CFA Institute®
Future of Finance

THE FUTURE OF WORK IN INVESTMENT MANAGEMENT

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THE FUTURE OF WORK IN INVESTMENT MANAGEMENT
THE FUTURE OF SKILLS AND LEARNING

CONTENTS

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EXECUTIVE SUMMARY

The fundamental purpose of finance is to contribute to society through enabling wealth creation and increasing societal well-being.[1] The investment industry lies at the heart of this purpose, and it is dynamic and complex. With these characteristics come many opportunities for intellectual challenge and positive impact. Career success in the investment industry requires continual learning and curiosity to build ever-deeper knowledge and transferable skills as the marketplace changes.

In this report, we identify gaps between the supply and demand for skills, outline strategies for career development, and propose structural changes to investment teams to better leverage the diversity of talent and the combined power of discrete but complementary skills. Furthermore, we challenge investment professionals and investment industry leaders—at all career stages—to continue to build their skills and increase their knowledge. An investment industry that prioritizes competency, ethics, and adaptability will be well-positioned to thrive now and in the future.

Key Findings from the Report by Section

The Next Generation of Investment Professionals

1. **The disrupted pipeline:** The pandemic disrupted the educational progress of many investment professionals and widened the gender gap of CFA® Program candidates to 60% men and 40% women.
2. **The desire for diverse educational backgrounds:** Finance remains an attractive area of study for students, though the educational background of those pursuing investing as a career has become less focused on finance, with growth over time in the popularity of STEM subjects—science, technology, engineering, and mathematics. Over the last 30 years, the number of Level I CFA Program candidates with a finance degree or course of study fell from 43% to 38%. As the industry becomes more complex, investment firms are seeking more diverse backgrounds and a wider knowledge base from which investment expertise can be developed.
3. **The attraction of private equity:** Following graduation, interest in joining private equity firms is particularly high. Among graduates of Harvard Business School, for example, five times as many now pursue private equity or venture capital compared with investment banking.

The Changing Scope and Nature of Investment Roles

4. **The impact of new analytical methods on roles:** More than a third of CFA Institute members[2] surveyed believe the role they perform will be substantially different in 5–10 years' time and the biggest disruptive factor will be new analytical methods, including artificial intelligence (AI) and machine learning.
5. **The pathway of traditional investment careers:** We mapped the career progression of CFA Institute members and found the most common job role transition is from analyst to portfolio manager to chief investment officer. Forty-six percent of portfolio managers previously were analysts, and among portfolio managers, 25% of our sample went on to become chief investment officers and 6% became CEOs.
6. **The outlook for less traditional investment career paths:** Career paths are becoming more varied and are characterized by more career breaks and greater flexibility. The primary influences on these career path developments are from the technology sector (via fintech) and entrepreneurs (particularly private equity boutiques).

Investment Skills Needed for Success

7. **The skills pathway:** Technical skills are most important at the start of one's career, with soft skills, leadership skills, and T-shaped skills (a combination of deep knowledge in a single domain and wider knowledge in other fields and the ability to connect them) growing in importance over time.
8. **The skills in high demand:** New sources of data will affect the skills needed for investment decision making, and the skills that most investment professionals are interested in obtaining include a foundational understanding of artificial intelligence and machine learning, as well as knowledge of sustainability issues. The most important soft skill category is influencing, persuading, and negotiating. Some of the skills that have become more

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important in the new world of work are more efficient time management; being effective in influencing, persuading, and negotiating; direct communication; and being more resourceful. Managers and leaders will need to adapt their skillsets to succeed in a more flexible and dispersed work environment.

9. **The talent factors:** Employers seek a combination of skills, grit, and experience.

Building Effective Teams

10. **The specialization trend:** As the investment industry becomes more complex over time, leaders must find the best ways to leverage specialist and generalist skills and combine the two into effective teams. Professionals with T-shaped skills can help bridge gaps in understanding between different specialties and with generalist investment professionals. For example, an environmental, social, and governance (ESG) expert can and should have T-shaped skills to connect investment topics with sustainability issues.
11. **The T-shaped team model:** In the case of adopting AI into the investment process, more specialists are needed because of the lack of individuals with both finance and data science training and the high barriers to acquiring subject matter depth in both areas. Combining finance specialists, data science specialists, and product innovators with T-shaped skills—the T-shaped team—is the most effective approach in this context.
12. **The codification of knowledge and team effectiveness:** Team productivity tends to improve in hybrid and remote work environments in cases where knowledge (or workflow) has been codified and team members' social capital is strong inside and outside the team. Productivity typically suffers when these factors are not present.

Recommendations for Investment Organizations

- Expand candidate pools beyond finance-only backgrounds, and understand the opportunities and limitations of a flexible hybrid work environment to attract and develop talent.
- Invest more purposefully in internal talent development programs, and act as stewards of human capital.
- Evaluate the need for specialists and generalists, and understand when and how to build T-shaped teams.

Recommendations for Investment Professionals

- Be flexible and agile to be effective in a hybrid work environment in which enhanced skills in communication, influencing, and creativity are needed.
- Continue to add new skills and refresh existing ones as new analytical methods disrupt existing job roles.
- Develop generalist and specialized skills to work effectively in teams and to create more career pathway opportunities.

Continuous Investment in Human Capital

The investment industry depends on human capital, and continuous development is essential for investment professionals and the industry overall to remain relevant amidst ongoing change. Industry leaders must recognize the value of continuous investment in human capital and its impact on raising standards of professional practice to create a more effective and adaptable investment industry, for the ultimate benefit of society.

INTRODUCTION

"Adaptability is essential" was the headline of our 2019 report *Investment Professional of the Future*.[3] We did not imagine, however, that all investment professionals would need to adapt so significantly and so quickly. The disruption to work caused by COVID-19 accelerated many of the emerging trends in investment management skills and the world of work.

This report continues our Future of Work in Investment Management series. Previous reports addressed the context of work and the culture of work—that is, where and how work is done (both summarized in this section). Both have changed substantially given the industry-wide move to a hybrid work environment, and both continue to evolve as pandemic dynamics vary across markets.

The Context of Work

This report showcases views from investment professionals regarding their strong desire for hybrid work—blending remote and in-office work—and analyzes how effective this work pattern might be for individuals' career paths and for the industry overall. Questions of productivity remain as individual investment professionals, teams, and organizations seek the right balance of time in different work settings. We outline the lessons learned from all-remote work and examine which investment roles are best suited for remote or hybrid work. In addition, we examine how professional networks and trust were tested during a pause in in-person interaction.

