vulnerabilities or undesirable social effects. Polarity emerges from the relationship between consequence and frame of reference.

5.2 Consequence as a necessary but non-symmetrical intermediate level

Moving directly from an event to risk or opportunity is often too rapid. The risk pathway requires a description of possible undesired consequences and their relationship with objectives, while the opportunity pathway requires clarification of the circumstances, capabilities or options that make a beneficial effect possible and of the value hypothesis supporting pursuit. ISO/FDIS 9001:2026 makes this difference visible by maintaining, in the notes to clause 3.7, the distinction between event, consequence and effect of uncertainty and by separately linking risks and opportunities to undesired and desired effects in clauses 6.1.2 and 6.1.3.

Possible consequences should be formulated in relation to an object and a criterion. "Increased demand" is not automatically favourable: it may raise revenue while saturating capacity, reducing quality or causing delays. Similarly, the availability of a technology is not automatically an opportunity: it must be relevant to an objective, accessible, timely and capable of being transformed through capabilities and decisions. Assessment should state who benefits or bears the effect, which objective is affected, with what intensity and over what period.

The distinction prevents four recurring errors: attributing intrinsic polarity to an event; identifying risk with a fact or with harm when it concerns the possibility of an adverse effect; treating any favourable fact as an opportunity without examining relevance, grounding and actionability; and, finally, confusing opportunity with benefit by overlooking that the former precedes decision and initiative whereas the latter represents value actually realized.

5.3 Uncertainty is cross-cutting, not necessarily the starting point

ISO 31073:2022 and ISO 56000:2025 define uncertainty as a state of deficiency of information, understanding or knowledge; their notes relate it to the consequences or likelihood of an event and, in ISO 56000, also to the characteristics of an entity. ISO 9000:2026 and ISO/FDIS 9001:2026 repeat the deficiency related to an event, its consequence or likelihood. The standards therefore locate uncertainty at the epistemic

level. As an explicit authorial development, the model extends attention to evidence, assumptions, causal relations, assessments and decisions rather than attributing that full extension to one standard.

An event may be certain while its consequences remain uncertain; the direction of a consequence may be known while its magnitude is not; likelihood may be estimable while causal relations or action effectiveness remain ambiguous. ISO 56000:2025 additionally states that uncertainties can be managed by systematically addressing assumptions and defines validation as testing assumptions to reduce uncertainty. Uncertainty is therefore not an initial phase of the model but a property of available knowledge and of the bases on which decisions are formulated and revised.

Pender [25] distinguishes forms of incomplete knowledge that cannot be reduced to probability: ignorance, ambiguity, imprecision, surprise and cognitive limitations. Johansen and Rausand [22] further distinguish linguistic, contextual and normative ambiguity in risk assessment. Perminova, Gustafsson and Wikström [27] connect uncertainty management with sensemaking and learning. Aven [17] warns that immediate quantification may conceal relevant aspects. The proposed model must allow what is known, what is assumed and what remains indeterminate to be stated.

The linear sequence "uncertainty → event → consequence" is therefore misleading. A more accurate representation starts from antecedents and system conditions, analyses consequences and possibilities for action, and makes explicit the uncertainty affecting each passage. The FDIS supports this reading because it distinguishes event, consequence and probability within the explanation of risk without turning uncertainty into the event itself.

5.4 The temporal dimension

The distinction between potential and realized is essential for preserving temporal coherence: before a decision, the organization recognizes favourable conditions and analyses possible adverse consequences; during implementation, it manages assumptions, resources, controls and signals; after occurrence, it observes outcomes, harm, benefits and unexpected effects. Categories may consequently change state, because a pursued opportunity becomes an initiative, a potential benefit may be validated or fail to materialize, and a risk may materialize as an issue or harm.

Management must therefore be dynamic, avoiding both the inclusion of benefits in a risk register as though they were positive risks and the omission of connected exposures from an opportunity portfolio; the two sets should instead remain linked and be updated as information changes, decisions are made and outcomes emerge.

5.5 Risk as a prospective, fact-laden and value-laden construct

The statement "risk is abstract" can be sustained only when abstract means a construct rather than a non-existent reality. Slovic shows that risk assessment integrates scientific evidence, judgement and social factors [34], while Hansson highlights its simultaneously fact-laden and value-laden character [35]. ISO/FDIS 9001:2026 adds useful terminological support: clause 3.7 defines risk as the effect of uncertainty and Annex A.6.1.1 explains that, in quality management, risk is frequently understood as an effect capable of negatively affecting intended results. Risk is therefore not identical to an object, event or harm, but prospectively represents possible impairment on the basis of real elements and an evaluative model.

Hansson rejects both radical objectivism and radical constructivism by arguing that risk statements are fact-laden and value-laden at the same time [35]; physical, epidemiological, economic or organizational data constrain analysis but do not by themselves determine which consequences matter, which subjects should be protected, which time horizon should be adopted or which thresholds are acceptable. Risk consequently takes the form of a relational construct whose grounding depends both on the quality of facts and on the transparency of the values incorporated.

Aven's perspective reinforces this conclusion because it requires risk to be described through events, consequences, uncertainty and available knowledge without being reduced to probability alone [17], [18]; sources, vulnerabilities and indicators may be concrete, whereas risk is the prospective model connecting those elements to the possibility of adverse effects. The adjective "abstract" is therefore admissible only to denote a grounded conceptual representation of a possibility, not an entity lacking real support.

