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VALORizing Innovation

Vanessa Orlando

Abstract: Innovation measurement remains fragmented across existing frameworks, creating ambiguity about effective approaches for assessing company level innovation performance. Drawing on classification methodology, this study synthesizes four established innovation measurement models to develop the holistic VALOR framework—encompassing Values, Activities, Longevity, Output, and Return on Innovation. For operationalization of the framework 62 distinct indicators are presented to measure performance. This research provides a comprehensive analytical framework which includes traditional as well as timely innovation aspects. The findings enable innovation managers and asset managers to evaluate and benchmark innovation performance of individual firms as well as to support their strategic decision-making.

Keywords: Innovation measurement, innovation performance evaluation, innovation efficiency, innovation controlling, classification, literature review.

VALORisieren von Innovation

Zusammenfassung: Die Messung von Innovation ist in bestehenden Modellen fragmentiert, was zu Unklarheiten hinsichtlich wirksamer Ansätze zur Bewertung von Innovationsleistung führt. Mithilfe der Klassifizierungsmethode fasst diese Studie vier etablierte Modelle zur Innovationsmessung zusammen, um das ganzheitliche VALOR Framework zu entwickeln, welches Values, Activities, Longevity, Output sowie Return on Innovation umfasst. Zur Operationalisierung des Frameworks werden 62 Indikatoren vorgestellt, mit denen die Leistung der Innovationskategorien gemessen werden können. Diese Forschung bietet einen umfassenden analytischen Rahmen, der sowohl traditionelle als auch zeitgemässe Innovationsaspekte umfasst. Die Ergebnisse ermöglichen es Innovationsmanagern und Vermögensverwaltern, die Innovationsleistung einzelner Unternehmen zu bewerten und zu benchmarken sowie ihre strategischen Entscheidungen zu unterstützen.

Stichwörter: Innovationsmessung, Bewertung der Innovationsleistung, Innovationseffizienz, Innovationscontrolling, Klassifizierung, Literaturrecherche.

1 Introduction

Global R&D expenditures reached USD 2.4 trillion in 2019, representing 17% of Europe's GDP for the same year (Burke et al., 2022; Eurostat, 2020). Corporate R&D investments from the top global R&D spenders increased from USD 840 billion in 2019 to USD 1.117 trillion in 2022, which corresponds to a 33 % growth rate (WIPO, 2023). This substantial capital deployment highlights the central role innovation plays for corporations.

Since Schumpeter's (1934) argumentation about innovation as the primary driver of economic growth, research has demonstrated its impact on organizational and economic

performance. Innovation enables firms to maintain a competitive advantage (Singhal et al., 2022), generates employment (Lachenmaier & Rottmann, 2011), drives macroeconomic growth (Dempere et al., 2023), and explains variations in stock returns (Ganbaatar et al., 2024). Despite this prevalent recognition of innovation's impact and importance, the multifaceted nature of innovation makes it difficult to measure (Möller et al., 2016).

Scholars emphasize that measuring and evaluating innovation performance requires a comprehensive approach due to innovation's multifaceted nature (Adams et al., 2006; Möller et al., 2016). Available innovation performance management frameworks, however, fail to holistically capture performance. For example, the IPOO (Brown & Svenson, 1998) does not include open-innovation relevant dimensions such as external investments, partnerships, or co-creation. The R&D Framework (Foster et al., 1985) fails to include the non-financial benefits derived from innovation such as corporate value increase from reputation and brand recognition. On the other hand, the Innovation Balanced Scorecard (IBS) (Kerssens-van Drongelen & Cooke, 1997) leaves out values – the basis for innovation to flourish – and activities that lead to innovation output. A throughout evaluation of innovation requires a holistic framework which captures all aspects relevant to innovation and which reflects current corporate innovation practices.

Developing a holistic framework that enables measurement, evaluation, and benchmarking of firms' innovation performance represents a significant contribution to both academic literature and practitioners. The developed VALOR framework adopts a holistic approach that acknowledges the multifaceted nature of innovation by capturing relevant dimensions throughout the value chain of innovation performance. Its process-based structure encompasses four key components: (1) Values, which capture the foundational resources and capabilities that enable innovation; (2) Activities, which encompass innovation initiatives pursued within and outside of the corporation; (3) Output, which includes inventions generated from innovation activities and (4) Return on Innovation, which captures the financial and non-financial benefits derived from innovation. The VALOR framework addresses the limitation of existing frameworks which fail to capture the multifaceted nature of innovation and are increasingly outdated.

1.1 Existing Innovation Performance Management Frameworks

Innovation represents the creation of new products and services [as well as processes] that generate economic value for society (Foray, 2023). Various theoretical and empirical models have been developed to measure and manage innovation (Möller et al., 2016). Among the most established frameworks are the Input-Process-Output-Outcome (IPOO) Model (Brown & Svenson, 1998), the Innovation Balanced Scorecard (Kerssens-van Drongelen & Cooke, 1997), the R&D Framework (Foster et al., 1985), and the Innovation Management Measurement Framework (Adams et al., 2006). These frameworks represent significant contributions to the innovation performance management literature (Davila et al., 2006; Möller et al., 2016; Walcher & Wöhrl, 2018). These frameworks align with the broader performance management discipline by seeking to measure innovation performance for corporate steering and achievement of objectives. However, analyzing these models comparatively reveals significant heterogeneity in their conceptual foundations, measurement approaches, and levels of granularity.

The Input-Process-Output-Outcome (IPOO) Model developed by Brown and Svenson (1998) represents one of the most well-known innovation management frameworks in

literature (Möller et al., 2016). This process-based model comprises eight distinct steps: Inputs, processing system, outputs, receiving system, outcomes, in-process measurement and feedback, output measurement and feedback, and outcome measurement and feedback (Brown & Svenson, 1998). The process-based structure provides analytical value because it describes "the causal relationships behind an innovation model" (Davila et al., 2006, p. 150). Therefore, it offers a causal approach to understanding how innovation inputs are transformed into outcomes.

The Balanced Scorecard (BSC) serves as a strategic implementation tool that links financial and non-financial objectives to key performance indicators (Davila et al., 2006; Möller et al., 2016). Building upon the BSC, Kerssens-van Drongelen and Cooke (1997) developed an innovation-specific model that addresses the unique challenges of measuring innovation activities. Their Innovation Balanced Scorecard encompasses four strategic perspectives: The financial perspective, the internal business perspective, the innovation and learning perspective, and the customer perspective. The framework serves organizations to translate innovation strategies into measurable objectives.

Foster et al. (1985) introduced an innovation measurement framework that focuses on financial inputs and outcomes relating to innovation performance. The framework's central focus is to optimize returns on R&D. The objective is operationalized as the ratio of profits to R&D investment, which is decomposed into two components namely, R&D productivity and R&D yield (Foster et al., 1985). This framework demonstrates a fundamentally mathematical and rational approach to innovation measurement (Möller et al., 2016).

Adams et al. (2006) synthesized six innovation management models following an inductive approach. The resulting framework encompasses seven categories for innovation measurement namely, inputs, knowledge management, innovation strategy, organization and culture, portfolio management, project management, and commercialization (Adams et al., 2006).

