MSCI Institute

AI Governance:

From Director Expertise to Board Effectiveness

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Companies face important questions about how their governance will adapt as AI reshapes business. This includes how companies will bring AI expertise into the boardroom.

Should AI expertise come from board members themselves? The specialist approach to allocating board seats carries real trade-offs. Investors would like boards, and particularly members of nominations and governance committees, to weigh both the opportunities and risks carefully before altering board composition.

Equipped with a range of resources, including the framework presented here, directors can and should deliberate on whether and how the board will strengthen its capacity for AI oversight.

While that could involve bringing an AI expert onto the board, it might involve developing, through education, an AI-conversant full board; or arranging for an independent AI expert to report to the board regularly; or some combination thereof.

From the perspective of long-term investors, the imperative is that boards oversee management of AI on a well-informed basis.

Dr. Erin Young

Head of Innovation and Technology Policy, Institute of Directors

AI systems, tools and technologies are reshaping organizational strategy, risk exposure and operations across every sector.

As boards seek to harness the opportunities of AI while managing its risks, many have focused on acquiring technical expertise, often by appointing directors with specialist AI knowledge. Yet effective governance has never been simply about who sits around the boardroom table. As this timely report demonstrates, the real challenge lies in ensuring that expertise meaningfully strengthens effective oversight and supports better decision-making.

The findings of this paper offer an important reminder for boards, investors and policymakers alike that AI governance remains fundamentally a governance issue, not solely a technological one. By moving beyond the question of whether boards possess AI expertise to examining how that expertise is integrated into board processes, this report provides a more sophisticated way of assessing governance readiness in an increasingly AI-mediated world.

As the development and deployment of AI continues to impact business models, economies and society, the most effective boards will not necessarily be those with the greatest concentration of technical knowledge, but those able to embed that expertise within a culture of strategic judgement and accountability.

Introduction

Boards are under pressure to govern AI and most are not yet doing it well.

That is the blunt finding at the center of this paper, and it is one that the stewardship professionals we convened to review the work recognized immediately from their own experience engaging company boards.

The numbers are striking. Between December 2021 and June 2025, the share of large- and mid-cap developed-market companies with at least one AI expert director grew from 15% to 25%. Yet only 14% of boards had effectively integrated that expertise as of mid-2025, meaning they had recruited the credential without deploying it. The gap between optics and oversight is wide, and it is consequential at a moment when AI strategy is moving fast and the cost of weak governance is rising.

The authors' more durable contribution, however, is the framework itself. Built on a foundation of academic research, the five-dimension framework assesses whether a director's expertise, independence, motivation, bandwidth and empowerment combine to produce meaningful oversight. It is designed to scale to any knowledge domain, not just AI.

This paper emerged from a conviction our Institute has held for some time: that governance quality is not captured by checking boxes on a skills matrix. What matters is whether expertise is embedded in structures that let it work. At a moment when AI is reshaping corporate strategy across every sector, the distance between those two things has rarely mattered more.

Linda-Eling Lee
Founding Director, MSCI Institute

Executive summary

As AI reshapes the business landscape, corporate boards are under growing pressure to demonstrate that they can govern both its opportunities and its risks. Many boards are responding by recruiting directors with AI expertise, but specialist directors can introduce new challenges which, if left unmanaged, can undermine rather than strengthen the board's collective oversight capacity.

This paper proposes a framework for evaluating whether a board has **integrated its subject-matter experts into the board as a whole** and whether those experts are positioned to meaningfully **enhance a board's oversight capacity**. It considers five key dimensions relevant to a director's ability to exercise effective oversight of strategy and risk management:

- **Expertise** in the relevant knowledge domain
- **Independence** from management and other interests such as controlling shareholders
- **Motivation** to prioritize investor interests and long-term financial success
- **Bandwidth** sufficient to understand and oversee the strategic priorities
- **Empowerment** to share their knowledge through formal board roles

The framework can be applied to **any group of companies** and **any technical knowledge area**. Here we apply it to **AI expertise**, looking at boards of constituents of the MSCI World Index, which comprises large- and mid-cap companies in developed markets. The analytical set included 14,528 individuals across 17,454 board memberships at 1,120 companies between Dec. 31, 2021 and June 30, 2025.

In summary, we find that:

- Companies have rushed to recruit **AI expert directors**, with the number of boards reporting an AI expert **growing from 15% to 25%** over the study period.
- Despite this growth in AI experts generally, **just 14% of boards had effectively integrated AI expertise** as of mid-2025.
- AI experts are rare but well distributed. **Just 2% of individual directors were identified as AI experts**, and most serve on only one corporate board.
- U.S. firms led in effective AI expertise, with **25% of boards having integrated AI subject-matter experts**. Companies in several EMEA and APAC markets had high rates of AI expert directors but lower rates of boards that had effectively integrated those experts into the full board.
- Companies in the IT and financials sectors had the **highest rates of integrated subject-matter expertise**, but communication services showed the **largest gap** between boards with AI expertise and boards that had meaningfully integrated that expertise.

Our findings suggest that while boards are actively recruiting AI experts, many have failed to deploy that expertise for maximum effect. For investors evaluating board composition, looking beyond individual directors to how their skills are used and supported may identify critical opportunities for engagement.[1]

Research context for corporate AI initiatives

Companies across all markets and sectors have raced to integrate AI into their operations and strategy, seeking improved efficiency, innovation and competitiveness. Yet studies show that most corporate AI initiatives to date have struggled to yield returns (Challapally et al. 2025). At the same time, AI adoption introduces new and heightened risks, ranging from algorithmic bias and cybersecurity vulnerabilities to environmental, workforce and regulatory concerns (Chung et al. 2024).

Boardrooms lie at the center of this tension. As the ultimate stewards of corporate strategy and capital, directors are expected to ensure that AI initiatives create long-term value while protecting against AI's myriad risks (ICGN 2024). Success requires that boards have the necessary expertise to ask meaningful questions of a company's proposed AI strategy – and of the managers executing that strategy. Boards can attempt to cultivate this understanding organically through continuing education targeted at existing directors, but this approach may appear languid compared to the rapid pace of AI innovation and insufficient relative to investor demands for returns on AI investments.