5.6 Opportunity as circumstance, propensity and affordance

ISO 31073 and ISO 56000 link opportunity to favourable circumstances and value realization. ISO/FDIS 9001:2026 reinforces this position when Annex A.6.1.1 describes opportunity as circumstances that make beneficial effects possible and Annex A.6.1.3 relates opportunities to context, interested-party needs, capability, competence, monitoring results, changing market conditions, emerging technologies and regulatory requirements. The substrate may therefore be empirically identifiable, but it becomes an opportunity only in relation to objectives and the capacity to act.

Ramoglou and Tsang interpret opportunities as propensities, meaning real possibilities that may pre-exist their perception, remain unactualized and produce outcomes only in the presence of further actions and conditions [36]; this conception provides a rigorous basis for speaking of greater relative concreteness because it grants opportunity a real mode of existence without confusing it with a benefit or an already actual outcome.

Affordance theory provides a second interpretive lens because Gibson describes the environment as offering possibilities for action relative to the characteristics of an agent [38], while Volkoff and Strong show in organizational research how affordances arise from the relationship between organizational configurations and artefacts and are actualized over time by actors [39]. In the proposed model, opportunity may therefore be understood as a possibility for action grounded in the relationship between contextual conditions and organizational capabilities, more immediately anchored in observable reality than risk but neither independent of the subject nor already realized.

The distinction between discovery theory and creation theory formulated by Alvarez and Barney nevertheless prevents the claim that all opportunities already exist "out there" in the same way [37], because some are discovered in antecedent conditions whereas others emerge through experimentation, interaction and institutional construction. The thesis should therefore refer to possible empirical grounding and to processes of recognition, creation and actualization, avoiding the idea of absolute and uniform concreteness.

5.7 Difficulty, perception and the creation of opportunity: a cautious use of the reference to Einstein

In managerial discourse, the idea that difficulty may become an occasion for progress is frequently associated with Albert Einstein; because this paper seeks to ground its argument in verifiable sources, it does not treat the popular aphorism "In the middle of difficulty lies opportunity" as a direct quotation from the scientist and instead uses Chen Ning Yang's 2006 essay as a documented basis for examining the relationship among favourable conditions, perception and the creation of opportunity [41].

Yang observes that the crisis in physics in 1905 offered Einstein a rare historical occasion, while also emphasizing that the same occasion was in principle open to other scientists and that the difference lay in the capacity to loosen attachment to established concepts and combine close knowledge of the problem with sufficient critical distance. His analysis distinguishes the presence of favourable conditions from the capacity to recognize them, showing that the substrate of an opportunity may be shared and relatively concrete whereas its qualification and actualization depend on the subject's perception, capabilities and action [41].

Yang further argues that, in the path towards general relativity, Einstein did not merely seize an opportunity already available but helped create it by formulating the problem and developing a new theoretical framework through years of work [41]. This reconstruction reinforces the distinction between discovered and created opportunities and allows difficulty to be interpreted not as an automatic container of favourable possibilities but as a condition that may reveal needs, expose the inadequacy of established solutions and stimulate learning and innovation. Any analogy with physical relativity should consequently remain confined to the illustrative reminder that qualification depends on a frame of reference, without transferring physical concepts into management as theoretical equivalences and without suggesting that risk turns into opportunity: more precisely, analysis and treatment of a problematic situation may reveal or help create a distinct favourable possibility that must then be assessed together with its associated risks.

5.8 Perspective, practical truth and the limits of relativism

The reference to the Greek sophists, and particularly to the Protagorean problem of measure and appearance, is useful only within precise limits, because the same fact may be qualified differently by different subjects when objectives, interests, capabilities and time horizons change [32], [33]. Logos makes a representation communicable and persuasive, but argumentative quality cannot replace grounding, because perspective contributes to qualification without freely creating facts or possibilities for action.

Before an outcome is realized, a statement concerning risk or opportunity cannot be verified in the same manner as a fact that has already occurred, but it can be judged through the quality of evidence, causal plausibility, transparency of assumptions, coherence of criteria and capacity to withstand intersubjective scrutiny. The asymmetry advanced by the paper may therefore be formulated without relativism: risk is predominantly a prospective construct concerning possible adverse effects, whereas opportunity may be a real, recognized or created favourable possibility more directly grounded in circumstances and capabilities and requiring actualization through action.

5.9 Philosophical antecedents: kairos, choice and danger

Ancient philosophy can enrich the paper only when used as a semantic antecedent rather than as direct proof of a distinction developed by modern standardization. In Greek thought, kairos denotes the appropriate moment for action, whereas discussions of fear, courage and danger concern exposure to what may happen when acting. This juxtaposition suggests that the appropriateness or advantage of a choice and the danger

connected with its execution occupy different positions; it does not justify attributing to Plato, Aristotle or Socrates the modern technical proposition that opportunity is a category opposed to risk.

The Seventh Letter attributed to Plato, whose authenticity remains disputed, may be cited only with an explicit critical note: its narrative contrast between waiting for a suitable occasion and the fears attached to the subsequent decision illustrates a difference between an occasion for action and exposure to danger. Similarly, in the Nicomachean Ethics the advantageous belongs among objects of choice, whereas fear and confidence are addressed in the treatment of courage. These texts are consistent with the idea that one decision may be favourable in purpose and risky in consequence, but they are not definitions of risk and opportunity in their current technical sense [48], [49].