The Culture of Work

In this study, we explore the cultural changes the investment industry is experiencing and is likely to experience in the future and gather insights from industry leaders in such areas as innovation, sustainability, inclusion, and technology. The Great Resignation has created sizable challenges for leaders to attract and retain talent. Although organizational culture usually changes slowly, during this recent period, we have had to adapt to changing norms quickly.

The Content of Work

Now we turn to the content of work. We consider the profile of the next generation of investment professionals, the changing scope and nature of investment roles, trends in investment skill development and available talent, and how investment teams may adapt in the future.

In our previous reports, we identified recurring themes related to skills that we will explore further, including the following:

- **The urgency of skill development.** The rapid changes in the investment industry have prompted more investment professionals to recognize a need to build new skills. Of those we surveyed, 91% said it is important for them to actively develop new professional skills to further their career. Less than half, however, said their company provides support to develop the new skills they need, which could come in the form of leadership training, financial support for training, or having a mentor or sponsor.
- **The challenge of early career training in a hybrid environment.** The past approaches of shadowing managers and teams to observe what they do are virtually nonexistent today. Asking questions, cultivating a professional network, and engaging with management are all more challenging in a virtual environment. These learning and development opportunities are especially valuable for junior employees, so it is no surprise that those very early in their careers were the least likely to want remote work.

We conclude with recommendations for how investment professionals can build future-relevant skills and how investment organizations can leverage that talent in effective teams. As the industry undergoes transformational change, having the right skills and a culture of learning will be essential for success.

Methodology

This report is the fourth in our Future of Work in Investment Management series. The series draws from quantitative responses from a combined group of more than 11,000 investment professionals globally across three surveys. We also gathered survey input from leaders at 41 investment organizations representing more than 230,000 employees. In addition, more than 100 investment professionals and human resources

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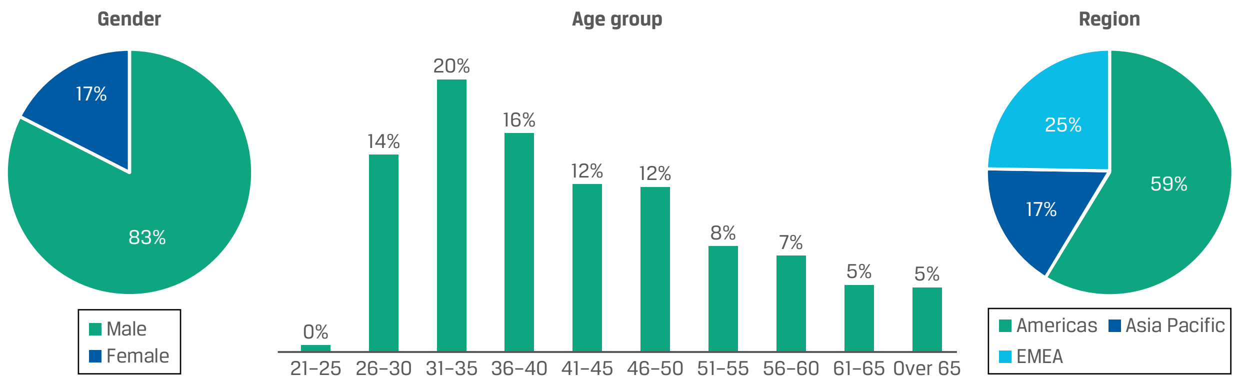
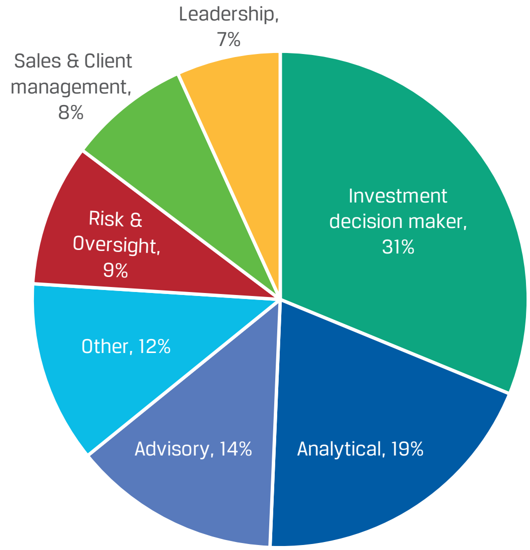
EXHIBIT 1. DEMOGRAPHIC BREAKDOWN OF SURVEY RESPONDENTS

A. Respondents by gender, age group, and region



B. Respondents by job role category



Note: The most prevalent roles in each category are as follows: corporate finance and investment consultant in advisory roles; credit analyst and equity analyst in analytical roles; portfolio manager (including hedge fund manager) and chief investment officer in investment decision maker roles; chief executive officer and chief financial officer in leadership roles; risk analyst/manager and accountant/auditor in risk and oversight roles; sales and product specialist/manager in sales and client management roles; fintech/IT specialist and professor in other roles.

professionals in the investment management industry provided qualitative input through virtual roundtables in the following markets: Australia, Canada, China, India, Japan, Malaysia, Singapore, South Africa, Switzerland, the United Arab Emirates, the United Kingdom, the United States, and Uruguay. We also conducted desk research and drew comparisons with research captured in previous CFA Institute Future of Finance publications, notably *Investment Professional of the Future*.

This report primarily leverages survey data from our most recent survey, conducted in November 2021 (the "Skills and Careers Survey"), of 2,137 CFA Institute members, with a margin of error of ±2.1% and demographic breakdown as shown in **Exhibit 1**.

Additional surveys used to provide quantitative data for this report are shown in the following table.

The other research reports in the CFA Institute Future of Work in Investment Management series[4] are *Future of Work in Investment Management*,[5] *Future of Work in Investment Management: Context of Careers*,[6] and *Future of Work in Investment Management: Changing Organizational Cultures*.[7]

Survey	Date Fielded	Respondents	Margin of Error
Skills and Careers Survey	October–November 2021	2,137	±2.1%
Investment Professionals Survey	March–April 2021	4,602	±1.4%
Supplemental CFA Institute Member Survey	April 2021	4,453	±1.5%
2022 Investor Trust Survey	October–November 2021	3,588 retail investors and 976 institutional investors	±1.6% (retail) and ±1.9% (institutional)

THE NEXT GENERATION OF INVESTMENT PROFESSIONALS

Given the competition for talent across industries, we begin with an analysis of the investment professional pipeline, including how students view finance as a course of study and the attractiveness of finance as a career. In addition, we describe recent changes to the composition of CFA Program candidates. Overall, finance remains an attractive field, and individuals with varied backgrounds see the investment industry as one worth pursuing.