As Adams et al. (2006) point out, the fragmentation of different innovation management and measurement models hinders further theoretical development and creates ambiguity regarding effective innovation measurement and management in practice. While their study contributes to the field by synthesizing existing approaches, their categorization does not offer a process-based logic, nor does it include innovation outcomes. So even their synthesized model seems incomplete for measuring and managing performance holistically. A holistic approach to innovation evaluation is critical, to capture resources and activities on which innovation is grounded as well as outputs and return on innovation to evaluate the added value of the resources and the activities employed. The IPOO as the most well-known model offers this process-based structure, however it is outdated, given the lack of open innovation relevant dimensions. A holistic approach that integrates structural causality, coherence and that reflects current innovation practices is essential for effective innovation performance management.

1.2 Objectives

The purpose of this paper is to synthesize and enhance existing innovation performance measurement and management frameworks by developing a holistic and coherent framework that enables comprehensive measurement of company-level innovation performance. The framework is designed to enable measuring, evaluating, and benchmarking innovation performance across corporations. While the framework serves multiple stakeholder groups, it targets analysts, investors, and innovation managers who require systematic

tools for evaluating innovation performance. This research contributes a novel methodology for holistic innovation performance evaluation. The framework provides both a structured conceptual model as well as performance indicators for comprehensive assessment of innovation performance at the company level.

This paper is structured as follows: Section two outlines the research methodology employed for the framework development and indicator collection. Section three presents the VALOR innovation measurement framework and section four details the innovation performance indicators that are collected through a systematic literature review. Finally, section five discusses the framework's implications and limitations, along with directions for future research.

2 Research Method

To develop a holistic and coherent innovation performance measurement framework, this study employs a two-stage methodology comprising framework construction followed by indicator collection, standardization, and mapping. First, the IPOO model structure is used as the basis for the newly developed VALOR framework. Second, using classification methodology the framework is created by recycling and recombining performance categories from four existing innovation performance measurement frameworks. Third, from 56 empirical studies 263 innovation performance indicators are collected and decoded. Fourth, these indicators are clustered and standardized into 62 performance indicators for performance evaluation of the VALOR innovation performance categories.[1]

2.1 Classification Methodology

The framework development follows classification methodology, which is defined as the "general process of grouping entities by similarity" (Bailey, 1994, p. 4). Classification enables systematic structuring and understanding of complex occurrences. They can be grounded in conceptual foundations, empirical evidence, or a combination of both (Bailey, 1994). This study adopts a mixed classification approach, integrating both theoretical and empirical concepts. The framework is required to be holistic – accounting for innovation's multifaceted nature – and coherent, providing a logically sound measurement approach. To ensure practical applicability and user accessibility a lean model design is necessary. This prevents cognitive overload of users and facilitates implementation. The aim is to ensure that the framework captures innovation's multifaceted nature while remaining operationally manageable for practitioners and researchers. The newly created framework reflects traditional as well as current corporate innovation practices holistically and closes the gaps present in available innovation performance management models.

The framework adopts a nested hierarchical structure with the highest level designed to represent the innovation process based on the IPOO framework. The IPOO model serves as the basic structure given its predominance among established innovation performance measurement frameworks (Möller et al., 2016). Additionally, the benefit of the IPOO structure includes its ability to capture causal relationships within innovation systems (Davila et al., 2006). Compared to the other frameworks presented in section 1.1 (with the exception of the IPOO model), none of them offers this causal relationship in combi-

1 Note that to improve readability and clarity of the text AI was utilized (Anthropic, 2025).

nation with a holistic model character. Following classification methodology, innovation performance categories from four existing frameworks are decomposed and recombined. The four models are the IPOO Model (Brown & Svenson, 1998), the Innovation Balanced Scorecard (Kerssens-van Drongelen & Cooke, 1997), the R&D Framework (Foster et al., 1985) and the Innovation Management Measurement Framework (Adams et al., 2006). The framework is created while adhering to Gregor's (2006) criteria for the application of classification methodology.

2.2 Literature Review

After the creation of the framework, performance indicators are collected from empirical research through a systematic literature review and are mapped to the model's structure. For the collection of research papers five academic databases – Econbiz, JSTOR, Scopus, Swiss Discoveries, and Google Scholar – are employed to source relevant articles from the innovation performance management and measurement literature. The search strategy makes use of Boolean operators combining innovation-specific keywords (innovation management, innovation measurement, innovation performance, balanced scorecard, business structures, and capital costs) with accounting and finance terminology (accounting, forecasting, asset pricing, capital, coefficients, earnings, financial, and performance). For each database, the first 50 results are screened, yielding an initial sample of 250 research papers. Studies are ranked by relevance since it indicates a paper's quality and suitability with respect to the keywords utilized. Case studies, literature reviews, and meta-analyses are excluded to ensure indicators were validated through large-scale empirical testing. Title and abstract analysis identify studies that empirically investigate innovation performance or impact, resulting in 134 studies for detailed examination. Thereafter, quality screening is applied using established journal rankings. Studies published in B rated journals or higher according to VHB criteria, or appearing on the FT50 journal ranking (Ormans, 2016) are saved. For unranked journals, inclusion requires an SJR rating exceeding 1.0 on Scopus. Working papers are included to capture recent developments in innovation management and measurement research. This filtering reduces the sample to 73 studies. Final screening excludes studies that do not focus on company-level analysis, resulting in a final sample of 56 research papers for indicator extraction and analysis. The utilized indicators from these studies are decoded and subsequently a bottom-up analytical approach examines the indicators based on similarity. The indicators are clustered and standardized into relevant performance indicators to measure each of the VALOR innovation performance categories.

3 VALOR Innovation Measurement Framework

Four established innovation performance measurement models have provided the foundation for the newly created innovation performance measurement framework. The resulting framework is called the VALOR innovation measurement framework. The framework consists of a three-level nested hierarchy structure that includes innovation processes, innovation dimensions, and innovation measurement categories. At the highest level, the framework encompasses the following four innovation processes that have been adapted from the IPOO model (Brown & Svenson, 1998): *Values*, *Activities*, *Output*, and *Return on Innovation*. The categories have largely been recycled from the four innovation perfor-

mance measurement frameworks. The innovation dimensions resulted by clustering the categories by similarity.

The framework's theoretical hypothesis rests on the premise that corporations with superior innovation performance are better positioned to maintain competitive advantage and achieve long-term success. Accordingly, *Longevity* (*L*) is positioned at the centre as organizing principle of the framework, reflecting the ultimate objective of innovation efforts. The integration of the four process steps with the Longevity principle, results in the acronym VALOR. Figure 1 illustrates the VALOR innovation measurement framework, with detailed descriptions of each component provided in the subsequent paragraphs.