5.10 Decision theory and economics: alternatives, outcomes and risk

The distinction acquires a firmer basis in economics and decision theory. Knight separates risk, understood as measurable uncertainty, from non-measurable uncertainty and entrepreneurial profit. His contribution is not an explicit theory of opportunity, but it shows that the prospect of profit and the risk faced in pursuing it are not identical. Savage, in turn, distinguishes acts, states of the world and consequences: the available alternative, the favourable or adverse value of the outcome and uncertainty about the state that will occur belong to different components of the model [42], [43].

Kahneman and Tversky's Prospect Theory assigns value to gains and losses relative to a reference point and treats probabilities separately through decision weights. A possible gain is therefore not positive risk, but one outcome of a risky prospect. The finding that decision makers can be risk-averse in the domain of gains and risk-seeking in the domain of losses confirms that outcome sign and attitude toward risk are not the same analytical dimension [44].

Real-options theory provides an even more concrete representation. Dixit and Pindyck describe an investment opportunity as an option granting the right, but not the obligation, to invest; uncertainty affects the value of the option and the desirability of exercising, postponing or abandoning it. Opportunity can therefore exist before the decision, whereas some risks are assumed through exercise and others arise from delay or rejection [45].

In entrepreneurship research, Shane and Venkataraman treat opportunities to create future goods and services as objects that may be discovered, evaluated and exploited. Later theories disagree on whether opportunities are discovered, developed or created, but converge in not reducing them to the favourable component of risk. A defensible synthesis is therefore that opportunity describes what may become possible to realize, whereas risk describes the uncertainty and exposure associated with the decision to pursue it. This is an interpretive synthesis, not a quotation attributable to a single author [46].

5.11 Contemporary philosophy of risk and the limits of symmetry

Contemporary philosophy of risk and decision theories show that a favourable outcome, an available alternative and exposure to uncertain consequences occupy different analytical positions. This distinction does not place risks and opportunities in separate worlds: they may concern the same decision, the same change and the same system, but they answer different questions. Risk concerns what may compromise results and the exposure accepted; opportunity concerns what may become possible to realize. Their relationship is therefore systemic and decision-based, rather than a semantic symmetry between the negative and positive sign of one entity [47].

VI. COMPLEXITY: WHY THE POLARITY OF EFFECTS IS RELATIONAL

6.1 Complexity is not identical to difficulty, uncertainty, chaos or risk

Complexity is often used as a synonym for difficulty, complication, uncertainty, chaos or risk, but these concepts are not identical. ISO/TS 22375:2018 defines complexity as a condition of an organizational system with diverse and autonomous yet interrelated and interdependent components interacting with one another and with external elements in multiple and non-linear ways. Note 1 adds that system behaviour cannot be determined solely as the sum of individual variable behaviours. Scientific literature complements this basis by showing that no single property is sufficient in every domain. Baccarini emphasizes differentiation and interdependency in project complexity, Ladyman, Lambert and Wiesner caution against a single universal defining property, and Williams highlights the need for approaches suited to complex projects [19], [23], [31].

A system may be complicated yet decomposable, or complex while displaying local regularities. Complexity, risk and uncertainty should therefore remain distinct. The technical specification nevertheless recognizes that high complexity may become a source of complexity-related risk and that complexity assessment may create strategic advantages and opportunities to maintain or improve performance. Its informative Annex B also includes unpredictability and ambiguity within one specific method and non-transparency within another. The rigorous formulation is therefore that uncertainty may be a dimension of

certain complexity manifestations or assessment methods without being identical to complexity as a system condition.

6.2 The definition in ISO/TS 22375:2018

ISO/TS 22375:2018 provides the most explicit ISO reference. Clause 3.1 defines complexity as a condition of an organizational system with many different and autonomous yet interrelated and interdependent components or parts that interact with one another and with external elements in multiple and non-linear ways. Note 1 adds that system behaviour cannot be determined solely as the sum of the behaviours of individual variables.

The technical specification distinguishes an appropriate level of complexity, necessary for system functioning, from an excessive or unmanageable degree that may weaken security, resilience, effectiveness and efficiency. The inverted U-shaped relationship between complexity and performance is presented as an illustrative hypothesis, not as a universal law or quantitative threshold. The same characteristic may be necessary or dysfunctional depending on organizational capability, context and the quality of interdependencies.

The document refers to complexity-related risk when high complexity becomes a source of vulnerability. The construction is important: complexity and complexity-related risk are not identical. The former is a system condition; the latter is a possible adverse implication of excess complexity, opacity or misalignment with governance capabilities. The specification also recognizes strategic and tactical benefits of complexity assessment and opportunities to maintain or improve performance.

6.3 Interdependence, non-linearity and emergence

Simon [28] describes many complex systems as nearly decomposable: interactions are stronger within subsystems, but the parts are not independent. This architecture permits local coordination while shifting attention to interfaces. In organizations, numerous failures and opportunities emerge not within one process but in relationships among functions, suppliers, technologies, responsibilities and decision levels.

Anderson [16] introduces non-linearity, self-organization, adaptation and coevolution into organization theory. Uotila and Morrell [29] locate complexity between order and chaos and connect it with locally directed elements, non-linear interactions and emergent outcomes. Perrow [26] shows how interactions that are not immediately visible and tight coupling may support systemic propagation. These contributions explain why analysis of isolated events is insufficient.