As a result, more boards may choose to seek out new directors with dedicated AI expertise. This approach is not without risk. Single-issue or specialist directors may be unable to integrate into and contribute to the board's broader work, and their knowledge could remain siloed from the rest of the board. Subject-matter experts can also introduce authority bias, leading the board's other directors to defer to their expert colleague rather than do their own diligence. Either outcome could hurt the board's collective ability to effectively oversee the firm's AI strategy (Shapira and Nili 2023).

This paper introduces a framework for evaluating whether a board has meaningfully integrated its subject-matter experts into the board's work, allowing those experts to enhance the board's collective ability to exercise oversight within a particular knowledge area. This framework builds on prior academic and industry research on board oversight. It comprises five dimensions that consider an individual's expertise, independence, motivation, bandwidth and empowerment. It is intended to assist investors, issuers and academic researchers in evaluating board expertise at scale.

Applying this framework, the paper evaluates the level of effective boardroom AI expertise across the MSCI World Index. Our findings suggest that corporate boards are rapidly recruiting AI expertise, but that only some have integrated these experts with a view to enhancing the board's collective effectiveness and oversight capacity regarding AI.

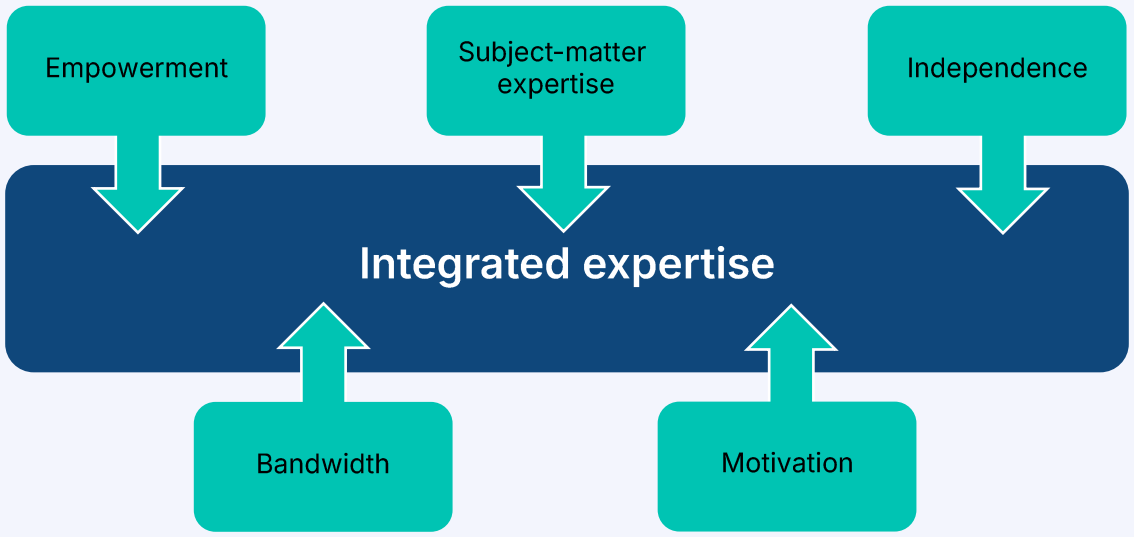
While this paper applies a systematic director-expertise framework to AI expertise, the framework can be applied to any knowledge area relevant to the user.

Evaluating integrated expertise

Overview

The framework described below is designed to evaluate an individual director's potential to make a meaningful contribution to a board's collective oversight capacity through the application of their subject-matter expertise. It posits that a board can meaningfully benefit from its subject-matter experts only when those experts have been **integrated into the board as a whole.**

Exhibit 1: Integrated expertise framework overview



Source: MSCI Sustainability & Climate (MSCI S&C)[2]

The framework builds on a growing body of research that links governance effectiveness with how directors interact, what motivates them and how the board is structured, not just what they know. It offers a systematic and scalable way to identify directors whose skills, independence, engagement and influence combine to support robust decision-making on complex topics such as AI.

Theoretical foundations

The framework draws from Hambrick, Misangyi, and Park's (2015) "Quad Model for Identifying a Corporate Director's Potential for Effective Monitoring". Hambrick and colleagues argue that oversight effectiveness emerges from the interaction of four attributes: expertise, independence, motivation and bandwidth. The model posits that a deficiency in any one dimension constrains the director's overall capacity to monitor management, regardless of strength in other areas. This interactional concept has been empirically validated by Hasija et al. (2025), who found that firms with "quad-qualified" lead independent directors displayed lower misconduct incidence and improved director attendance, confirming that oversight sufficiency depends on multidimensional qualification rather than singular strength.

Building on these insights, the framework introduces a fifth dimension – empowerment – which recognizes that formal authority within the board's governance structure influences how effectively a director can apply their expertise to the board's work. This addition aligns with Larcker, Seru, Tayan and Yoler's (2025) view that effective governance requires not only qualified directors but also the formal structures that enable them to shape board deliberations.

The framework also draws on broader organizational theory emphasizing that capability is systemic rather than individual. Studies of corporate performance and adaptation – most notably Brynjolfsson and Hitt (1998) and Brynjolfsson and McElheran (2016) – show that the value of specialized knowledge depends on complementary structures, incentives and coordination mechanisms. In governance terms, this means that director expertise yields meaningful oversight only when embedded in settings that foster independence, engagement and authority.

Finally, the framework aligns with recent governance research emphasizing the relational and behavioral dimensions of expertise. Shapira and Nili (2023) argue that the value of specialist directors derives not simply from technical knowledge, but from their ability to contextualize that knowledge within the board's collective function. Likewise, Alcaide-Ruis and Bravo-Urquisa (2024) highlight that expertise becomes an effective governance resource only when coupled with the motivation and capacity to apply it diligently. Taken together, these theoretical strands support a multidimensional model of director effectiveness that views possessing subject-matter expertise as only one element of transmitting that expertise into the work of the board. Our proposed framework synthesizes these insights into a methodology for evaluating directors' potential to contribute meaningfully to **any specialized area of board oversight**, whether related to finance, sustainability, technology or other complex domains.