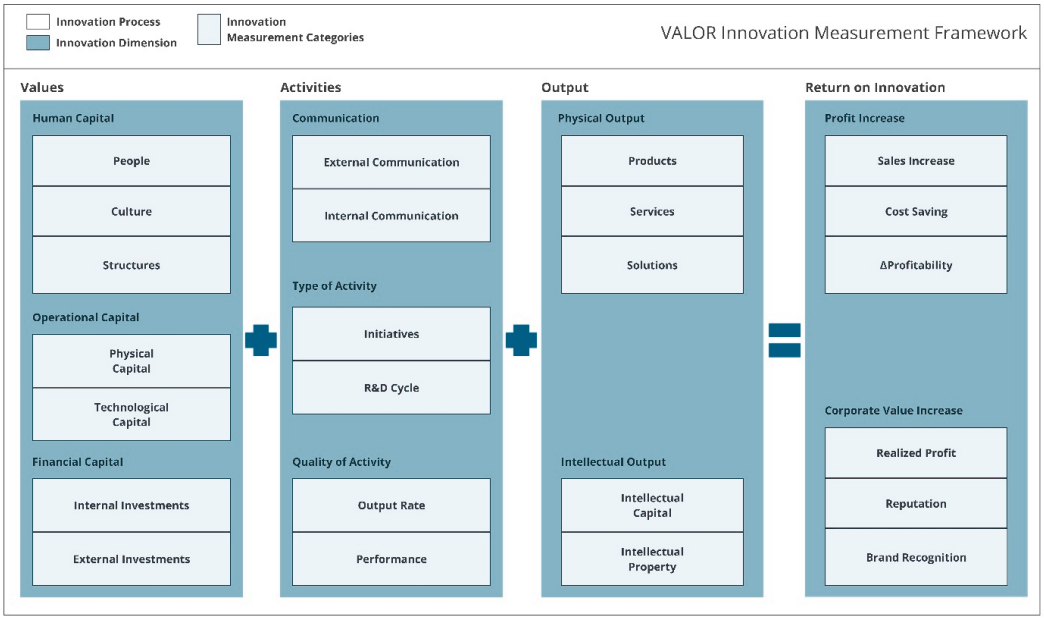

Figure 1: The VALOR Innovation Measurement Framework

Note. The figure presents the VALOR innovation measurement framework that was created using classification methodology by synthesizing four established innovation performance measurement and management models.

Values encompasses resources controlled by the corporation as a result of past events that are used for innovation activities and serve as enablers, from which future economic benefits are expected to flow. This conceptualization adapts the standard definition of assets from literature (CFA Institute, n.d.) to the specific context of innovation management. The *Values* process step comprises three innovation dimensions: *Human Capital*, *Operational Capital*, and *Financial Capital*. *Human Capital* encompasses three innovation measurement categories—*People*, *Culture*, and *Structures*—that capture human-centered resources and capabilities essential for innovation performance. *Operational Capital* includes *Physical Capital* and *Technological Capital*, representing the tangible and intangible assets corporations possess to enable innovation activities. *Financial Capital* encompasses the monetary resources that corporations allocate to innovation. The framework differentiates between *Internal Investments* (internally invested funds) and *External Investments*

(externally deployed capital) to reflect the diverse investment mechanisms available to corporations.

The innovation process step *Activities* encompasses R&D initiatives pursued internally within the organization or through external collaborations with third parties. This process is structured into three innovation dimensions: *Communication*, *Type of Activity*, and *Quality of Activity*. *Communication* captures both *Internal Communication* and *External Communication* mechanisms that enable, enrich, and promote R&D activities across organizational boundaries and stakeholder networks. *Type of Activity* encompasses *Initiatives* and *R&D Cycle* components, which characterize the nature and scope of innovation activities, including collaborative efforts with external partners. *Quality of Activity* incorporates *Output Rate* and *Performance* measures that assess the efficiency, effectiveness, and productivity of R&D investments and activities, providing indicators about how well organizations convert innovation inputs into measurable innovation outcomes.

Longevity represents the competitive position of an organization over time. The framework posits that companies with superior innovation performance are better positioned to maintain competitive advantage in dynamic market environments, thereby ensuring long-term organizational value creation.

Output encompasses innovations created internally within the corporation or in collaboration with third parties, that are expected to generate benefits to the company while delivering economic value to society. This process comprises two innovation dimensions: *Physical Output* and *Intellectual Output*. *Physical Output* represents tangible innovations resulting from R&D activities that can be commercialized in the form of *Products*, *Services*, or *Solutions*. *Intellectual Output* encompasses intangible innovations namely *Intellectual Capital* and *Intellectual Property*, which emerge from R&D activities as abstract assets including new concepts, methodologies, and processes that contribute to superior organizational capabilities and competitive positioning.

Return on Innovation represents the tangible and intangible benefits derived from innovation outputs that are captured by the company. This process encompasses two innovation dimensions: *Profit Increase* and *Corporate Value Increase*. *Profit Increase* captures direct financial gains resulting from innovation outputs, measured through: *Sales Increase* (revenue growth attributable to innovation), *Cost Saving* (operational efficiencies achieved through innovation), and *ΔProfitability* (changes in profitability margins resulting from innovation). *Corporate Value Increase* encompasses broader value creation mechanisms through which organizations capture benefits from their innovation performance. These include *Realized Profits* (financial returns converted to shareholder value), *Reputation* (enhanced organizational standing and credibility), and *Brand Recognition* (increased market awareness and brand equity derived from innovation).

The four innovation processes include ten innovation dimensions and twenty-four innovation measurement categories. While the majority of categories were recycled from the four established frameworks, the existing categorizations proved insufficient for comprehensive evaluation of company-level innovation performance. Consequently, additional categories were incorporated to address the gaps in the measurement structure. The framework optimization process integrated insights from the systematic literature review, domain expertise, and collaborative discussions with innovation and investment managers to ensure comprehensive coverage of relevant innovation performance dimensions while maintaining theoretical coherence and practicality.

External Investments was incorporated as an innovation category alongside the established *Internal Investments* category to reflect present practices where corporations acquire innovative capabilities through external sourcing rather than solely relying on internal R&D development. Additionally, *Services* and *Solutions* were added to complement *Products*, recognizing that modern corporations deliver value through service offerings and solutions rather than exclusively through physical products. The *Return on Innovation* process step was structured according to a clear conceptual logic that distinguishes between direct and indirect value capture mechanisms. Within *Profit Increase*, all categories represent direct financial gains. On the other side, *Corporate Value Increase* encompasses both direct financial returns and indirect value creation through *Reputation* and *Brand Recognition*, which capture consumer sentiment and market awareness as intermediate drivers of long-term financial performance. This comprehensive categorization enhances confidence in the framework's ability to capture the complete value chain of innovation from initial investments through value realization.

The VALOR innovation measurement framework provides a comprehensive analytical foundation that can be applied independently of specific performance indicators. Users may draw upon diverse data sources including company reports and external databases based on individual preferences and data accessibility to extract innovation relevant information as outlined by the framework. The VALOR adheres to the process-based logic to obtain the causal relationship of innovation performance. Its holistic nature is achieved by the synthesis of existing innovation performance measurement frameworks and is updated to reflect current corporate innovation practices. The VALOR framework includes open-innovation relevant aspects, which the IPOO lacks. It includes the financial view of the R&D framework but also adds non-financial dimensions that were missing. It includes the resources fundamental to innovation which the IBS lacks and innovation outcomes which are missing in Adams et al.'s (2006) framework.

While the framework ensures holistic and comprehensive capture of innovation performance across all relevant dimensions, practical implementation requires standardized performance indicators to enable systematic measurement, comparison, and benchmarking across organizations. Consequently, the development of a standardized indicator set is essential for translating the framework's conceptual structure into an operational measurement tool that supports innovation performance evaluation.

4 VALOR Indicators

Empirical indicators have been systematically collected from 56 studies which have been clustered and standardized into 62 indicators for measuring the VALOR innovation performance categories. Initially 309 performance indicators were extracted. During the mapping process, 46 indicators could not be allocated to any VALOR innovation measurement categories, resulting in a final sample of 263 innovation indicators. The excluded indicators represent exogenous variables beyond direct organizational control, such as market competition intensity, competitor actions, and regulatory factors such as tax benefits.