Educational Background of Investment Professionals

How, if at all, has COVID-19 affected students' career decisions and, specifically, their interest in finance?

EXHIBIT 2. TOP CAREER CHOICES BY STUDENTS

Before COVID-19	2021
1. Education (25.0%)	1. Health care (20.9%)
2. Health care (19.9%)	2. Education (19.7%)
3. Arts and culture (18.5%)	3. Medicine and science (16.0%)
4. Finance (17.8%)	4. Finance (15.9%)

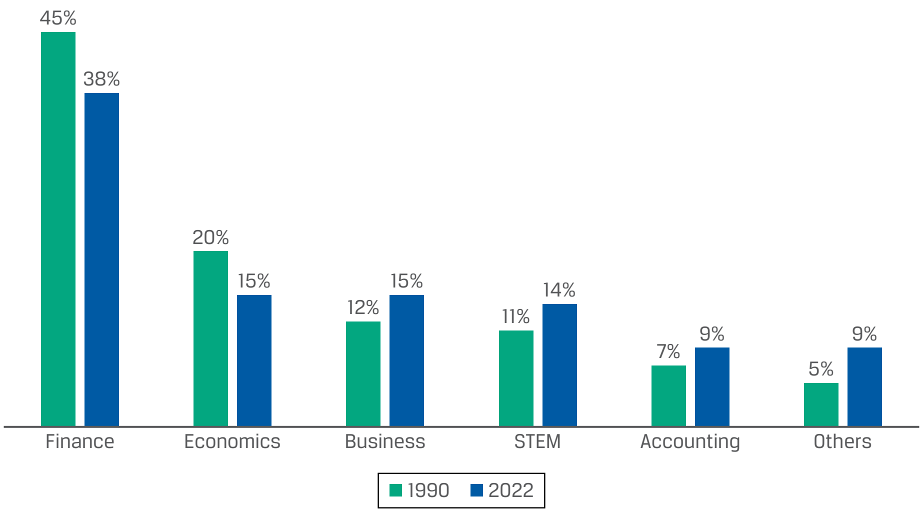
Source: CFA Institute, "Global Student Outlook Report: Career Prospects, Aspirations, and Passions" (2022).

In a survey of 15,000 students aged 18–25 across 15 markets in early 2021, 48% said they had to reassess their career path expectations, which is consistent with the adaptability they had to learn during the pandemic.[8] Even so, 75% believed their career prospects were as good as or better than those of their parents' generation, and among those studying accounting and finance, the level was 80%. As shown in **Exhibit 2**, finance was one of the top four preferred career areas both before COVID-19 emerged and at the time of the survey.

The continued interest in finance bodes well for the future of the investment industry, though investment professionals have varied educational backgrounds, and many organizations are beginning to hire those who leave school without completing their degree.[9] As shown in **Exhibit 3**, among Level I CFA Program candidates, the most prevalent undergraduate studies are finance (38%), economics (15%), and business (15%), while STEM subjects (science, technology, engineering, and mathematics) have risen to 14%.

Finance and engineering provide helpful technical and analytical skills to enable those who are new to the industry to delve into the technical aspects more quickly, and according to David Epstein in *Range: Why Generalists Triumph in a Specialized World*,[10] those who study economics are often best able to apply lessons learned across disciplines because economics

EXHIBIT 3. LEVEL I CFA PROGRAM CANDIDATES BY UNIVERSITY AREA OF STUDY, 1990 VS. 2022



Note: 1990 is the earliest year for which data are available.

Source: CFA Institute candidate database.

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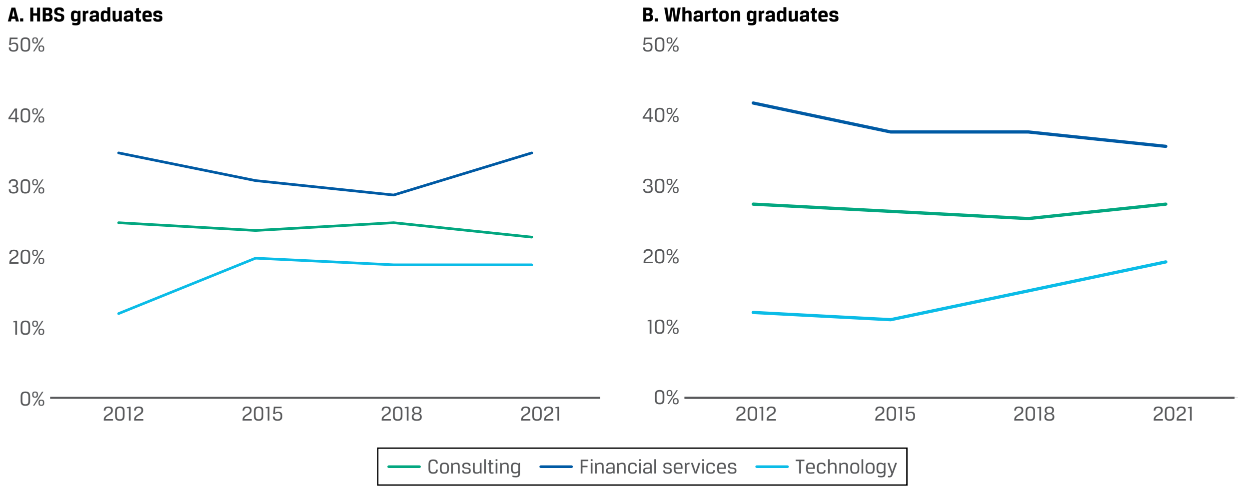
EXHIBIT 4. INDUSTRIES ENTERED AFTER GRADUATION



Sources: www.hbs.edu/recruiting/employment-data/trends/Pages/default.aspx; https://statistics.mbacareers.wharton.upenn.edu/full-time/.

as a field of study intersects with other fields and is an applied social science.