Framework dimensions

The framework comprises five mutually reinforcing dimensions, each of which can be evaluated with a "Yes" or "No" answer. Each individual dimension is necessary but not sufficient for true effectiveness. Our framework treats these factors as multiplicative rather than additive: The framework treats a deficit in any one area as materially reducing the likelihood that a director's expertise enhances overall board oversight. Only directors that fulfill all five criteria of the framework qualify as effective experts. This approach reflects Hambrick's interactional thesis and the broader evidence that organizational capabilities depend on the alignment of complementary components.

Exhibit 2: Integrated expert dimensions

Dimension	Definition	Assessment
Expertise	The director has professional or academic experience directly relevant to the domain under consideration.	Based on a review of director biographies published in proxy circulars and evaluated relative to a consistent definition of expertise.[3]
Independence	The director is independent of the company's management and any other special-interest groups within the company's governance structure (e.g., a controlling owner).	Evaluated using the definition of director independence applied in MSCI corporate governance evaluations.[4]
Motivation	The director's personal incentives are aligned with the long-term success of the firm through existing equity ownership or an expectation that the director will obtain equity ownership during their board tenure.	Evaluated based on whether the director owns shares worth at least USD 150,000 or whether the director is subject to an equity ownership policy.
Bandwidth	The director dedicates sufficient time and attention to board responsibilities.	Evaluated based on the total number of boards a director serves on, with directors serving on four or more boards in total considered to lack bandwidth.
Empowerment	The director holds a role on the board that enables them to meaningfully influence the board's decision-making.	Evaluated based on the director's disclosed board roles and committee memberships.

Source: MSCI S&C

Integrated AI expertise

Objectives and methodology summary

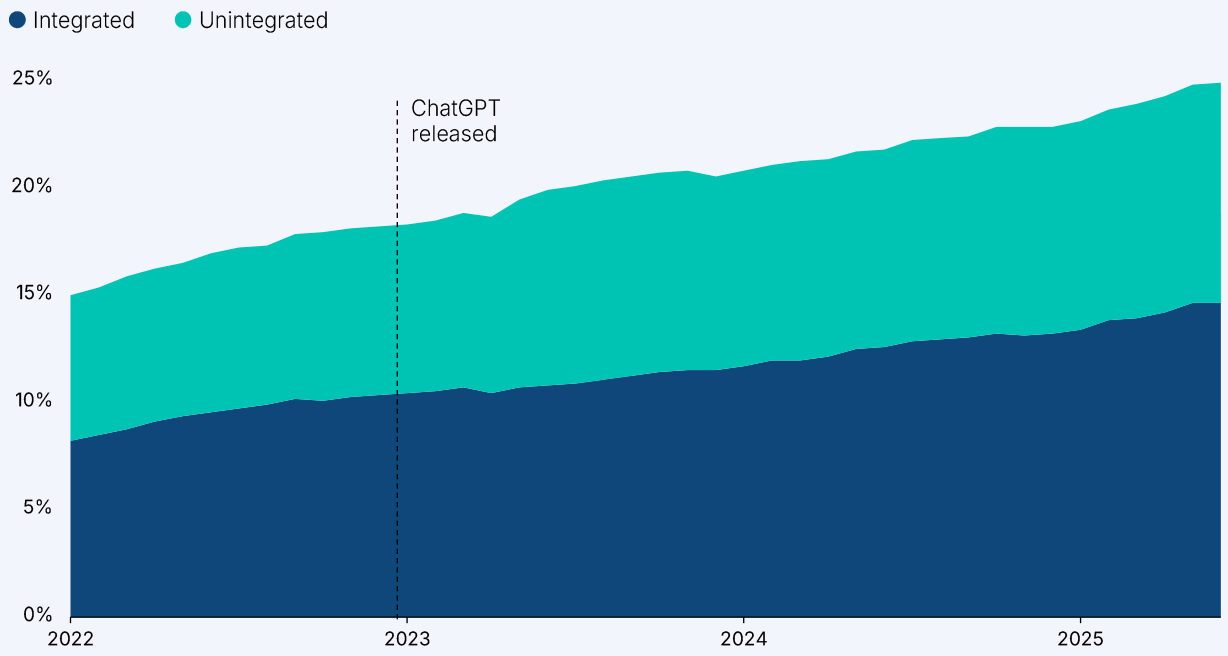
To assess the landscape of AI expertise across corporate boards, we applied our framework to the knowledge area of AI expertise and the MSCI World Index, which comprises large-and mid-cap equities in developed markets.

We evaluated companies that were constituents of the index throughout the period between December 2021 and June 2025 (n=1,120 companies and 14,528 individuals). Director expertise in AI was evaluated using director biographies and AI analysis, while the other framework dimensions were evaluated using corporate governance data from MSCI S&C. For further details regarding our study methodology, see Appendix I.