The temporal distribution of the 56 included studies spans from 2006 to 2023, with two earlier publications from 1994 and 2003. The most relevant studies during this timeframe were selected for analysis and indicator collection. Figure 2 in Appendix A illustrates the distribution of study publications over the period. The quality distribution of the 56 included studies are as follows: 20% were published in A+ or A-rated journals, 34% in B-rated

journals, and 11% in journals with SJR ratings exceeding 1.0. The remaining 36% are conference proceedings, SSRN publications, and working papers from academic institutions, ensuring inclusion of emerging research. Indicator extraction yielded an average of 4.7 indicators per study (median = 4). Journal rankings and bibliography for all 56 studies are provided in Table 2 in Appendix A. Studies utilized for indicator collection are identified in the reference section with an asterisk (*) for transparency purposes.

Mapping the 263 indicators to the VALOR innovation measurement categories reveals significant variation in research attention across different performance dimensions. The categories with the highest representation are *Sales Increase* (31 indicators), *People* (25 indicators), and *Performance* (22 indicators), indicating substantial scholarly focus on revenue-based outcomes, human capital factors, and R&D efficiency measures. Conversely, the least studied categories are *Brand Recognition* (0 indicators), *Reputation* (1 indicator), and *Cost Saving* (2 indicators), highlighting notable research gaps in intangible value creation and operational efficiency measurement within the innovation performance literature. Figure 3 in Appendix A presents the complete distribution of indicators across all VALOR innovation measurement categories, illustrating the uneven research emphasis across different innovation performance dimensions.

The 263 indicators extracted underwent systematic analysis and standardization, resulting in 62 distinct performance indicators that serve as operational measures for the individual VALOR framework categories. Table 1 presents the complete set of standardized indicators with their corresponding mapping to innovation measurement category, dimension, and process step. Practitioners and researchers may choose the indicators that are most relevant for their objective and use them with consistency across time and corporations. A holistic framework does not set forth that the employment of more indicators is better than less indicators, but that all categories are measured and evaluated. The indicators should always relate to innovation values, -activities, output- or return from innovation activities.

Innovation Process Step	Innovation Dimension	Innovation Category	Indicator
Values	Human Capital	People	Diversity
Values	Human Capital	People	Knowledge
Values	Human Capital	People	Size
Values	Human Capital	Culture	Training and Development
Values	Human Capital	Culture	Innovation Spirit
Values	Human Capital	Culture	Motivation
Values	Human Capital	Culture	Leadership
Values	Human Capital	Structures	Foreign Ownership
Values	Human Capital	Structures	R&D Internationalization
Values	Human Capital	Structures	Organizational Structures
Values	Operational Capital	Physical Capital	Physical Capital Stock
Values	Operational Capital	Physical Capital	Physical Capital Investment
Values	Operational Capital	Technological Capital	Technological Diversity

Innovation Process Step	Innovation Dimension	Innovation Category	Indicator
Values	Operational Capital	Technological Capital	Intangible Assets
Values	Financial Capital	Internal Investments	R&D Investment
Values	Financial Capital	Internal Investments	R&D Investment Intensity
Values	Financial Capital	External Investments	M&A Activity
Values	Financial Capital	External Investments	R&D Outsourcing
Values	Financial Capital	External Investments	External Business Development Activities
Activities	Communication	Internal Communication	Information Flow
Activities	Communication	External Communication	External Linkages
Activities	Type of Activity	Initiatives	R&D Collaboration
Activities	Type of Activity	Initiatives	Open Innovation
Activities	Type of Activity	Initiatives	Partner Variety
Activities	Type of Activity	Initiatives	R&D Outsourcing Intensity
Activities	Type of Activity	R&D Cycle	R&D Monitoring
Activities	Quality of Activity	Output Rate	Patent Applications
Activities	Quality of Activity	Output Rate	Product Output
Activities	Quality of Activity	Output Rate	Patents Granted
Activities	Quality of Activity	Performance	Forward Citations
Activities	Quality of Activity	Performance	R&D Intensity
Activities	Quality of Activity	Performance	Speed of Innovation
Activities	Quality of Activity	Performance	Success Ratio
Output	Physical Output	Product Services Solutions	New Products, Services, Solutions Launched
Output	Physical Output	Product Services Solutions	Modified Products, Services, Solutions
Output	Intellectual Output	Intellectual Capital	Process Innovation
Output	Intellectual Output	Intellectual Capital	New Knowledge Generated
Output	Intellectual Output	Intellectual Capital	Innovativeness
Output	Intellectual Output	Intellectual Property	Patent Stock
Output	Intellectual Output	Intellectual Property	Reuse of Patent
Output	Intellectual Output	Intellectual Property	Patent Diversity
Output	Intellectual Output	Intellectual Property	Patent Longevity
Output	Intellectual Output	Intellectual Property	Protection Strength

Innovation Process Step	Innovation Dimension	Innovation Category	Indicator
Return on Innovation	Profit Increase	Sales Increase	Sales Growth
Return on Innovation	Profit Increase	Sales Increase	Innovative Sales
Return on Innovation	Profit Increase	Sales Increase	CFO
Return on Innovation	Profit Increase	Sales Increase	Volatility of CFO
Return on Innovation	Profit Increase	Cost saving	Gross Margin
Return on Innovation	Profit Increase	Cost saving	Cost Reduction
Return on Innovation	Profit Increase	Profitability	Profit Margin
Return on Innovation	Profit Increase	Profitability	Volatility of EBITDA
Return on Innovation	Profit Increase	Profitability	ROA
Return on Innovation	Profit Increase	Profitability	EBITDA
Return on Innovation	Corporate Value Increase	Realized Profit	Assets to Market
Return on Innovation	Corporate Value Increase	Realized Profit	Market Return
Return on Innovation	Corporate Value Increase	Realized Profit	Net Income
Return on Innovation	Corporate Value Increase	Realized Profit	Variability of Income
Return on Innovation	Corporate Value Increase	Realized Profit	Market Share
Return on Innovation	Corporate Value Increase	Realized Profit	EPS
Return on Innovation	Corporate Value Increase	Realized Profit	Firm Value
Return on Innovation	Corporate Value Increase	Reputation	Customer Satisfaction
Return on Innovation	Corporate Value Increase	Brand Recognition	Brand Awareness

Table 1: Standardized Indicators

Note. This table presents the 62 indicators that have been standardized from 263 initial indicators that have been decoded from 56 studies.

The VALOR framework together with the indicators enables systematic innovation performance analysis at the company level through a standardized four-point evaluation scale. For each category one or more indicators from Table 1 need to be utilized with consistency. Employing the indicators, each category is assessed with the ratings *insufficient (1)*, *poor (2)*, *sufficient (3)*, or *good (4)*. Numbers are always used as integers. Detailed definition for each rating is provided in Table 3 Appendix B. This four-point scale design eliminates neutral rating options, ensuring that evaluations provide clear directional guidance regarding organizational innovation performance rather than an ambiguous middle-ground assessment. The evaluation process follows a hierarchical aggregation structure whereby rated categories are equally weighted before summing them up to their respective innovation measurement dimension. The dimensions are then equally weighted to aggregate them into their respective process step. The four innovation process step ratings are aggregated equally to an overall organizational innovation performance rating. This multi-level evaluation approach enables both granular analysis and comprehensive assessment of overall innovation performance. The rating requires professional judgement. Therefore, the person conducting the analysis is required to have relevant experience in the field. Additionally, it is recommended to perform the analysis longitudinally (focusing on one company) or comparatively (multiple companies).

By employing the VALOR innovation performance measurement framework together with a selection of the 62 performance indicators innovation as well as asset managers are equipped to measure and evaluate a company's innovation performance holistically. By providing performance indicators to the innovation measurement categories, operationalization of the framework is ensured. An innovation manager is enabled to comprehensively capture and report corporate innovation performance whereby the VALOR evaluation provides the basis for discussing strategic decisions. Asset managers are given a framework to evaluate and benchmark innovation performance of different corporations, which serves as a decision-making tool given an innovation focused investment strategy.