Non-linearity means that an effect does not necessarily vary in proportion to its cause. Feedback, thresholds, accumulation and delay may amplify or attenuate interventions. Emergence denotes properties or patterns arising from the configuration of interactions and not attributable to a single part. Reputation, culture, congestion, collective capabilities and network vulnerability are organizational examples. Consequences may propagate, combine and change sign over time.

6.4 Polarity depends on the frame of reference

In complex systems, classifying an antecedent as absolutely positive or negative is particularly fragile. The same decision may reduce a local risk while increasing systemic vulnerability; improve short-term efficiency while reducing long-term resilience; create value for one customer while destroying it for another interested party. ISO 31073 recognizes that a threat to one party may be an opportunity to another and vice versa.

Polarity must therefore be related to at least four dimensions—objective, interested party, system level and time horizon—while scope and relevance criteria are also taken into account, because an effect may be non-significant in relation to one objective while remaining relevant elsewhere. It is consequently more prudent to refer to effects that are non-significant within the adopted frame than to claim absolute neutrality.

Complexity does not authorize terminological indeterminacy and instead requires more rigorous descriptive discipline capable of distinguishing antecedents from consequences, making relationships explicit, keeping opposing effects visible and updating assessments as conditions change. Simplification remains necessary for decision-making provided that it states what it excludes and remains open to revision.

VII. THE PROPOSED MODEL: CONCEPTUAL DISTINCTION AND COORDINATED GOVERNANCE

Figure 1 represents the conceptual model developed by the authors and should be read as a map of analytical, informational and feedback relationships, not as a sequence prescribed by a single ISO standard. The two upper bands indicate cross-cutting dimensions: uncertainty concerns limitations of knowledge, while complexity concerns system structure, interdependencies and non-linearity. The central flow proceeds from the frame of reference to the factual basis, divides into adverse-effect and favourable-possibility pathways and leads to risks, opportunities or mixed/non-significant effects. The qualifications converge in coordinated decisions and

realized outcomes, while feedback updates both antecedents and the frame of reference. The integrated legend distinguishes solid flows, dashed links, cross-cutting dimensions and the three colour-coded pathways, while the "How to read the connections" section specifies the meaning assigned to each arrow.

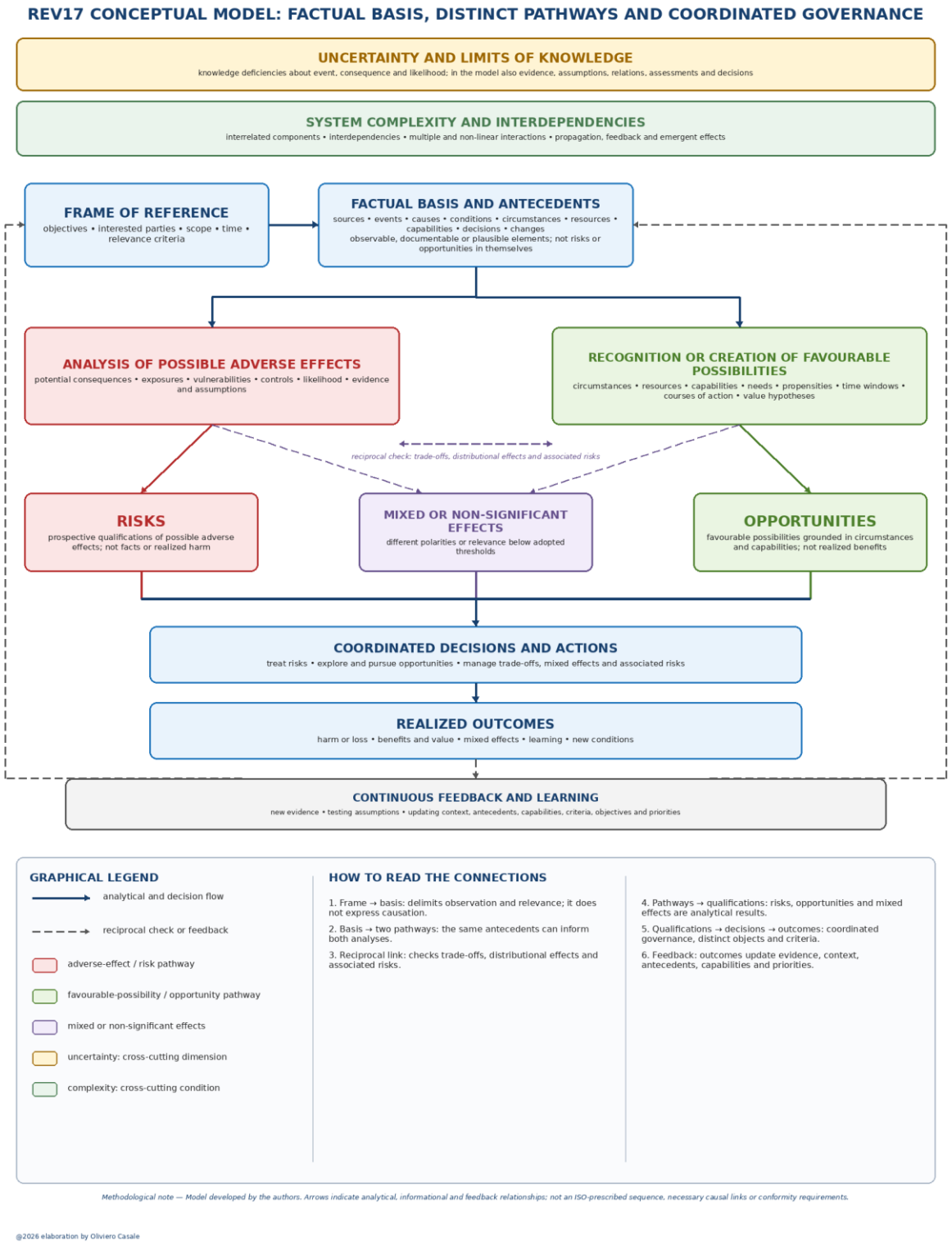

Figure 1: Conceptual model developed by the authors with integrated legend: cross-cutting dimensions, factual basis, distinct pathways, coordinated governance and feedback