Global results

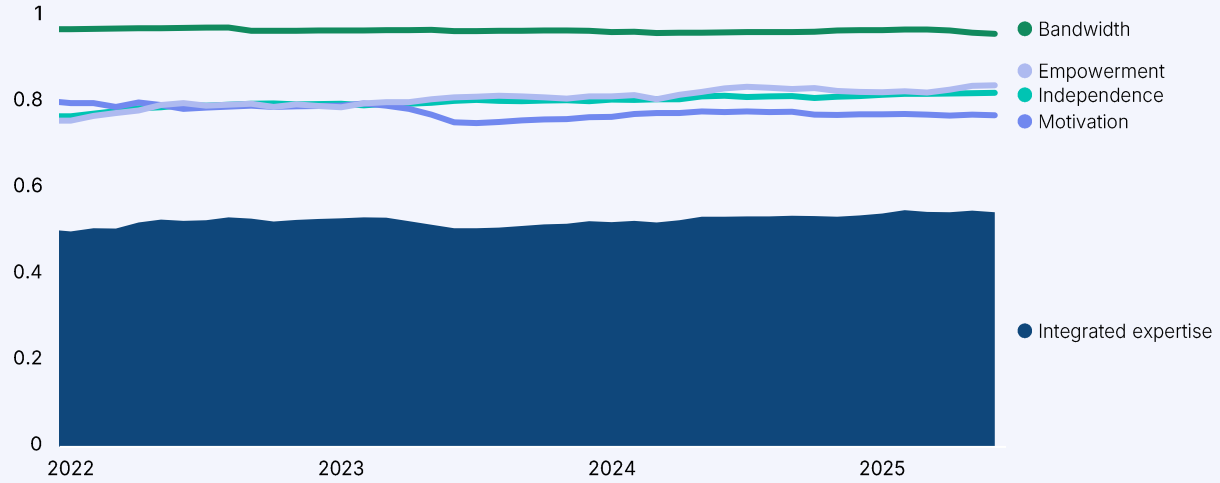
Across the MSCI World Index, the proportion of companies with AI experts on the board increased steadily over the study period, from about 15% in 2022 to approximately 25% by mid-2025 (Exhibit 3 below). However, the share of boards that had meaningfully integrated those AI experts – i.e., the share of boards with at least one director meeting all five framework criteria – was significantly smaller, ranging from 8% at the start of the study to 14% at the end.

Exhibit 3: Percentage of companies with AI expert directors



Source: MSCI S&C. Includes 14,528 individuals across 17,454 board memberships at 1,120 companies that were constituents of the MSCI World Index continuously between Dec. 31, 2021 and June 30, 2025. Of the 14,528 individuals in the sample, 286 (2%) were considered AI experts under our methodology. Of these 286 AI experts, 156 (55% of all AI experts and 1.1% of all individuals) were considered integrated experts.

Exhibit 4: Individual directors by integration criteria
AI experts who met criteria



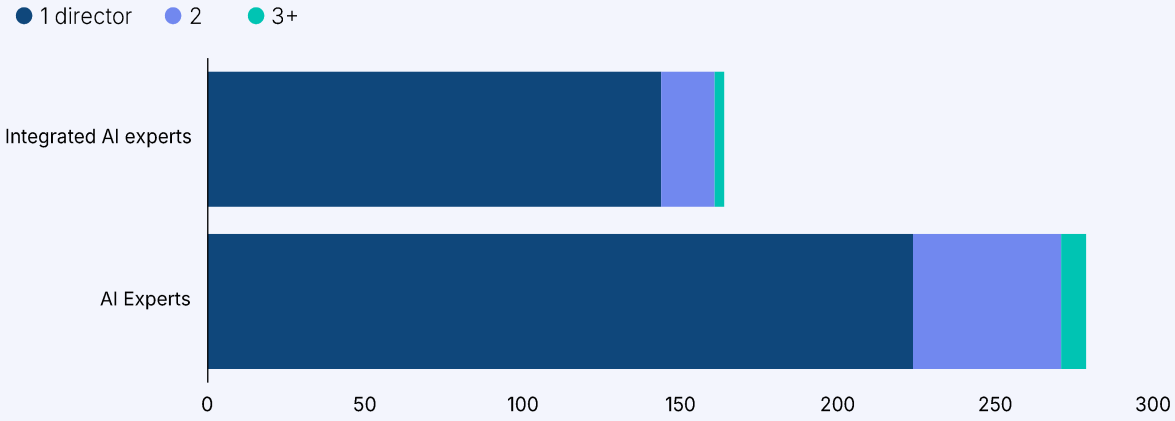
Source: MSCI S&C. Includes 14,528 individuals across 17,454 board memberships at 1,120 companies that were constituents of the MSCI World Index continuously between December 31, 2021 and June 30, 2025.

Empowerment was the most failed integration dimension. It was measured based on whether the expert director was identified as having a meaningful role on the board (e.g., a committee membership or leadership position) (Exhibit 4). This suggests that many directors with technical expertise related to AI have not yet been appointed to the board's broader decision-making bodies or positions.

Bandwidth was the least significant framework dimension. It was measured based on the total number of outside boards on which an individual served. As shown in Exhibit 5, AI experts were well distributed among the companies in our study. While between 15% and 25% of boards included AI experts over the study period, just 286 of the more than 14,000 individual directors in our study (2%) were considered AI subject-matter experts. Of those, only 156 (55% of all AI experts and 1.1% of all individual directors) were considered effectively integrated into their boards under our framework.

Companies with two or more effectively integrated AI expert directors at the end of the study period are set out in Appendix II.

Exhibit 5: Companies by AI expert director count, as of June 2025



Source: MSCI S&C. Includes 1,120 companies that were constituents of the MSCI World Index continuously between December 31, 2021 and June 30, 2025. Excludes companies with no AI experts. Board composition calculated as of June 30, 2025. One company had four directors identified as AI subject-matter experts. No companies had more than three directors whom we considered integrated AI experts.

Case Study

International Business Machines Corp. (IBM)

(United States / Information Technology)

Martha Pollack was appointed to the board of IBM in February 2019. A former president of Cornell University and professor of computer science, information science and linguistics, Dr. Pollack is described by IBM as an expert in the field of AI with a wide range of contributions to the field, including having served as editor-in-chief of the Journal of Artificial Intelligence Research. Dr. Pollack met our criteria for integration into IBM's board based on disclosure as of June 2025.

IBM's **2025 board skills and experience matrix** included "Innovation and Emerging Technologies" as a core strategic skill of the board, alongside areas such as cybersecurity, risk oversight and financial expertise. The company reports governance of risk oversight is **distributed across the full board** and its standing committees.