To demonstrate the applicability of the VALOR innovation measurement framework, two companies from the aerospace and defense sector are analyzed using selected indicators based on the perspective of an investment analyst. These case studies illustrate the framework's operational utility for systematic innovation performance evaluation and benchmarking of two companies. The framework application, including company analyses and innovation performance assessments, are presented in Appendix C. Additionally, practitioners interested in using the VALOR framework find an evaluation template in Appendix D.

5 Discussion

The VALOR framework synthesizes and extends traditional innovation performance management and measurement models to a holistic analytical framework, offering comprehensive information to decision-makers. Unlike existing models, this updated framework includes financial, non-financial, closed- and open-innovation relevant aspects throughout the value chain of innovation. A holistic, comprehensive approach to innovation performance evaluation is important for identifying and understanding the aspects that shape and influence innovation performance.

Conceptually, the VALOR framework is providing a process-based approach like the IPOO model. The R&D framework, the IBS and the innovation performance model

from Adams et al. (2006) do not offer this causal relationship. However, as with any analytical model, the VALOR framework constitutes an abstraction of reality and cannot fully encompass the complete complexity of innovation phenomena. Users must therefore be aware of the limitations presented in section 5.2. The VALOR framework does not specify an absolute efficiency metric like the R&D framework. The evaluation based on the VALOR framework builds the ground for further discussion and decision-making. Also, the VALOR framework does not help to define the innovation strategy, but needs to be defined independently of the framework. However, unlike the traditional models, the VALOR framework supports users in finding weaknesses, inefficiencies, gaps, and opportunities for improvement holistically. By aggregating the individual categories into the process steps, gaps and inefficiencies are recognized by comparing Values, Activities, Output and Return on Innovation ratings.

Equal to the models presented in section 1.1 users of the framework must customize the VALOR for their own use. First, performance indicators must be selected. Second, corresponding data needs to be collected. Third, each category is evaluated based on the indicators before aggregating the evaluation to the final rating. This process requires professional judgement and leaves a certain freedom to users which may imply personal biases. Therefore, for proper utilization it is recommended to work in teams. Additionally, the quality and comprehensiveness of the evaluation are dependent on data availability. Enhanced data quality (for example through direct data sourcing) and completeness across innovation measurement categories improves the reliability and validity of the assessments. Users must also recognize that comparability across companies decreases when information availability varies significantly between them. Compared to existing approaches the VALOR framework is more extensive and therefore requires greater effort for performance evaluation. While the process steps are comparable and efforts were made to keep the model lean, compared to the R&D framework for example, it requires more data (sources).

The VALOR framework is useful for corporations with established innovation practices. It supports identifying gaps and avenues for improvement. For example, one might encounter that satisfactory innovation performance is achieved within the company, but the impact on perceived corporate value (such as customer satisfaction and brand recognition) is unknown providing direction for further investigation. The VALOR framework can be utilized also for corporates which do not pursue innovation. It can serve as a starting point and help to implement the innovation strategy by defining resource allocation, activities, and key performance indicators besides others. For example, starting within the process step Values and the category people, managers may define the number of employees to allocate to innovation, how diverse their backgrounds should be, and what knowledge is required from them to succeed innovating. The VALOR framework hereby enables systematic thought through decision-making.

5.1 Implications

The VALOR framework challenges traditional innovation performance measurement frameworks by offering a more holistic and comprehensive approach. For today's complex world we need more than isolated, quantitative models for decision-making. We need to understand the interconnections and interdependencies of innovation performance. For this we need a framework and tools which support capturing information in a comprehen-

sive manner. This basis is what the VALOR framework and the underlying indicators offer. It surpasses traditional approaches because it is timely, holistic, and captures financial, non-financial, quantitative, as well as qualitative data. Researchers are equipped with a framework which was consolidated based on four innovation performance measurement and management models, making the VALOR framework the most comprehensive of them. Researchers and practitioners benefit from this paper since it provides them the most timely and comprehensive version of an innovation performance measurement model as of to date.

The VALOR framework supports innovation managers in assessing the performance of their subject and corresponding decision-making. The framework also serves as a reporting tool and basis for discussion with the upper management and employees involved. The evaluation supports innovation managers in identifying gaps and inconsistencies across the innovation value chain. Key implementation challenges for innovation managers include the time and resources involved in conducting the analysis and the subjectivity of their performance assessment. It is recommended to perform the analysis in teams and periodically to recognize trends and efficiency of past decision-making.

The VALOR framework also serves asset managers with an innovation-based investment hypothesis in their decision-making process. The holistic innovation performance evaluation acts as a filter for identifying the most innovative companies from an investment universe. The implementation challenges for asset managers are primarily data availability. Public available data may be insufficient for comprehensive innovation assessment which would require asset managers to source data directly from the corporation. Data needs to be normalized for size and industry when comparing different companies. This requires extensive efforts for a high-quality assessment. The VALOR framework includes an extensive and throughout analysis compared to other innovation-based investment hypotheses (see for example Hirshleifer et al. 2013; 2018). However, indicators have not been tested for forecasting in this paper.

5.2 Limitations

The following limitations should be noted by users of the VALOR framework. First, as a single author study, the screening, analysis, and selection of categories and indicators are affected by personal biases and individual professional experience. Second, the VALOR framework emphasizes internal organizational innovation performance and excludes macroeconomic influences and external environmental factors. This limitation is demonstrated by the 46 sourced indicators that could not be allocated to the VALOR framework categories, despite their established use in innovation performance measurement literature. Consequently, the framework's scope is constrained to company internal variables that can be directly influenced and controlled. Third, no empirical utilized measure for brand recognition was sourced from the structured literature review. Brand awareness was added as indicator to measure the category that is measuring market awareness and brand equity of a company which results out of its innovation performance. Fourth, regarding data availability constraints, users are recommended to conduct sensitivity analyses to examine how alternative scenarios – both positive and negative – for missing categories influence the overall conclusion. Sensitivity analyses are conducted by rating categories with a 1 in the worst case and a 4 in the best case scenario before summing up the rating to each of the next levels of the framework and overall innovation rating. The difference

in the rating from these sensitivity analyses to the base case provide an approximation of the company's innovation performance robustness. Fifth, meaningful application of the framework requires professional judgment in applying the four-point evaluation scale to each measurement category, introducing an element of subjectivity that must be carefully managed through consistent application criteria and evaluator expertise. Sixth, the two case studies in Appendix C show that information relating to the categories internal communication, products, services, and solutions, as well as intellectual capital and brand recognition are difficult to collect from the utilized sources. Innovation managers will likely have more information than asset managers when it comes to evaluating innovation performance, since innovation managers are employed by the company and have direct data access unlike asset managers.

5.3 Further Research

The present study establishes a foundation for further research directions that enhance the understanding of company level innovation performance. First, quantitative analyses that empirically validate the indicators and examine their interrelationships represent potential for future research. Second, research focusing on aggregated analyses – across industries or countries – presents opportunities to extend the framework's application beyond individual company evaluation. Third, the development of industry specific benchmarks based on the VALOR framework could significantly enhance its practical utility. Fourth, future research could address one of the framework's acknowledged limitations by exploring the integration of macroeconomic influences into innovation performance analysis. Incorporating external factors such as regulatory environments, government incentives, market dynamics, competitive pressures, and broader economic trends could provide a more comprehensive understanding of factors that influence company level innovation success.