Currently, about 11% of CFA Institute members have an MBA. We examined employment trends at several highly ranked business schools that confer MBA degrees. Two examples are Harvard Business School (HBS) and Wharton, which provide data online about their graduates over the last decade. Finance has remained the most popular career choice among MBA graduates at these institutions, and currently, finance accounts for approximately 35% of graduates, as shown in **Exhibit 4**. Consulting is the next most popular career path, at 25% of graduates, while technology has grown to account for about 20% of graduates, up from only about 12% a decade ago. Similarly, graduates of the Hong Kong University of Science and Technology MBA program are more likely to enter financial services (40%) than any other industry, with 17% entering technology or fintech and only 13% entering consulting. In addition, 10% of these graduates join green energy, ESG, or chemical firms.

Within financial services, about twice as many HBS and Wharton graduates go to work at private equity firms versus investment management firms or hedge funds. This trend mirrors the market; the growth of private equity has outpaced that of public equities since 2002, and the number of private equity firms has more than tripled since 2005.[11] According to Harvard Business School's website, five times as many of its graduates now are hired by private equity or venture capital firms compared with investment banking firms. This is not only a US phenomenon: Nearly twice as many INSEAD MBA graduates are employed by private equity and venture capital firms compared with investment banks, according to the INSEAD website.[12]

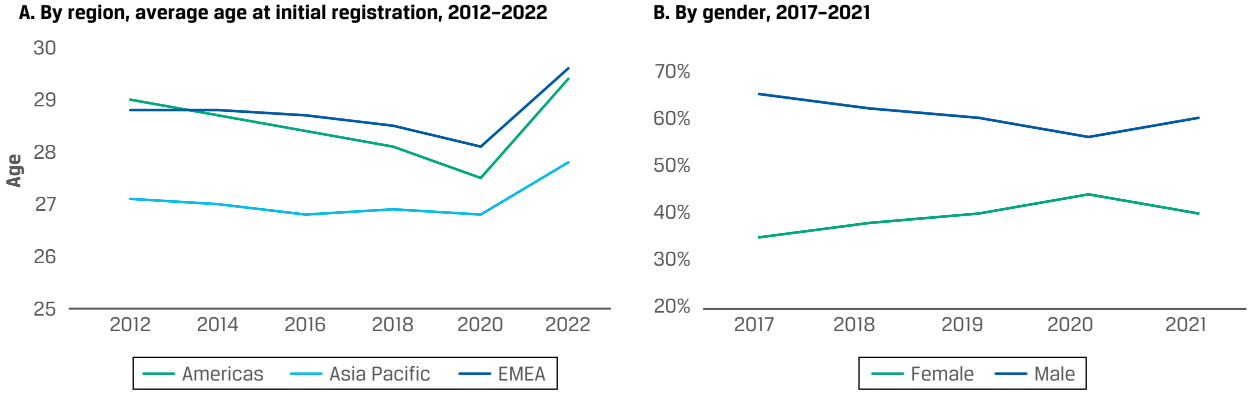
Changes to the Pipeline of Investment Professionals

The disruption caused by the pandemic decreased the amount of time available for learning and limited investment professionals' access to learning opportunities. **Exhibit 5** shows there were two noticeable changes to CFA Program candidate demographics during this time. The first was that the loss of a year of exam availability in 2020–2021 meant the average age of candidates upon entry to the CFA Program, which had been trending lower, increased in 2022. This change was most pronounced in the Americas region, although the average age of candidates remained highest in the Europe, Middle East, and Africa (EMEA) region. The second change was that the candidate gender gap widened in 2021, reversing a multi-year trend.

Research shows that women have disproportionally felt the effects of the COVID-19 disruption. McKinsey quantified the "double shift" phenomenon wherein full-time employed mothers assumed responsibility for significantly more housework and childcare than men. A McKinsey article found that mothers are 1.5 times more likely than fathers to spend an additional three or more hours per day on housework and childcare.[13] These commitments crowd out time for professional development outside of working hours.

Although many in the investment industry are in a financial position to afford high-quality dependent care, few options were available in the early days of the pandemic, and some professionals were forced to take a career break. Even in March 2021, we found that among CFA Institute members surveyed who had school-aged children, two-thirds of respondents had children who were still attending school remotely.[14]

EXHIBIT 5 CFA PROGRAM CANDIDATE TRENDS



Source: CFA Institute candidate database.

Summary Points

- **The disrupted pipeline:** The pandemic disrupted the educational progress of many investment professionals and widened the gender gap of CFA Program candidates to 60% men and 40% women.
- **The desire for diverse educational backgrounds:** Finance remains an attractive area of study for students, though the educational background of those pursuing investing as a career has become less focused on finance, with growth over time in the popularity of STEM subjects—science, technology, engineering, and mathematics. Over the last 30 years, the number of Level I CFA Program candidates with a finance degree or course of study fell from 43% to 38%. As the industry becomes more complex, investment firms are seeking more diverse backgrounds and a wider knowledge base from which investment expertise can be developed.
- **The attraction of private equity:** Following graduation, interest in joining private equity firms is particularly high. Among graduates of Harvard Business School, for example, five times as many now pursue private equity or venture capital compared with investment banking.

THE CHANGING SCOPE AND NATURE OF INVESTMENT ROLES

Next, we examine the types of roles investment professionals have, how much these roles are expected to change, and why. We also explore the impact various industry disruptors will have on jobs today and how those disruptions will shape the roles of the future. We examine common career paths and how additional learning and skill development can position someone for advancement and transitions.