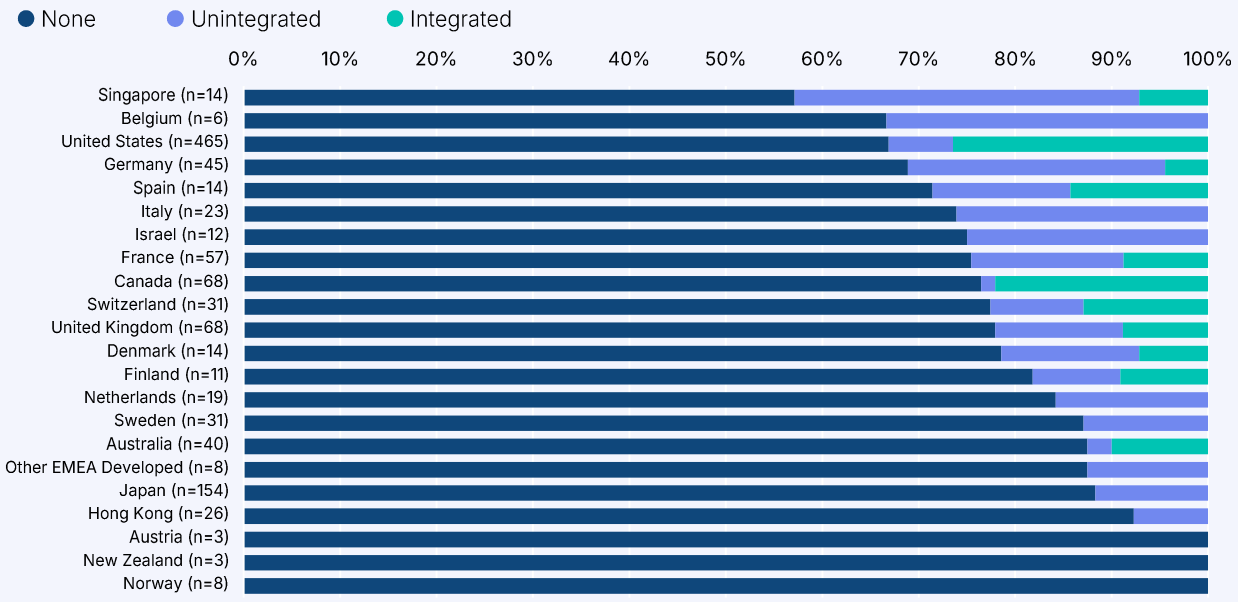
IBM reported that its Principles for Trust and Transparency guide its approach to the **ethical use of AI**, including oversight by the IBM AI Ethics Board, an internal body co-chaired by the company's Chief Privacy & Trust Officer and AI Ethics Global Leader, and overseen by IBM's Policy Advisory Committee.

Source: IBM 2025

Global results

Differences across developed markets were pronounced (Exhibit 6). The U.S. had the highest proportion of boards with integrated AI expertise (about 25%), followed by Canada (19%) and Spain (14%).

Exhibit 6: Percentage of companies with AI expert directors by Home Market



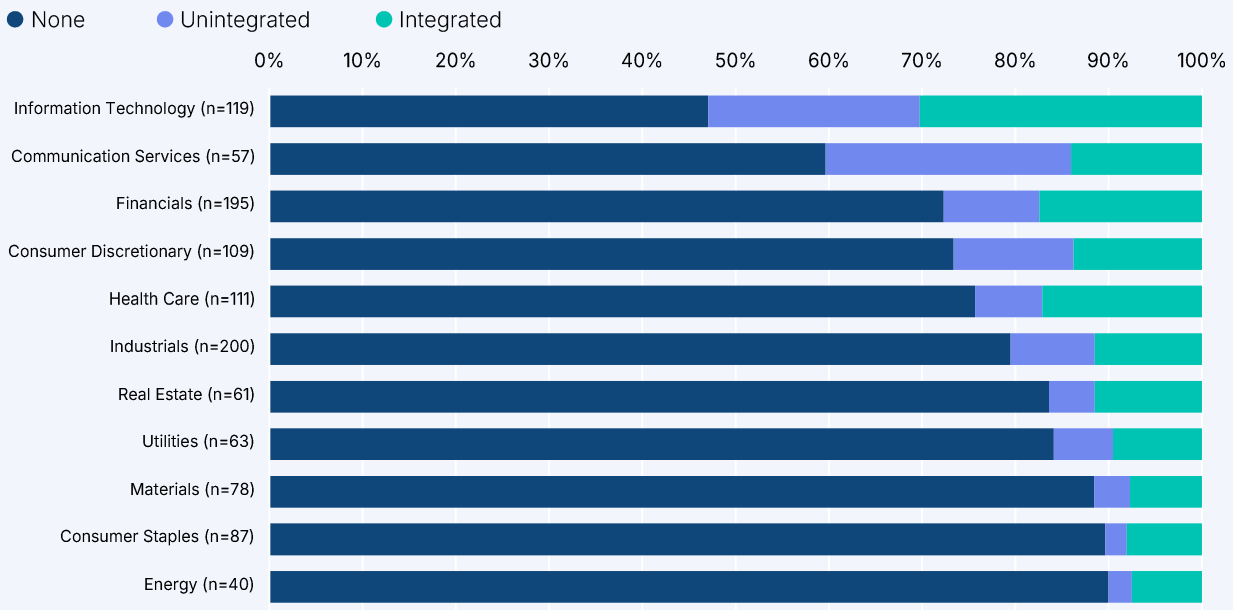
Source: MSCI S&C. Includes 14,528 individuals across 17,454 board memberships at 1,120 companies that were constituents of the MSCI World Index continuously between December 31, 2021 and June 30, 2025. Note that the study universe included only companies classified as belonging to developed markets by MSCI.

Developed markets in the EMEA and APAC regions generally displayed a different pattern. Singapore had the largest share of firms with AI expertise that had not been effectively integrated into the board (36%), followed by Belgium (33%) and Germany (27%). In these jurisdictions, boards appeared to prioritize recruitment of technical specialists without – at least at this stage - necessarily providing those experts with the authority or incentives associated with effective oversight. Markets such as the Netherlands, Sweden and Finland also showed high levels of AI-expert representation overall but a smaller proportion of directors meeting all framework criteria.