6 Appendices

Appendix A

Figure 2: Publication Year of Studies Included

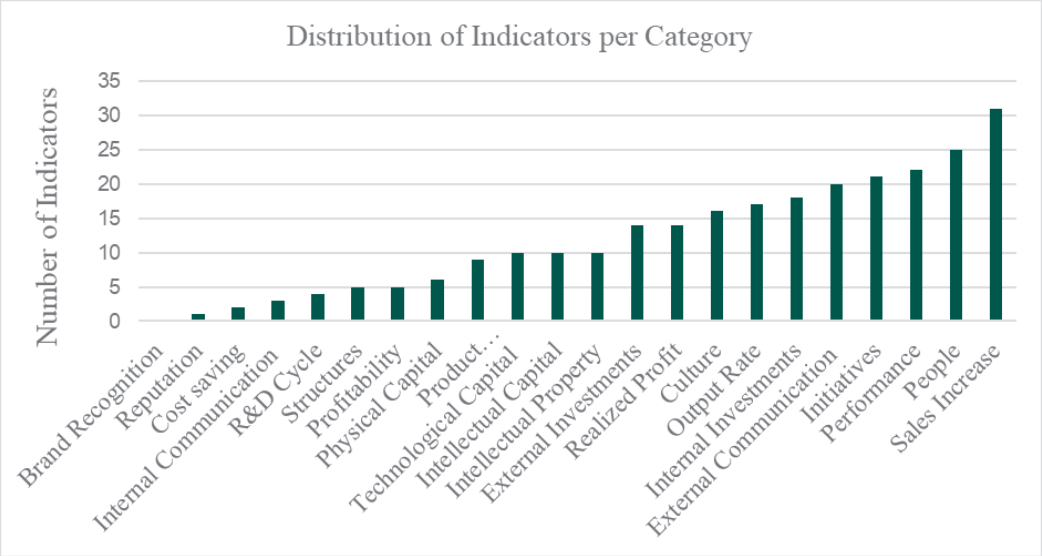

Figure 3: Distribution of 263 Sourced Indicators per Category

Performance Indicators

Journal Name	#	%	% cum	VHB Rank	SJR
The Review of Financial Studies	1	2 %	2 %	A+	
The Accounting Review	1	2 %	4 %	A+	
Strategic Management Journal	4	7 %	11 %	A	
Research Policy	2	4 %	14 %	A	
Journal of Management Studies	1	2 %	16 %	A	
Review of Accounting Studies	1	2 %	18 %	A	
Journal of Organizational Behavior	1	2 %	20 %	A	
IEEE Transactions on Engineering Management	3	5 %	25 %	B	
Small Business Economics	3	5 %	30 %	B	
Finance Research Letters	2	4 %	34 %	B	
European Journal of International Management	1	2 %	36 %	B	
International Journal of Production Economics	1	2 %	38 %	B	
Journal of Accounting, Auditing & Finance	1	2 %	39 %	B	
Journal of Business Finance & Accounting	1	2 %	41 %	B	
Journal of Business Research	1	2 %	43 %	B	

Journal Name	#	%	% cum	VHB Rank	SJR
Journal of International Management	1	2 %	45 %	B	
Journal of International Marketing	1	2 %	46 %	B	
The International Journal of Accounting	1	2 %	48 %	B	
R&D Management	1	2 %	50 %	B	
Managerial and Decision Economics	1	2 %	52 %	B	
Omega	1	2 %	54 %	B	
Cambridge Journal of Economics	1	2 %	55 %		1.156
Global Journal of Flexible Systems Management	1	2 %	57 %		1.072
Industrial Management and Data Systems	1	2 %	59 %		1.219
Journal of Innovation & Knowledge	1	2 %	61 %		2.649
Scientometrics	1	2 %	63 %		1.019
Review of Industrial Organization	1	2 %	64 %		1.009
Working Paper	13	23 %	88 %	-	
Conference Paper	4	7 %	95 %	-	
SSRN	3	5 %	100 %	-	
Total	56	100.0 %			

Table 2: Paper Publication and Distribution

Appendix B

Evaluation Scale

The VALOR framework employs a standardized four-point evaluation scale—insufficient, poor, sufficient, and good—applied systematically across innovation measurement categories, innovation dimensions, innovation processes, and overall organizational assessment. The evaluation process follows an equally weighted hierarchical aggregation structure that ensures systematic and comprehensive performance assessment. Initially, individual innovation measurement categories are evaluated using the four-point scale based on available data and performance evidence. Subsequently, category-level ratings are aggregated to generate innovation dimension scores, which are then consolidated to produce innovation process evaluations. Finally, process-level assessments are synthesized to derive an overall organizational innovation performance rating. This multi-level evaluation approach requires professional judgment at each aggregation stage to ensure that ratings accurately reflect company performance across different innovation domains.

Rating	Numeric Rating	Description
Good	4	The company demonstrates operationalized innovation activities and quantifiable progress toward strategic innovation objectives
Sufficient	3	The company exhibits innovation initiatives, though implementation remains limited or outcomes have not yet materialized substantially
Poor	2	The company displays minimal innovation efforts with limited strategic integration or measurable outcomes
Insufficient	1	There are no recognizable innovation activities, or the company exhibits declining innovation performance indicators

Table 3: Definitions of the Four-Point Scale Used for Evaluating Organizational Innovation Performance Using the VALOR Innovation Measurement Framework

Note. Colors may be used in conjunction with the four-point evaluation scale to facilitate rapid visual assessment and intuitive understanding of innovation performance.

Appendix C

Application of the Framework

The following analysis demonstrates the practical application of the VALOR framework through evaluation of two publicly listed companies from the aerospace and defense sector: OHB Group and Thales Group. These organizations were selected based on their active participation in the space industry, an emerging sector characterized by increasing commercialization activities within the New Space Economy (ESA, n.d.). Thales Group represents one of the largest aerospace and defense companies by market capitalization, while OHB Group operates as a smaller organization serving as a key supplier to the European Space Agency (ESA). This size differential provides valuable insights into how innovation performance varies across organizations of different scales and market positions.

The framework application process involves consulting publicly available data sources, including annual reports, corporate disclosures, and database information, which are systematically attributed to the corresponding innovation measurement categories within the VALOR framework. Each category is analyzed using one or more of the indicators out of Table 1 based on data availability and evaluated using the four-point scale as detailed in Appendix B. This process enables systematic comparison of innovation performance across the two organizations while demonstrating the framework's practical utility for real-world organizational assessment and benchmarking purposes. The evaluation process follows a hierarchical aggregation structure whereby rated categories are equally weighted for summing up to their respective innovation measurement dimension, respective process step to an overall organizational innovation performance rating. The categories were rated by the authors professional judgement.

OHB SE represents a European space and technology group headquartered in Germany, established in 1981 (OHB SE, 2023a; PitchBook, n.d.-a). The organization operates through three primary business verticals: Space Systems, Aerospace, and Digital services. As of 2022, the OHB Group maintains a diversified portfolio structure encompassing mul-

tiple subsidiaries alongside minority and majority equity positions in more than twenty companies (OHB SE, 2023a).

The comprehensive evaluation draws upon data sourced from OHB SE's Annual Report (OHB SE, 2023a), Corporate Report (OHB SE, 2023b), and Sustainability Report (OHB SE, 2023c), supplemented by PitchBook data (n.d.-a) where information gaps exist in official corporate disclosures. The analysis focuses on 2022 performance data with 2021 serving as the comparative baseline for trend assessment. Figure 4 presents a visual summary of the evaluation findings, while Table 4 provides detailed tabular documentation of ratings across each innovation measurement category, innovation dimension, innovation process, and the overall organizational assessment derived through systematic application of the VALOR framework.