Methodological note — The figure does not reproduce a sequence prescribed by a single ISO standard. Normative terms are traced in the paper; the groupings, mixed or non-significant effect category, relative

asymmetry, legend structure and graphical links are developments proposed by the authors. Arrows indicate analytical, informational and feedback relationships rather than necessary causal links or conformity requirements.

7.1 Frame of reference, uncertainty and complexity

The frame of reference does not causally produce antecedents. The arrow to the factual basis indicates that objectives, interested parties, scope, time and criteria delimit what is observed and how relevance is assessed. The uncertainty and complexity bands have no causal arrows towards the frame because they cut across the model. Uncertainty may concern event, consequence and likelihood and, in the model, evidence, assumptions and decisions; complexity may alter propagation, delays, feedback and emergent effects. The two dimensions may interact but are not semantically identical.

7.2 Factual basis and antecedents

The factual basis gathers tangible or intangible sources, events, causes, conditions, circumstances, resources, capabilities, decisions and changes. The inclusion of sources, events and causes in the factual basis, together with the subsequent analysis of potential consequences, reflects the analytical structure made explicit in ISO Guide 73:2009 and ISO 31073:2022 without turning those elements into risks. "Factual" requires the elements to be observable, documentable or supported by explicit plausibility; it does not require every future aspect to be certain or materialized. The bifurcation shows that the same basis can feed both pathways simultaneously.

7.3 Two complementary and non-exclusive analytical pathways

The left-hand pathway analyses possible adverse consequences in relation to the frame of reference and considers exposures, vulnerabilities, controls, evidence and assumptions. The right-hand pathway recognizes the circumstances, resources, capabilities, needs, propensities and courses of action that may make a desired result practicable. The dashed two-way arrow between the pathways does not merge them or suggest that they are mirror images; it represents reciprocal checking. Risk analysis should test whether treatment measures eliminate favourable possibilities or create new trade-offs, while opportunity analysis should identify risks connected with pursuing, implementing, postponing or abandoning the possibility. The pathways are therefore distinct in object and criteria but mutually informative in decision-making.

7.4 Three outcomes of qualification

The solid arrows descending from the two pathways indicate the qualification resulting from analysis. Risks arise from the adverse-effects pathway and, within the model, are prospective qualifications concerning the possibility of unfavourable effects or obstacles to objectives; they are not identical to events, sources, observed facts or harm already incurred. Opportunities arise from the recognition of favourable possibilities and are relational configurations grounded in circumstances and capabilities that may be recognized, made practicable or created; they are not identical to benefits already realized. The two diagonal arrows to the central category show that mixed or non-significant effects may emerge from either pathway: the same configuration may produce different polarities for different parties, objectives or time horizons, or may not exceed the adopted relevance thresholds. This third category prevents every antecedent or consequence from being forced into a binary choice between risk and opportunity.

The central position of mixed or non-significant effects and the two diagonal arrows prevent an exclusive reading of the antecedent: the same fact or change may produce adverse consequences, favourable possibilities and differently signed outcomes at the same time. The arrows do not state that risk and opportunity are properties of the event; they show that qualification depends on the relation between the antecedent, the consequences or possibilities identified and the adopted frame of reference. The two-sides-of-the-same-coin metaphor therefore remains usable only when the coin is the common decision situation rather than risk as an all-encompassing concept.

7.5 Coordinated decisions and actions

The three categories converge in the coordinated decisions and actions box. Convergence does not erase their differences; it indicates that the management system should combine within one governance the treatment of risks, exploration and actualization of opportunities, and management of mixed effects, trade-offs and associated risks. Actions concerning risk may avoid, reduce, modify, share or accept exposure, whereas actions concerning opportunity may explore, validate, enable, pursue, postpone or abandon a favourable possibility. The relationship expressed in ISO/FDIS 9001:2026, according to which risk may be taken in order to pursue an opportunity, confirms that the exposure accepted and the object pursued are connected but conceptually distinct.

7.6 Realized outcomes, feedback and system updating

The arrow to realized outcomes indicates the transition from prospective qualification and decision to observable results. Outcomes may include harm or loss, benefits and value, mixed effects, learning and new conditions. The dashed feedback does not represent a mechanical return; it indicates that outcomes produce new evidence, test assumptions, modify capabilities and conditions and may require revision of the frame of reference, antecedents, criteria and priorities. The model is cyclical and adaptive, and the relationships do not imply necessary linear causality.