Sector results

Sectoral variation largely reflected differences in technological intensity and regulatory exposure (Exhibit 7). Information technology firms had the highest percentage of boards with integrated expertise (27%), alongside an additional 26% of boards that had unintegrated AI expertise. Financials and health care followed, with 17% and 16% of boards having integrated AI expertise, respectively.

Exhibit 7: Percentage of companies with AI expert directors by GICS sector



Source: MSCI S&C. Includes 14,528 individuals across 17,454 board memberships at 1,120 companies that were constituents of the MSCI World Index continuously between December 31, 2021 and June 30, 2025. Sectors reflect the Global Industry Classification Standard (GICS®) jointly developed by MSCI and S&P Dow Jones Indices.

Communication services firms exhibited the widest gap between integrated and unintegrated AI expertise: 41% of boards had at least one AI expert director, but only 11% had meaningfully integrated that expertise into the full board, with 30% of boards having only unintegrated expertise. This suggests that many boards have added domain specialists but have not done so in a way that effectively supports their ability to contribute meaningfully to the board's work on AI. Industrial, materials and energy firms showed the lowest rates of integrated expertise, typically below 10%, which may reflect lower direct exposure to AI-related risks and opportunities.

The high levels of unintegrated AI expertise in several sectors suggest that many boards may have rushed to acquire relevant director expertise but not yet deployed or supported those directors in a way that can maximize their potential contributions to the board's work in addressing the potential risks and consequences of AI.

Investor perspectives

The authors shared the findings and methodology with a roundtable of senior institutional investors prior to publication. The purpose of this discussion was to surface any material weaknesses in our analytical approach and to test whether the framework resonated with those responsible for assessing and engaging with boards on AI governance in practice. The engagement did not produce fundamental challenges to the methodology; the feedback received was constructive and directionally consistent with the quantitative findings and identified several areas for refinement and future development. The perspectives gathered inform the directions for future research identified at the close of this paper.

Investor roundtable

In April 2026, the MSCI Institute convened a roundtable of senior stewardship and governance professionals. These were drawn from leading European and global institutional investors, with the intent to sense-check the methodology and findings of this study. The session was conducted under Chatham House Rule, and the following account accordingly reflects themes and views without attribution to specific individuals or organizations. Participants collectively represented governance and stewardship functions at firms with a combined global reach spanning trillions of dollars in assets under management and included specialists from active ownership teams with deep experience engaging company boards on various governance matters, including the nascent AI field.

Views on the framework

The five-dimension framework was well received, and no participant raised a fundamental objection to its structure or underlying methodology. Several participants expressed that the research fills a gap the stewardship community has been waiting to see addressed, namely a structured, evidence-based foundation for assessing AI board governance that teams can take directly into company engagements. One participant noted that scoring well across all five dimensions would provide investors with initial confidence that effective oversight is in place, a view that reflected broader sentiment in the room.

The finding that most companies had added directors with AI credentials without effectively integrating that expertise resonated strongly with participants' own engagement experience and was described as matching precisely what they observed when speaking with boards. Participants identified the empowerment dimension, which captures whether an AI-experienced director can actually shape board deliberation and oversight, as the most practically significant finding. Participants agreed widely that **current AI board governance is largely symbolic** rather than substantive.

A starting point for integrating specialist directors

Participants were equally clear that they saw the framework as a starting point capable of further development, with the discussion surfacing several directions in which they would like to see it extended. A recurring theme was **collective versus individual competence**. While participants well understood the framework's focus on specialist directors, several suggested that the more important governance variable may be the **minimum level of AI literacy across the full board**. This would reflect the ability of all directors to interrogate management, evaluate strategic proposals, and hold executives to account without depending exclusively on a single expert colleague. Rather than replacing the individual expertise dimension, participants proposed treating **collective literacy as a complementary measure** that the framework could incorporate over time, particularly as general board competence advances with increasing exposure to these technologies in the coming years.

Views on motivation

The motivation dimension prompted the most substantive discussion, and the feedback here pointed to a specific refinement. Specifically, the use of equity ownership and remuneration alignment as proxies for motivation reflects compensation conventions that differ materially between U.S. and European governance contexts. European non-executive directors are less commonly remunerated in equity by structural design rather than as a reflection of governance quality, meaning **the metric may systematically rank European boards lower** on this dimension even where oversight is otherwise effective. Participants identified **regional calibration** as the appropriate response. On the related question of empowerment, some participants suggested that committee membership and leadership roles, while a reasonable starting proxy, may not always capture actual influence. For example, a director may hold a seat without meaningfully shaping a committee's agenda or conclusions. Participants raised richer qualitative indicators, such as **patterns of board-level AI-related disclosures or evidence of board-initiated strategic reviews**, as potentially more informative additions to the proposed measurement toolkit.

Governance adequacy and sector specificity

Participants proposed two further extensions they felt would significantly increase the framework's practical utility. The first is the introduction of a **governance-to-deployment ratio**: an assessment of governance adequacy relative to how aggressively a company is deploying AI, rather than against a uniform threshold. A company deploying AI cautiously may require a different standard of oversight than one that has made it a core operational and strategic pillar, and participants felt the framework would generate more actionable assessments if it accounted for this variation. The second is **greater sector specificity**.

The governance requirements for a pharmaceutical company using AI in drug discovery differ substantially from those of a utilities company or a financial services firm, and participants called for sector-specific calibration of how the five dimensions are weighted and what constitutes adequate performance on each.

A final theme concerned the pace of change in the field. Participants noted that **static expertise credentials, however carefully assessed at the point of appointment, may decay rapidly** in relevance as the technology, its regulatory context, and its business applications evolve. In this sense, a director's qualifications at the time of joining a board were seen as less important than **whether the board as a whole has embedded mechanisms for ongoing learning**, such as structured education programs, regular management briefings, and governance processes designed for continuous adaptation. Participants suggested the framework might give greater weight to **these structural indicators of adaptability** alongside point-in-time credentials.