Consolidating the individual category ratings through systematic aggregation as detailed in Table 4, OHB receives an overall poor rating for innovation performance. This comprehensive assessment reflects consistent weaknesses across multiple framework dimensions, with poor performance in foundational resources (Values), poor effectiveness in R&D execution (Activities), and insufficient innovation outcomes (Output). However, OHB reports sufficient financial returns (Return on Innovation) for the year under consideration. Key performance indicators are depicted in Figure 4 and the detailed evaluation summary is presented in Table 4.

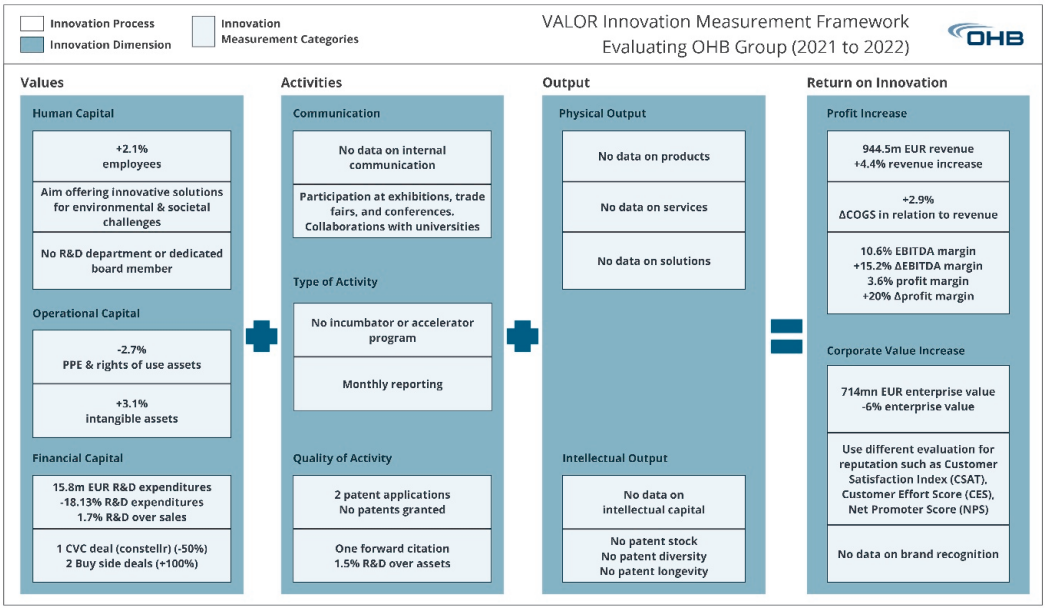

Figure 4: OHB Group Analysis Based on the VALOR Framework

Note. This is a visual representation of OHB's innovation performance for the year 2021/2022.

The second organization analyzed is Thales Group, a global technology leader providing comprehensive solutions and services across Defense, Aeronautics, Space, and Digital Identity and Security sectors (Thales Group, 2023a). Founded in 1986 with headquarters in France, Thales operates across 68 countries and maintains market leadership positions as the foremost defense electronics company in Europe and the global leader in data

protection, payment cards, and SIM card technologies (PitchBook, n.d.-c; Thales Group, 2023a).

The comprehensive evaluation utilizes data sourced from Thales Group's Integrated Report (Thales Group, 2023a) and Consolidated Financial Statements (Thales Group, 2023b), supplemented by PitchBook information (n.d.-c) where gaps existed in official corporate documentation. The analysis examines 2022 performance data with 2021 serving as the comparative baseline for trend assessment and performance evaluation. Figure 5 provides a visual summary of the evaluation findings. Table 5 presents detailed tabular documentation of ratings across each innovation measurement category, innovation dimension, innovation process, and overall organizational assessment derived through systematic application of the VALOR framework to Thales Group's innovation performance.

Consolidating the individual category ratings through systematic aggregation as detailed in Table 5, Thales receives an overall sufficient rating for innovation performance. This comprehensive assessment reflects consistent performance across framework dimensions, with sufficient ratings in Values, Activities, and Return on Innovation as well as good performance in Output. The aggregated results and key performance indicators for Thales Group are presented visually in Figure 5.

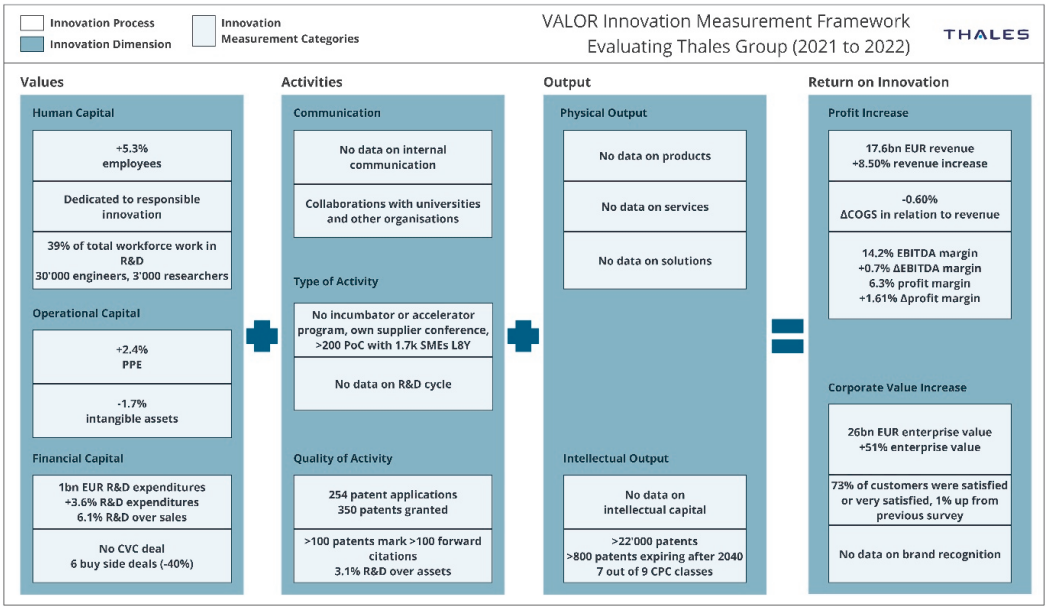

Figure 5: Thales Group Analysis Based on the VALOR Framework

Note. This is a visual representation of Thales's innovation performance for the year 2021/2022.

The comparative analysis demonstrates that Thales Group's innovation performance substantially exceeds that of OHB Group across multiple framework dimensions. Systematic evaluation of all VALOR framework components using the four-point scale yields an overall sufficient rating for Thales compared to a poor rating for OHB, indicating significant performance differentiation between the two organizations. While both companies achieve sufficient performance in Return on Innovation, Thales consistently outperforms OHB across remaining process steps. Thales achieves sufficient ratings in both Values and

Activities alongside good performance in Output, reflecting strong foundational resources, effective R&D execution, and substantial innovation outputs. Conversely, OHB demonstrates poor performance in both Values and Activities, with insufficient performance in Output, indicating fundamental weaknesses in innovation capabilities and execution.