Table 3: Working definitions and delimitations of the proposed model

Concept	Working definition and delimitation
Source/cause	Tangible or intangible element that, alone or in combination, has the intrinsic potential to give rise to risk; in the model it is treated as an antecedent that may contribute to events or consequences. It is not identical to risk; cause describes an explanatory relationship rather than a management qualification.
Event	Occurrence or change of circumstances, including something not happening. It does not necessarily possess polarity and is not in itself identical to either risk or opportunity.
Consequence	Outcome of an event affecting objectives; it may be potential or realized, certain or uncertain, positive or negative. In the model potential consequences inform qualification, while observed consequences belong to realized outcomes.
Risk	Prospective qualification grounded in evidence, knowledge, assumptions and criteria, concerning the possibility of adverse effects. It is not intended to replace general ISO definitions and is not identical to source, event, fact or harm.
Opportunity	Favourable and relational possibility grounded in circumstances and capabilities and capable of being recognized, made practicable or created. It may enable value or benefit and entail associated risks but is not identical to benefit.
Benefit	Created or realized advantage, value or other positive effect. It is an outcome rather than the opportunity that precedes it.
Uncertainty	Deficiency of information, understanding or knowledge related to event, consequence or likelihood; in the model it also concerns evidence, assumptions, causal relations, assessments and decisions. Cross-cutting dimension, not an initial phase.
Complexity	System condition with autonomous yet interrelated and interdependent components and multiple, non-linear interactions. It may generate complexity-related risk and include unpredictability or non-transparency in specific methods without being identical to risk or uncertainty.
Mixed/non-significant effects	Outcomes or implications with different polarities across objectives, interested parties or time horizons, or with relevance below adopted thresholds. A category of the model proposed in this paper rather than an autonomous ISO term.

VIII. OPERATIONAL IMPLICATIONS FOR MANAGEMENT SYSTEMS

8.1 Common governance, distinct analytical pathways

Conceptual distinction does not require two separate systems. Context, objectives, responsibilities, resources, decisions, monitoring, audit and review may belong to common governance, while identification, assessment and action retain criteria appropriate to the object concerned. ISO/FDIS 9001:2026 provides an advanced example of this architecture: clause 6.1.1 starts from common planning, clauses 6.1.2 and 6.1.3 separate the actions, Annex A distinguishes risk-based thinking and opportunity-based thinking, and clauses 9.1.3 and 9.3.2 require their effectiveness to be considered separately [40].

Integrated governance may use a common map of antecedents and decisions linked to a risk register and an opportunity portfolio. The register describes possible adverse effects, exposures, vulnerabilities and controls; the portfolio describes favourable circumstances, value hypotheses, enabling capabilities, initiatives and expected benefits. Common identifiers and causal maps make interdependencies, trade-offs and associated risks visible without merging the categories.

8.2 Identification and formulation

The quality of identification depends on formulation and on separating evidence from judgement. An entry such as "new technology" describes at most an element of the factual basis: it does not explain why it constitutes an opportunity, which adverse effects are possible or which action is envisaged. A complete formulation distinguishes the observed element, the proposed qualification, the objective, the evidence and the assumptions. For example, the documented availability of monitoring technology may constitute an opportunity to reduce consumption if it is accessible and integrable; adoption may nevertheless create supplier dependency, security risks and integration costs.

The same structure prevents the frequent confusion among cause, event and consequence, because an existing cause is not a future event, an event that has already occurred is no longer a risk of occurrence, and a

potential consequence should not be described as a cause. In complex systems, causal maps should also allow for cycles, delays and multiple consequences without imposing linearity that the system does not possess.

8.3 Assessment and criteria

Risks and opportunities should be assessed using coordinated but not necessarily identical criteria. Severity, likelihood, exposure, vulnerability, reversibility, control capacity, causal robustness and knowledge quality are relevant to risk; desired effect, potential value, strategic coherence, favourable substrate, capability, feasibility, time window, actionability, additionality and associated risks are relevant to opportunity. The fact that ISO/FDIS 9001:2026 requires both categories to be separately determined, analysed and evaluated confirms the legitimacy of differentiated criteria within a common framework.

Assessment should consider the distribution and temporality of effects. An opportunity of high value to the organization may produce unacceptable external harm; a limited financial risk may have irreversible environmental consequences. Ethical, legal, social, environmental and reputational criteria are not optional additions but components of the frame of reference.

8.4 Actions and treatment

Actions addressing risk seek to modify sources, likelihood, consequences, exposure or vulnerability; actions addressing opportunity seek to create or use conditions, acquire competence, mobilize resources, experiment, validate, collaborate and scale. Some activities, such as information gathering, monitoring or experimentation, may serve both pathways, but their purpose should remain explicit. Effectiveness cannot therefore be reduced to an undifferentiated "risks and opportunities" indicator: it should show whether undesired effects have been contained and whether desired results have actually been enabled or achieved.

The principle that pursuing, postponing or declining an opportunity may be a source of risk should be operationalized. Every initiative relating to an opportunity should include a section on associated risks: execution, lack of adoption, lock-in, conformity, distributional effects, reputation and opportunity cost. In parallel, risk analysis and treatment should determine whether favourable possibilities are also eliminated or whether opportunities for prevention, learning, innovation or improvement are revealed. The relationship remains coordinated but does not become a semantic identity.

8.5 Monitoring, audit and review

Monitoring should distinguish exposure and control indicators from signals of opportunity progress and value realization. This distinction is consistent with ISO/FDIS 9001:2026, which requires separate evaluation of the effectiveness of actions addressing risks and opportunities and includes both in management review. Review should therefore connect the two sets by examining which risks have increased or decreased, which opportunities have been recognized or created, which have been pursued, which benefits have been realized and which unexpected adverse effects have appeared.