The session concluded with broad agreement that the research addresses a genuine and unmet need. Participants expressed clear interest in using it as a tool for company engagement and indicated that the outputs they would find most directly useful were a best-practice standard or checklist that stewardship teams can use in company meetings, sector-specific calibrations of the five dimensions, and greater corporate disclosure on board training and AI oversight architecture. The discussion reinforced the authors' view that the framework presented here represents a foundation on which further development, ideally in ongoing dialogue with the practitioner community, can build.

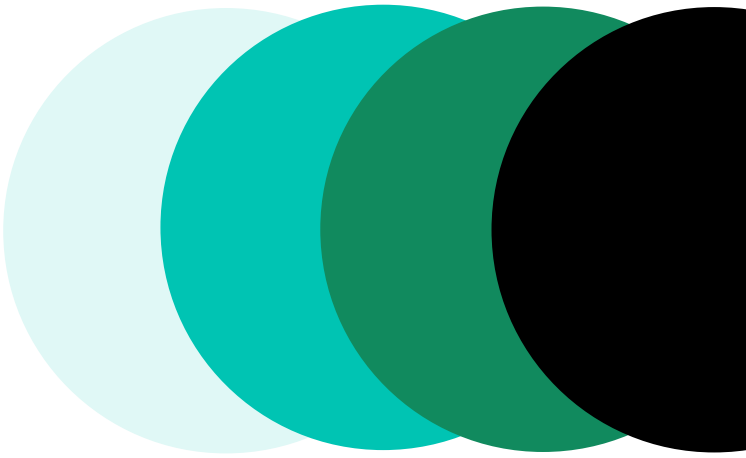
Conclusion

Boards see a clear need to acquire new skillsets relevant to understanding and managing AI risks and opportunities. Between December 2021 and June 2025, the percentage of mid- and large-cap companies in developed markets with at least one AI expert director (as evaluated by our methodology) increased from 15% to 25%.

But recruitment alone is not governance. The central finding of this study is that most boards that have added AI expertise have not effectively integrated it, and that the gap between having an expert on the board and deploying that expertise in service of robust oversight is wide. This raises doubts about the ability of these boards to effectively leverage this expertise and utilize it in overseeing corporate AI strategy.

Practitioners responded positively to our findings. Many participants at an Institute-convened roundtable on the findings recognized the symbolic-versus-substantive distinction from their own engagement experience, while identifying empowerment as the most practically significant dimension. Participants identified several areas for further development, including regional calibration of the motivation dimension, greater sector specificity and increased emphasis on collective board literacy. The authors intend to observe how boards respond to the shortfalls the framework identifies, and to refine it accordingly.

As investors continue to evaluate board composition and effectiveness ahead of a potential AI revolution, looking beyond directors' individual skillsets to the way in which those skillsets are deployed and fostered may help to identify the most important areas for engagement within a portfolio. The framework presented here offers a systematic and scalable basis for making that assessment, and the authors intend to refine it in ongoing dialogue with the practitioner community.



Appendix 1: AI expertise study methodology

Study period and sample

Our study period ranged from December 2021 through June 2025. Our analytical set included:

- All **companies** that were constituents of the MSCI World Index (an index of mid- and large-cap companies in developed markets) **over the entire study period** (n=1,120 companies); [5] and
- All **individuals** who were directors of a company identified above **at any time in the study period** (n=14,528 individuals).

The composition of each company's board was recalculated as of each month-end timestep in the study period, allowing us to measure changes in board AI expertise over time.

Our study considered directors who were members of a unitary board of directors or, for companies with two-tier board structures, members of a supervisory board. Members of audit boards were excluded from the study to limit our focus to oversight bodies with broad strategic mandates.

Expertise dimension

To evaluate the expertise dimension of the framework, we used OpenAI's GPT-5 model to read the director biographies of all individuals within the study and evaluate whether they possessed AI expertise. We considered only company-disclosed director profiles, which were typically included in each company's annual shareholder meeting materials (e.g., proxy circulars). This is consistent with the assessment of other areas of director expertise under the MSCI ESG Ratings methodology. Where an individual served on multiple boards, we considered their biographies from all of the companies where they served in aggregate.

Each biography was reviewed by three GPT-5 agents. Each agent was asked to produce binary "yes" or "no" evaluations indicating whether the biography contained evidence of significant professional or academic expertise related to AI, and to provide supporting commentary justifying their evaluations. Each agent's response was treated as a vote, and the majority opinion of the three agents was used as the final evaluation of an individual's expertise. This approach builds on our previous research in Chung et al. (2025) and Sommer, F., Muirhead, D. (2024).

Our definition of "AI expertise" is reflected in the prompts set out below. The system prompt was designed to be extensible to a wide range of technical knowledge domains, with the user prompt providing both a description of the relevant area of expertise and the director biography to be evaluated.

System prompt

You read biographies to evaluate whether an individual has substantial expertise in a subject based on their professional and academic experience. Obey these rules:

Professional:

- Professional experience can include things like: hands-on experience with the subject; a senior role directly related to the subject; leadership/management of organizations closely related to the subject; policy/regulatory oversight related to the subject; and directing investments in the subject.
- Board director experience is not professional experience. Answer "No" if the only evidence of professional experience is board director experience.

Education:

- Advanced degrees are master's degrees (e.g., MA), doctorates (e.g., PhD) and executive-level professional certifications that explicitly address the subject.
- Bachelor's degrees (e.g., BA, BSc) are not advanced degrees. If the only evidence of academic expertise is a bachelor's degree, answer "No".

General:

- If an individual is described as an expert in the subject, their professional or academic background must credibly support that claim.
- Return structured JSON, with one JSON object per expertise evaluation. Each evaluation has exactly these fields: answer_professional, note_professional, title, company, answer_education, note_education, degree, subject.
- Carefully reason through your answers and explain how they follow these rules in the note fields.