Data limitations prevented complete evaluation of certain innovation dimensions as documented in Tables 4 and 5. Particularly for the internal communication, the product, services, and solutions as well as the brand recognition categories. However, available information provides sufficient basis for comparative assessment. These evaluation results offer practical decision-making insights for multiple stakeholder groups. Innovation managers at OHB can benefit from the assessment to make strategic decisions based on comparative analysis. Asset managers pursuing innovation-focused investment strategies may rationally prefer Thales over OHB based on superior comprehensive innovation performance, assuming market premiums for innovation performance. Policy makers may leverage Thales's innovation performance as a benchmark or best practice example for promoting industry-wide innovation development, utilizing the organization's systematic approach to R&D investment, external collaboration, and intellectual property development as reference standards for innovation excellence within the aerospace and defense sector.

Measurement Category			Dimension		Process		Overall
People	Increase of 2.1 % in employees from 2021 to 2022 counting 3,025 employees as of December 2022	Sufficient	Human Capital	Sufficient	Values	Poor	Poor
Culture	Aims offering innovative solutions for environmental and societal challenges. Do not demonstrate how.	Sufficient					
Structures	No R&D department or dedicated board member	Poor					
Physical Capital	Decrease in PPE and rights of use assets by 2.7 %	Insufficient	Operational Capital	Poor			
Technological Capital	Increase in intangible assets by 3.1 %	Sufficient					
Internal Investments	EUR 15.8m, 18.13 % less than in 2021, 1.7 % R&D over sales	Insufficient	Financial Capital	Insufficient			
External Investments	One CVC follow on investment and two corporate deals	Poor					
Internal Communication	NA	NA	Communication	Sufficient	Activities	Poor	
External Communication	Participation at exhibitions, trade fairs, and conferences. Pursuing collaborations with universities.	Sufficient					
Initiatives	No incubator nor accelerator program.	Insufficient	Type of Activity	Poor			
R&D Cycles	Monthly reporting	Sufficient					
Output Rate	2 patent applications, no patents granted	Poor	Quality of Activity	Poor			
Performance	One forward citation, 1.5 % R&D over assets	Poor					

Measurement Category			Dimension		Process		Overall
Products	NA	NA	Physical Output	NA	Output	Insufficient	
Services	NA	NA					
Solutions	NA	NA					
Intellectual Capital	NA	NA	Intellectual Output	Insufficient			
Intellectual Property	No patent stock, no patent diversity, no patent longevity	Insufficient					
Sales Increase	944.5m EUR revenues, 4.4 % more than in 2021	Good	Profit Increase	Sufficient	Return on Innovation	Sufficient	
Cost Saving	2.9 % higher costs in relation to revenues	Insufficient					
ΔProfitability	EBITDA margin 10.6 % with 15.2 % increase from 2021. Profit margin 3.6 % with 20 % increase compared to 2021.	Good					
Realized Profit	714mn EUR enterprise value, 6 % less compared to 2021	Poor	Corporate Value Increase	Poor			
Reputation	Different metrics in place to evaluate customer satisfaction. However, without any conclusion or reporting specific numbers.	Poor					
Brand Recognition	NA	NA					

Table 4: Evaluation of the OHB Group Based on the VALOR Innovation Measurement Framework

Note. Data sources for the evaluation includes OHB Group's Annual Report (OHB SE, 2023a), Corporate Report (OHB SE, 2023b), Sustainability Report (OHB SE, 2023c), PitchBook (n.d.-a; n.d.-b), and Refinitiv Eikon (n.d.-a).

Measurement Category			Dimension		Process		Overall
People	5.3% increase in number of employees marking 85,253 employees in 2022	Sufficient	Human Capital	Good	Values	Sufficient	Sufficient
Culture	Dedicates itself to responsible innovation and R&D is at the core of their business	Good					
Structures	39 % of their total workforce works in R&D counting 30,000 engineers and 3,000 researchers in 2022	Good					
Physical Capital	Increase of 2.4 %	Sufficient	Operational Capital	Poor			
Technological Capital	Decrease of 1.7 %	Insufficient					
Internal Investments	1bn in R&D amounting to 6.1 % R&D expenditures over sales, expenditures are 3.6 % higher than in 2021	Good	Financial Capital	Sufficient			
External Investments	No external investments since 2017 with their CVC. 6 buy side deals, -40 % from 2021.	Poor					

Measurement Category			Dimension		Process		Overall
Internal Communication	NA	NA	Communication	Sufficient	Activities	Sufficient	
External Communication	Collaboration with four universities and the CNRS	Sufficient					
Initiatives	No accelerator or incubator but worked on over 200 PoCs with SMEs and startups counting a network of over 1,700 ventures for the past eight years. Own supplier conference.	Sufficient	Type of Activity	Sufficient			
R&D Cycles	NA	NA					
Output Rate	254 patent applications, 350 patents granted	Good	Quality of Activity	Good			
Performance	>100 patents mark >100 forward citations, 3.1 % R&D over assets	Good					
Products	NA	NA	Physical Output	NA	Output	Good	
Services	NA	NA					
Solutions	NA	NA					
Intellectual Capital	NA	NA	Intellectual Output	Good			
Intellectual Property	>22,000 patents, >800 patents expiring after 2040, 7 out of 9 CPC classes	Good					
Sales Increase	17.6bn EUR revenues with 8.5 % increase from 2021	Good	Profit Increase	Good	Return on Innovation	Sufficient	
Cost Saving	0.6 % decrease in cost of sales in relation to revenues	Sufficient					
ΔProfitability	EBITDA margin 14.2 % with 0.7 % increase from 2021. Profit margin of 6.3 % which is 1.6 % higher than 2021.	Good					
Realized Profit	26bn EUR enterprise value, +51 % from 2021	Good	Corporate Value Increase	Sufficient			
Reputation	73 % of customers are satisfied and very satisfied with 1 % increase from last survey	Sufficient					
Brand Recognition	NA	NA					

Table 5: Evaluation of the Thales Group Based on the VALOR Innovation Measurement Framework

Note. Data sources for the evaluation includes Thales Group's Integrated Report (Thales Group, 2023a), Consolidated Financial Statements (Thales Group, 2023b), PitchBook (n.d.-c; n.d.-d), and Refinitiv Eikon (n.d.-b).

Appendix D

Evaluation Template

Measurement Category			Dimension		Process		Overall
People			Human Capital		Values		
Culture							
Structures							
Physical Capital			Operational Capital				
Technological Capital							
Internal Investments			Financial Capital				
External Investments							
Internal Communication			Communi-cation		Activities		
External Communication							
Initiatives			Type of Activity				
R&D Cycles							
Output Rate			Quality of Activity				
Performance							
Products			Physical Output		Output		
Services							
Solutions							
Intellectual Capital			Intellectual Output				
Intellectual Property							
Sales Increase			Profit Increase		Return on Innovation		
Cost Saving							
ΔProfitability							
Realized Profit			Corporate Value Increase				
Reputation							
Brand Recognition							

Table 6: Template for the Usage of the VALOR Innovation Performance Measurement Framework

Note. This template can be used for evaluating a company of choice using the four-point scale presented in Appendix B. Indicators are selected from Table 1.

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References to articles that are included for indicator collection are marked with an asterisk (*).

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Vanessa Orlando obtained her PhD from the Institute for Law and Economics at the University of St.Gallen. She is a CFA charterholder, serves as a guest lecturer at the University of Applied Sciences and Arts Northwestern Switzerland, and has been working in the private equity industry for the past five years.

Address: Institute for Law and Economics, University of St.Gallen, Varnbüelstrasse 19, 9000 St. Gallen, Switzerland, Tel.: +41 71 224 25 20
E-Mail: vanessa.orlando@student.unisg.ch