Anticipated Changes to Investment Professional Roles

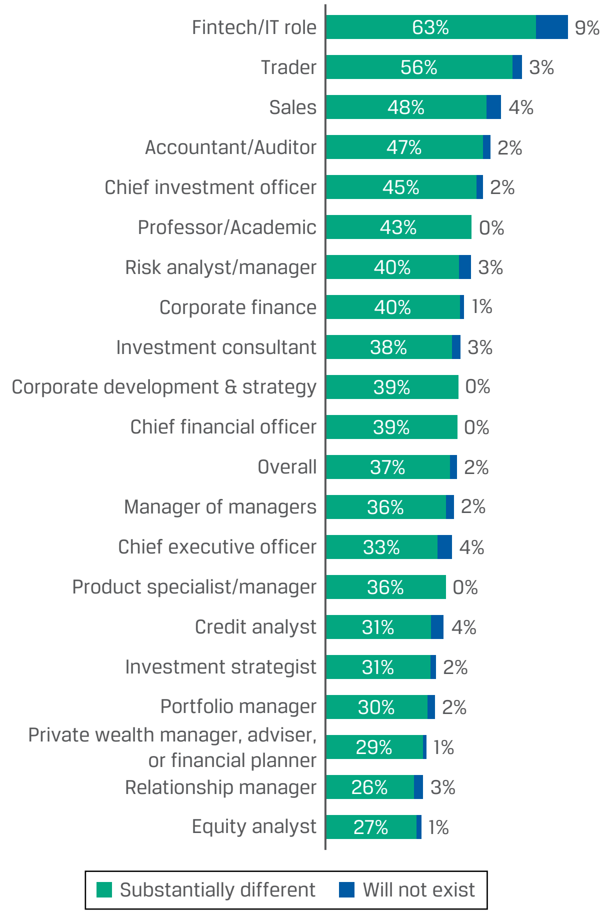
Overall, 37% of CFA Institute members surveyed believe their role will be substantially different in 5–10 years' time—which is similar to findings in 2019[15]—and 2% of respondents believe their role is unlikely to exist in 5–10 years.

As shown in **Exhibit 6**, fintech roles are, not surprisingly, the most likely to be substantially different in the next 5–10 years, given the pace of technological developments, with 63% of those in these roles expecting significant change and 9% expecting their role will not exist in the same way in the future. Traders and those in sales are the other roles where a majority expect significant change. Accountants and auditors, chief investment officers, and risk analysts are also above average in terms of anticipating change.

Some less common roles did not have a sufficient number of respondents to generate robust findings but did indicate a high likelihood of change. One example is ESG analysts; a majority of these respondents anticipated substantial change, and about 10% said the role would cease to exist in 5–10 years' time. Although there are many ways that this specialist role could develop different characteristics, it could become more mainstream and no longer be considered specialist if ESG expertise is diffused among investment professionals more broadly. Similarly, a majority of those in equity capital markets said there will be significant change, though about 10% believe their role will not change at all.

Among the roles surveyed in both 2019 and 2021 with robust sample sizes, the ones for which the expectations for change increased the most are chief investment officers and CEOs, as shown in **Exhibit 7**. It is perhaps not surprising that chief investment officers have had a large change in perspective given the combination of managing a hybrid team (in most cases) and managing new dynamics in the market related to an increased focus on the integration of technology and the rising demand for sustainability-focused investment products and strategies. CEOs also must adapt to manage their workforce, to attract and retain talent in a competitive marketplace, and to be the champion for the organizational culture. The role that has decreased the most in terms of expected change is private wealth manager. The threat of robo-advice as a significant disruptor has decreased in recent years because the robo-advice model has worked best in serving the mass affluent segment that traditional private wealth managers typically

EXHIBIT 6. EXPECTED CHANGE IN JOB FUNCTIONS



Note: Respondents answered the question, "Leaving aside any personal circumstances or your expected career progression, how different, if at all, do you think your current job role will be in 5–10 years' time?"

Source: CFA Institute Skills and Careers Survey.

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EXHIBIT 7. TRENDING JOB ROLE DISRUPTION

Note: Percentage point difference in responses to the question, "How different do you think your role will be in 5–10 years' time?" in 2021 versus 2019 (combines "I do not think the role I perform today will exist in 5–10 years" and "I expect it to be substantially different."

Source: CFA Institute Skills and Careers Survey.

cannot cover profitably. Consequently, robo-advisers do not compete in the same target market segment as traditional private wealth managers. In addition, those in client-facing roles have already experienced major disruption from COVID-19 and have had to adapt their communication mode and style. Those who have adopted technology effectively should be well positioned for the future and may therefore anticipate relatively less change over the specified time horizon, although some high-trust situations may require reverting to more traditional approaches.

How Industry Disruptors Will Affect Roles

Why are these roles likely to be disrupted? The most common answer among respondents is the impact of artificial intelligence and machine learning (see **Exhibit 8**). Half of respondents also cited the incorporation of sustainability considerations into investments and the changing regulatory landscape.

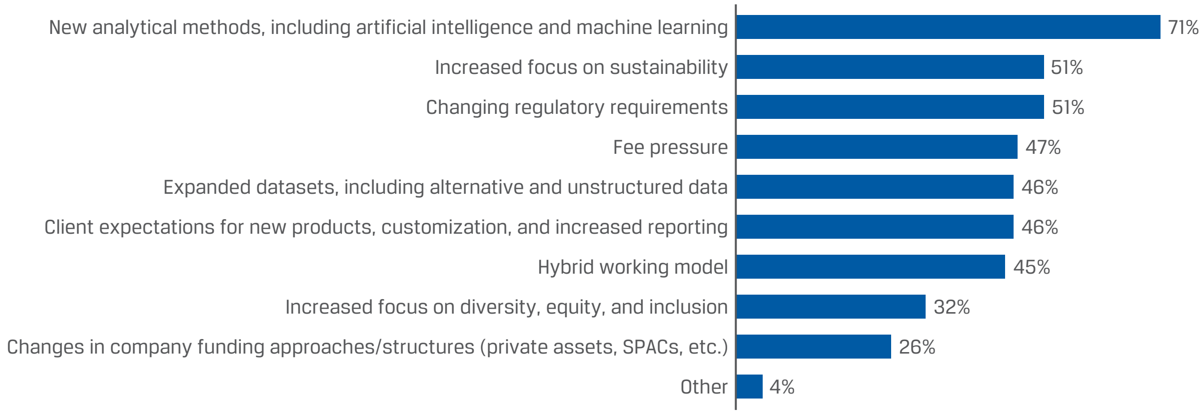
Expanded datasets, including those with alternative and unstructured data, are a potentially disruptive factor for nearly half of respondents, and we further examine the role of data in skills in the section "Investment Skills Needed for Success." Fee pressure, client expectations, and the hybrid working model also rank highly as disruptors as the business and operating models of investment firms change. These factors are likely to affect some roles more than others.

Disruptors in Detail

The respondents most likely to say that new analytical methods, including AI and machine learning, will be disruptors work in quantitative analyst or performance analyst roles. Those most likely to view sustainability as a disruptor are product specialists, investment consultants, managers of managers, investment strategists, and credit analysts. Regulatory changes are of highest concern among risk analysts and financial advisers. Fee pressures are an important disruptor according to financial advisers, managers of managers, those in sales, and portfolio managers.