User prompt

- -ai: Expertise in artificial intelligence, including fields such as machine learning (ML), large language models (LLM), natural language processing (NLP), and computational linguistics.
- Biography: <director biography>

To eliminate any volatility in skills assessments attributable to increased reporting of AI-related experience in director biographies following the launch of ChatGPT in November 2023, we used each individual's latest biography as of the end of the study period. In other words, if a director was considered an AI expert at the end of the study period, that expertise assessment applied throughout the entire study period. This decision incorporates an assumption that individuals' core areas of academic and professional experience did not significantly change over the 3.5-year study period.

Of the 14,528 individuals in our study, we could not identify a published biography for 3,028 (21%). These individuals were classified as non-expert.

The GPT-5 expertise assessments were validated relative to a manual review of 254 randomly selected director biographies (~2% of the total). MSCI analysts evaluated these biographies for evidence of AI expertise using the same criteria as the GPT-5 agents. Based on this validation exercise, we estimate that GPT-5 was 97% accurate relative to manual review.

Other dimensions

The other framework dimensions were evaluated using MSCI S&C corporate governance data.

- **Independence:** A director was considered to have met the criteria of the independence dimension if the director was considered both independent of management and independent of other interests under the MSCI ESG Ratings methodology (see "MSCI ESG Ratings Methodology: Board Key Issue" for further details).
- **Motivation:** A director was considered to have met the criteria of the motivation dimension if:
  a. The company had implemented a director equity ownership policy or guideline (regardless of the director's personal shareholdings); or
  b. The director personally owned at least USD 150,000 in shares of the company where they served as a director as of the end of the study period.
- **Bandwidth:** A director was considered to have met the criteria of the bandwidth dimension if the director served on less than four boards in total across all of their board memberships at companies in MSCI ESG Ratings coverage as of the end of the study period.
- **Empowerment:** A director was considered to have met the criteria of the empowerment dimension if:
  a. The director held a board leadership role, including board chair, vice chair or lead director; or
  b. The director was the chair or a member of a committee responsible for overseeing the board's audit, pay, governance, nomination or risk management responsibilities.

Unless otherwise noted above, each dimension was recalculated for each director at each monthly timestep in our study period.

Appendix 2: Companies with multiple integrated AI expert directors

The table below sets out all companies that had two or more integrated AI expert directors as of the last month-end timestep in our study period.

Company	Home Market	GICS sector	Integrated AI expert directors
Alimentation Couche-Tard Inc.	Canada	Consumer Staples	2
Amazon.com, Inc.	United States	Consumer Discretionary	2
Autodesk, Inc.	United States	Information Technology	3
CAE Inc.	Canada	Industrials	2
The Coca-Cola Company	United States	Consumer Staples	2
FactSet Research Systems Inc.	United States	Financials	3
Fortive Corp.	United States	Industrials	2
HP Inc.	United States	Information Technology	2
HubSpot, Inc.	United States	Information Technology	2
IGM Financial Inc	Canada	Financials	2
Intuit Inc.	United States	Information Technology	2
Klépierre SA	France	Real Estate	2
Motorola Solutions, Inc.	United States	Information Technology	2
Munich Re	Germany	Financials	2
NatWest Group PLC	United Kingdom	Financials	2
Nokia OYJ	Finland	Information Technology	2
The Procter & Gamble Company	United States	Consumer Staples	2
PTC Inc.	United States	Information Technology	3
Seagate Technology Holdings PLC	Ireland	Information Technology	2

Footnotes

1. The authors thanks Ewan Jarvis and Florian Sommer for their contributions to this report.
2. MSCI Sustainability & Climate products and services are provided by MSCI Solutions LLC in the United States and MSCI Solutions (UK) Limited in the United Kingdom and certain other related entities.
3. The specific definition of expertise will depend on the knowledge domain under evaluation. In Section 3 of this paper, we apply this framework to the knowledge area of AI. Our definition of AI expertise is set out in Appendix I.
4. Directors are evaluated for a wide range of relationships to a company's management and other interests (e.g., controlling shareholders). See "MSCI ESG Ratings Methodology: Board Key Issue" for further details.
5. MSCI Inc. was excluded from the study.

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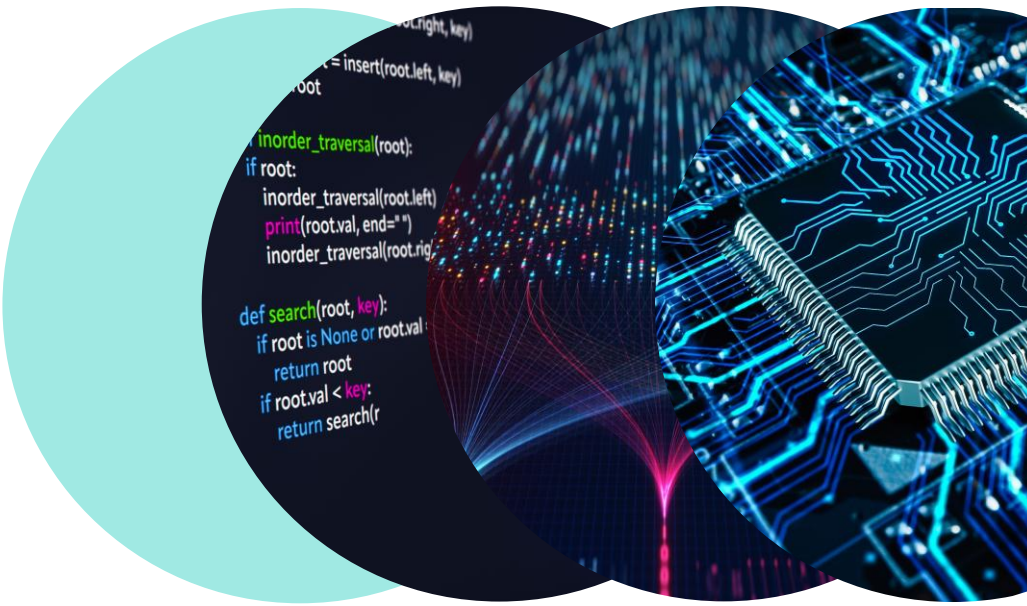

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