In audit, the model does not replace the terminology of the applicable standard and, until the new ISO 9001 is published, the FDIS is not a conformity criterion unless specifically agreed for another purpose. It can nevertheless improve analytical quality by directing attention to the distinction among antecedents, events, consequences, risks, opportunities and outcomes; to the evidence and assumptions used; to coherence between risk-based and opportunity-based thinking; and to the organization's ability to govern trade-offs and associated risks jointly without representing opportunity as positive risk.

8.6 A concise example

Consider the introduction of a new environmental legal requirement with a known effective date. Publication and the effective date are documentable facts; they do not in themselves constitute either a risk or an opportunity. For an unprepared organization, analysis may justify qualifying risks connected with costs, delays, penalties and loss of market. For an organization already equipped with technology and competence, the same condition may constitute a favourable configuration and therefore an opportunity for differentiation, customer access and service development. The opportunity is more directly anchored in observable capabilities, but it remains an opportunity only in relation to objectives and the capacity to act. The decision to invest entails demand, execution and economic return risks. Only after implementation can actual benefits or losses be observed.

IX. COMPATIBILITY WITH CURRENT ISO TERMINOLOGY

9.1 The proposal does not declare ISO 31000 to be wrong

The ISO 31000 definition is a general stipulative choice and remains valid within its field. The paper does not declare it wrong but reconstructs its origin in ISO Guide 73:2009 and observes that risk tends to acquire a narrower operational meaning in the pair "risks and opportunities". ISO 9000:2026 retains an inclusive

account of risk-based thinking by considering potential benefits and harms and a missed opportunity; ISO/FDIS 9001:2026, within the same quality domain, associates risks with undesired effects, opportunities with desired effects and states in Annex A that they are distinct. The tension is documentary rather than assumed.

Coherence can be improved by distinguishing three levels. Events, conditions, resources, capabilities and changes belong to the factual level; knowledge, assumptions and uncertainty belong to the epistemic level; qualifications of risk and opportunity and the related decisions belong to the management level. Risks and opportunities belong to the same governance field because they refer to the same objectives and may arise from the same antecedents, but they do not occupy the same conceptual position and should not be treated as mutually exclusive alternatives.

9.2 Constraints imposed by the Harmonized Structure

The fundamental definitions of the Harmonized Structure cannot be freely changed by individual committees. ISO/TMB Resolution 16/2025 clarifies the policy on deviations and reinforces the principle of uniformity. A substantive revision would therefore require upstream action on the general vocabulary or the Harmonized Structure, not a plurality of incompatible definitions in individual management system standards.

Discipline-specific standards may nevertheless add compatible terms, requirements or explanations. ISO 14001:2026 directly defines the pair "risks and opportunities"; ISO/FDIS 9001:2026 retains the common risk definition but separates risk-based thinking, opportunity-based thinking, requirements and effectiveness evaluation. These solutions neither amend ISO 31000 nor constitute a general settlement, but they show that a management system standard can coordinate the two fields without semantically assimilating them.

9.3 Possible directions for development

A future revision of the terminological framework could consider seven complementary options:

– clarify that, when risk is used in the pair risks and opportunities, it conventionally denotes possible adverse effects;

– introduce a common definition of opportunity as a favourable circumstance or possibility for achieving objectives or realizing value;

– avoid positive risk as the preferred expression, using opportunity and risks associated with the opportunity instead;

– maintain integrated governance linking every opportunity to risks arising from pursuing, implementing, postponing or declining it;

– clarify that the same antecedent may generate risks and opportunities simultaneously and that, if the two-sides-of-the-same-coin metaphor is used, the coin should be identified with the common decision situation or system rather than with risk as an umbrella category;

– explicitly distinguish the factual and observable basis from the prospective qualifications of risk and opportunity;

– require statements about risks and opportunities to identify evidence, assumptions, criteria, affected subjects and time horizon.

A more radical option would reserve risk for adverse effects and use a neutral superordinate category, such as "effects of uncertainty" or "potential effects on objectives", to encompass both directions. This solution would improve consistency with ordinary usage but would require coordinated revision of numerous documents. The paper does not present it as the only path; it identifies the problem that should be resolved.

X. OBJECTIONS AND RESPONSES

10.1 "The inclusive definition is intentional and therefore not ambiguous"

The intention behind the choice made in 2009 is documented, but it does not remove the polysemy produced by the later use of the pair "risks and opportunities". Clause 3.7 of ISO/FDIS 9001:2026 itself retains the inclusive definition, allowing positive or negative deviations, while adding that risk is sometimes used where only negative consequences are possible. The objection should therefore be addressed not by denying the original intention, but by examining the coexistence of these usages and their communicative and operational effects.

10.2 "A single process is more efficient"

The proposal does not require separate organizational processes, but distinct categories within common governance, in which one process may contain differentiated pathways, criteria and responsibilities. ISO 14001 permits separate or integrated processes, and ISO/FDIS 9001:2026 states that risks and opportunities are distinct and may be determined and addressed through separate processes while locating them in the same planning framework and management system. Organizational efficiency therefore does not require semantic identity.