Professionals in client-facing roles will need to reassess client service expectations given that the hybrid working model introduces more communication options and opportunities for firms to differentiate themselves. We surveyed industry leaders and individual investment professionals in early 2021, and at that time, both groups expected business travel to

EXHIBIT 8. RESPONDENTS' ANSWERS TO THE QUESTION, "WHICH OF THESE INDUSTRY DISRUPTORS DO YOU EXPECT WILL SIGNIFICANTLY CONTRIBUTE TO THE CHANGE? (SELECT ALL THAT APPLY)"



Source: CFA Institute Skills and Careers Survey.

be permanently reduced by 25%–50%.[16] Meanwhile, individual investors said they need in-person interaction with their adviser only in high-trust situations, such as at the start of a relationship and when strategic decisions need to be made.[17]

Because in-person interaction was limited during the pandemic and affected the due diligence process, some asset allocators chose to expand their relationships with existing managers during that time instead of hiring new managers.[18] The situation tested the adaptability of asset owners and asset managers alike. For more on this topic, see the report *Future of Work in Investment Management* and the 2022 CFA Institute Investor Trust Study.[19]

Investment Industry Career Paths

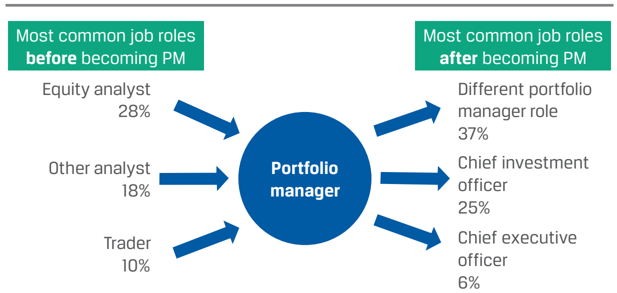
In this section, we turn to an examination of career paths and how investment professionals are looking to build their careers.

One common investment career path among CFA Institute members is from analyst to portfolio manager to chief investment officer. This developmental approach continues to be the primary leadership path for investment professionals. Of all respondents who have been portfolio managers, 46% progressed from an analyst role to a portfolio manager role. **Exhibit 9** shows the most common points of entry into a portfolio manager role and the most common destinations for outgoing portfolio managers.

Although these are common paths, we note that nearly half of portfolio managers did not follow one of these routes to the role, and many nontraditional pathways exist. Of those we surveyed, once in the portfolio manager role, many tended to stay in that role: 37% of portfolio managers had more than one portfolio manager role in their career. The average age of portfolio managers in our sample is 42. A quarter of portfolio managers went on to lead the investment business as a chief investment officer, and 6% became CEOs. These findings may be somewhat higher among our sample of CFA Institute members compared with the overall portfolio manager population. Only CEOs have a longer average tenure (nine years) than portfolio managers (nearly eight years), as shown in **Exhibit 10**. In comparison, common job roles before becoming a portfolio manager (as illustrated in Exhibit 9) tend to be 4.5–5 years in tenure, and most current or former portfolio managers in our sample entered that role as their second (42%) or third (28%) job.

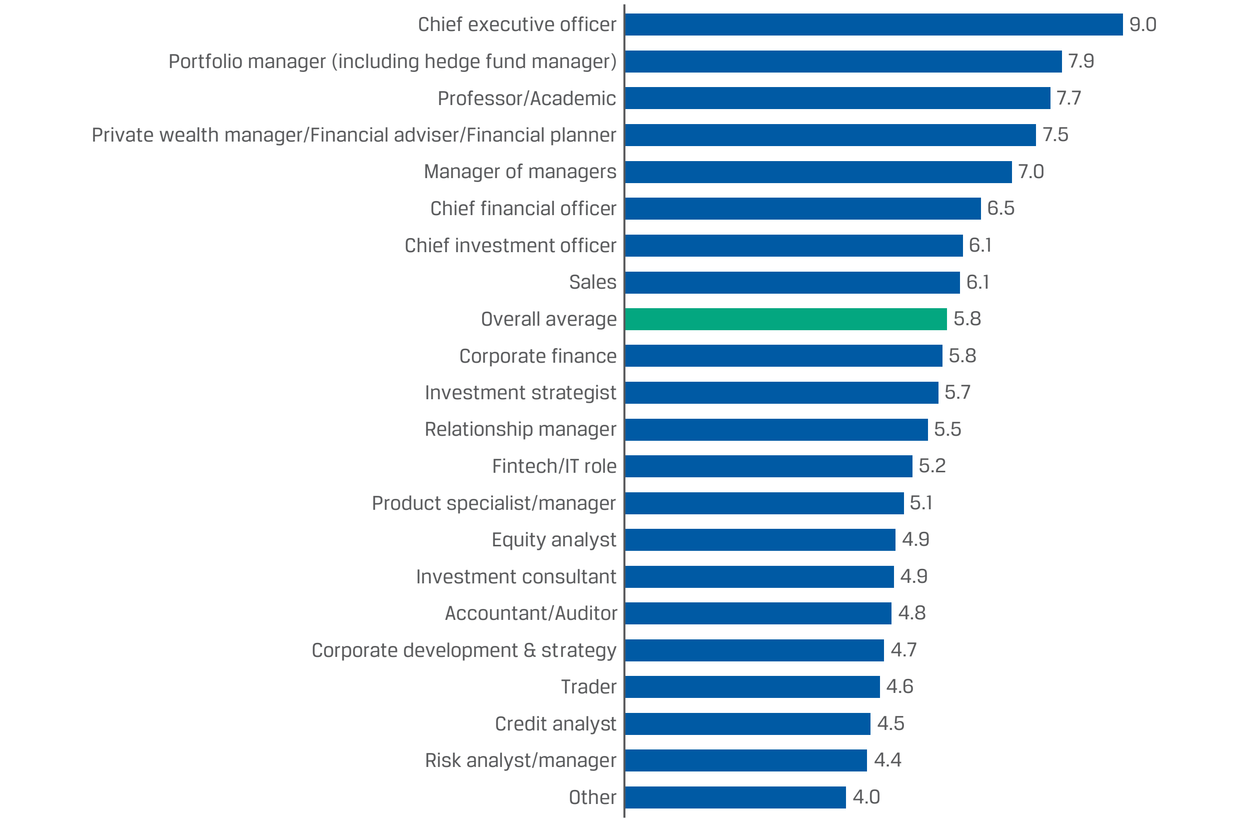
As shown in **Exhibit 11**, we found that the most common roles immediately before chief investment officer were portfolio manager (35% of chief investment officers, or CIOs, in our sample took this path), investment strategist (14% of CIOs), and equity analyst (7% of CIOs).