10.3 "Every opportunity is uncertain, therefore it is risk"
Uncertainty concerning the realization of an opportunity does not make the concepts identical, because a threat, forecast, decision or expected benefit may also be uncertain; uncertainty describes an attribute of knowledge, whereas opportunity qualifies a favourable possibility and risk represents a possible adverse implication, establishing a relationship that cannot be reduced to identity.

10.4 "The starting point must always be the event"
The event remains central without exhausting the field of antecedents, because opportunities may emerge from stable conditions, capabilities, relationships, resources, aspects or combinations of circumstances, as demonstrated by ISO 56000 and, more explicitly, ISO 21504:2022, which identifies strategy, customer requests, evolution of offerings and internal improvements as sources of opportunities and threats. The model therefore uses a broader category of antecedents while retaining the neutral definition of event where applicable and reaffirming that no antecedent in itself constitutes a risk or an opportunity.

10.5 "A neutral effect is not an effect"
In ISO terminology, an effect is a deviation from the expected; where there is no deviation, there is no effect in the defined sense. To avoid impropriety, the paper mainly refers to effects that are non-significant in relation to the adopted frame and thresholds, or to mixed effects that offset one another at a given level. It does not assert the absolute neutrality of an event.

10.6 "ISO/FDIS 9001:2026 definitively settles the issue"
The FDIS provides strong evidence of operational distinction, but it does not justify treating the issue as definitively settled. It is not yet the published International Standard, retains the inclusive definition of risk in clause 3.7, places its most explicit statement on distinction in informative Annex A and specifically concerns quality management. The paper therefore uses it as a technical text close to completion of the standardization process and as confirmation that distinction and coordination are compatible, not as proof of universal or irreversible terminological agreement.

10.7 "Risks and opportunities are two sides of the same coin"
The metaphor is useful only when the coin is specified as the common decision situation, management system and frame of objectives rather than risk. Risks and opportunities may arise from the same antecedent, influence one another and require coordinated decisions, but they are not necessarily symmetrical, exhaustive or mutually exclusive. The FDIS reinforces this reading because it declares them distinct, separates risk-based thinking and opportunity-based thinking and allows an organization to take risk in order to pursue an opportunity. Their relationship is therefore one of systemic co-membership rather than semantic identity.

10.8 "Risk is abstract, whereas opportunity is concrete"
The statement identifies a useful difference, but it should be transformed into a relative and testable thesis. Risk is abstract only in the sense that it is a prospective representation, not because it lacks a real basis; its sources, events, vulnerabilities and evidence may be concrete. Opportunity may have a more immediate empirical anchoring in circumstances, capabilities, technologies, needs or options, as Annex A.6.1.3 of ISO/FDIS 9001:2026 also indicates, but it remains a relational possibility rather than a benefit already realized. The defensible formulation therefore distinguishes modes of anchoring in reality without absolutely opposing the unreal and the concrete.

XI. CONCLUSIONS

The definition of risk as the effect of uncertainty broadened risk management and supported a preventive and integrated perspective, but also generated persistent tension when the same word is used both as a general category including positive deviations and as a category paired with opportunity. The analysis shows that clarity does not require fragmented governance, but rather distinction among conceptual levels and the purposes of action.

ISO/FDIS 9001:2026 is a particularly important source because it combines three elements in the same document: it retains the inclusive definition of risk, operationally separates requirements and actions addressing risks and opportunities, and states in Annex A that they are distinct and may be addressed through separate processes. The FDIS also introduces autonomous opportunity-based thinking, links opportunities to circumstances, capabilities and changes, and allows risk to be taken in order to pursue them. This architecture supports the paper's thesis but is not treated as a final solution, because the document is not yet published, the general definition remains and the approach concerns the quality domain.

On this basis, the paper proposes the analytical sequence frame of reference → factual basis of sources, events, causes, conditions and capabilities → analysis of possible adverse consequences and recognition or creation of favourable possibilities → distinct risks, opportunities and mixed effects → coordinated decisions and actions → realized outcomes and feedback. This sequence is a model developed by the authors rather than an ISO requirement. An event is not identical to either category, uncertainty concerns limits of knowledge, complexity conditions relationships, and the same situation may generate different qualifications across objectives, interested parties or time horizons.

Risks and opportunities may therefore be considered together because they belong to the same decision and system field, but they should not be represented as the negative and positive poles of a single entity. Figure 1 makes this conclusion explicit: two distinct analytical pathways develop from the frame of reference and the same factual basis and may produce risks, opportunities, and mixed or non-significant effects; the three qualifications converge in coordinated decisions, while realized outcomes update evidence, antecedents and the frame itself through feedback. If the two-sides-of-the-same-coin metaphor is retained, the coin is the management system with its context, objectives, decisions and outcomes. Uncertainty cuts across the model as a limit of knowledge and complexity conditions its relations, without either being identified with risk. Conceptual distinction therefore clarifies what the organization is exposed to and what may become possible to realize, while coordination makes trade-offs, risks associated with opportunities, possibilities emerging from risk treatment and learning generated by outcomes visible.

The proposal neither weakens risk-based thinking nor fragments the management system. It complements risk-based thinking with explicit opportunity-based thinking, maintains a common framework of responsibility, monitoring and review, and requires evidence, assumptions and criteria appropriate to the two pathways. The conclusion is therefore that unity of governance and semantic distinction are not alternatives: they can and should coexist when an organization addresses, within the same system, the possibility of adverse effects and the circumstances that make beneficial effects possible.

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