EXHIBIT 9. MOST COMMON JOB ROLES BEFORE AND AFTER BECOMING A PORTFOLIO MANAGER



Source: CFA Institute Skills and Careers Survey.

EXHIBIT 10. AVERAGE TENURE BY ROLE (IN YEARS), EXCLUDING CURRENT ROLE

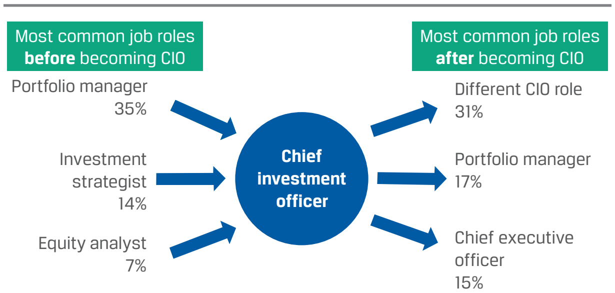


Source: CFA Institute Skills and Careers Survey.

Among CEOs, the most common preceding roles were chief investment officer (20% of CEOs), portfolio manager (18% of CEOs), and relationship manager (10% of CEOs). This dispersion reflects the mix of skills and knowledge needed in these roles, with both internal leadership requirements and outward-facing, client-focused responsibilities.

Private wealth managers and financial advisers appear to have the most varied career pathways to their respective roles: 12% had been equity analysts, 12% had been portfolio managers, 9% had been in sales, and 9% had been investment consultants. In combination, these pathways still represent only a minority of the possible routes to these roles. Given the growth of the wealth management business in markets with aging populations and a shift away from defined benefit pensions, private wealth is an area for growth with many available roles. CFA Institute has conducted internal analysis that indicates the number of private wealth professionals servicing high-net-worth clients (assets greater than USD1 million) globally is forecast to grow by more than 30% over the next 10 years.

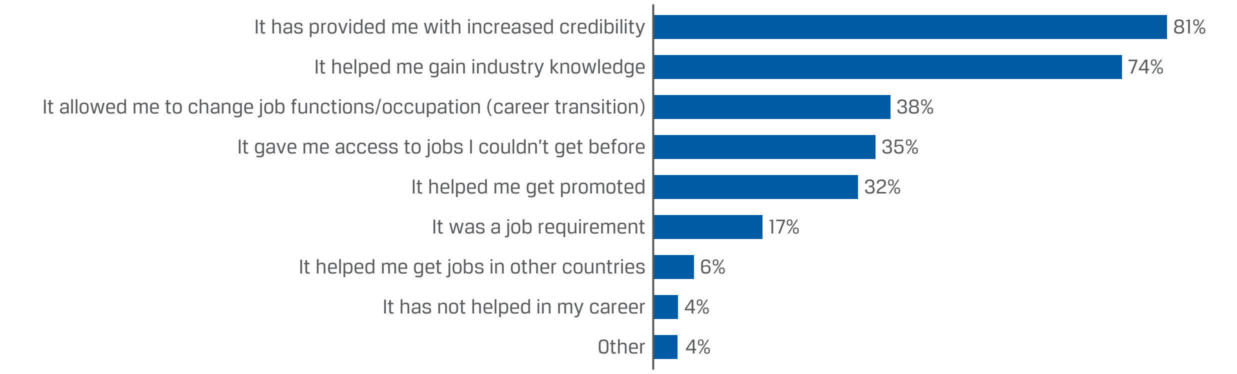
EXHIBIT 11. MOST COMMON JOB ROLES BEFORE AND AFTER BECOMING A CIO



Career Benefits of the CFA Charter

The CFA Program is designed to test knowledge and understanding of the fundamentals of investment analysis, valuation, portfolio management, and wealth management. Candidates who take the exams use them as a means to enhance their career trajectory. Overall, among the CFA charterholders we surveyed, 96% said the CFA designation has aided their career by providing increased credibility, greater industry knowledge, increased access to jobs and career transitions, or a

EXHIBIT 12. RESPONDENTS' ANSWERS TO THE QUESTION, "HOW, IF AT ALL, HAS HAVING THE CFA DESIGNATION HELPED YOUR CAREER? (SELECT ALL THAT APPLY)"



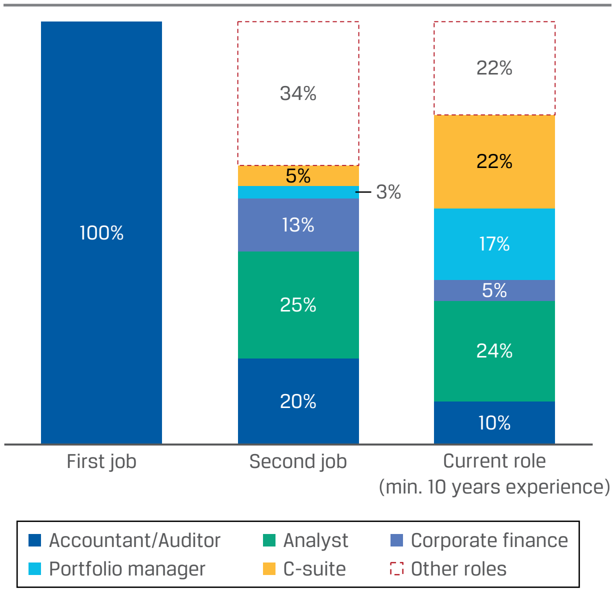
Source: CFA Institute Skills and Careers Survey.

promotion or helped their career because it was a job requirement, as shown in **Exhibit 12**.

As an example of how the CFA charter may be able to facilitate career transitions, about 8% of members surveyed told us that their first role was in audit or accounting. By their second role, only 20% of those were still in audit or accounting, as shown in **Exhibit 13**; 25% had transitioned into an analyst role, and 13% had transitioned into corporate finance. Within 10 years, only 10% of the initial cohort were still in audit or accounting, and the most common roles were analyst (24%), C-suite functions (chief executive officer, chief investment officer, or chief financial officer, at 22%), and portfolio management (17%).

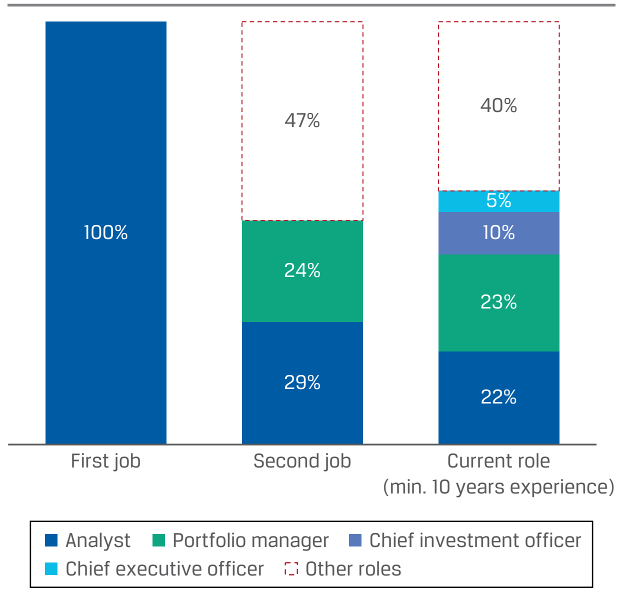
Exhibit 14 shows that those in analyst roles, however, are more likely to follow traditional paths of advancement. Although some choose to be an analyst for their entire career and there are different levels of seniority within that role, of those whose first role in finance was at the analyst level, only 29% were still in that position for their second job, whereas 24% had become portfolio managers. That trend continues into the third role, with a further reduction of the number of analysts and the emergence of CIOs (8%). Looking at the current roles of the analyst cohort with at least 10 years

EXHIBIT 13. CAREER PATHS FOR CFA INSTITUTE MEMBERS WHO STARTED AS ACCOUNTANTS/AUDITORS



Source: CFA Institute Skills and Careers Survey.

EXHIBIT 14. CAREER PATHS FOR CFA INSTITUTE MEMBERS WHO STARTED AS ANALYSTS



Source: CFA Institute Skills and Careers Survey.

of experience, only 22% are still analysts, while 23% are portfolio managers, 10% are CIOs, and 5% are CEOs.

A New Perspective on Career Flexibility and Breaks

Although many of the paths described thus far may appear to be linear, career paths are likely to be more circuitous in the future, including in the investment industry.[20] The primary cultural influences are from the technology sector (via fintech) and entrepreneurs (particularly in private equity boutiques). A roundtable participant noted that there is more of an independent contractor mentality at investment organizations in the hybrid work era, since remote work can strain loyalty in both directions: Many employees feel less connected to the company and its culture, and many employers face higher turnover rates than in the past. This situation could lead to different types of investment career paths or organizational structures.

One approach is a portfolio career, now referred to increasingly as "polywork," where individuals have multiple jobs simultaneously. As an example, Peter Johnston, the founder of the social network Polywork, surveyed 1,000 US-based workers aged 21–40 and found that nearly two-thirds already had more than one job or hoped to in the future. They seek to work "in multiple ways at once on their own terms," he said.[21] In our roundtables, we found that this mindset was ingrained in people in that age range but not limited to them. In the most extreme version, portfolio careers allow people to spend time at different firms and in different roles, though such situations most likely occur toward the end of someone's career and are not yet widespread in the investment industry.[22] Career breaks have become more common, especially since the pandemic forced many into taking a hiatus, and human resources leaders now discourage hiring managers from viewing career breaks or "resume gaps" negatively since this approach could eliminate otherwise qualified candidates. Acceptance of more agile career management and the move to hybrid work may also encourage those on career breaks to return sooner.

The Role of the Employer

Many organizations have created skill development opportunities outside employees' areas of expertise that will enable them to more easily transition to roles that are more broadly scoped. These opportunities may be rotational programs or job exchanges in which departments exchange some personnel with one another. Roundtable participants discussed ways to increase their employees' competencies and career mobility. Some had shifted to a management model in which they built working groups based on the mix of competencies that the group needed for a particular set of tasks. Their rationale was that the groups would be less about personalities and more agile as a result. Another successful example was the creation of special teams brought together from within a large function, connecting employees who would not typically work together and who had very different perspectives. These groups were very quickly able to work together well. Still, participants noted it is difficult to offer internal growth opportunities that provide as much learning as someone would gain from the experience of changing firms, since doing so generally involves significant initial learning opportunities.

Some roundtable participants also noted that corporations outside the financial services industry are typically much better at advertising the training and support they offer their employees and that the investment industry could do more to highlight the value of employee training and support they provide. Promoting training and support programs more could help with both staff retention and attracting new hires. There is an opportunity for the industry to reset and reframe its focus on training and development.

Summary Points

- **The impact of new analytical methods on roles:** More than a third of CFA Institute members surveyed believe the role they perform will be substantially different in 5–10 years' time and the biggest disruptive factor will be new analytical methods, including artificial intelligence (AI) and machine learning.
- **The pathway of traditional investment careers:** We mapped the career progression of CFA Institute members and found the most common job role transition is from analyst to portfolio manager to chief investment officer. Forty-six percent of portfolio managers previously were analysts, and among portfolio managers, 25% of our sample went on to become chief investment officers and 6% became CEOs.
- **The outlook for less traditional investment career paths:** Career paths are becoming more varied and are characterized by more career breaks and greater flexibility. The primary influences on these career path developments are from the technology sector (via fintech) and entrepreneurs (particularly private equity boutiques).

INVESTMENT SKILLS NEEDED FOR SUCCESS

A competency model is a collection of knowledge, skills, abilities, and other characteristics needed to perform a job well.[23] Such models can be useful in any discipline, and investment organizations are increasingly creating custom competency models to manage their human capital and provide a roadmap for training and development. In dynamic fields, such as investing, in which the knowledge and skills needed by professionals for mastery can change quickly, it is important to differentiate the foundational elements necessary for minimum competence and emerging skills. Developing areas will often be better understood in the context of established—if imperfect—theories or practices.

Individuals from one organization at a roundtable had recently reviewed their competencies for different roles, with a focus on adaptability, digital expertise, and communication skills. They expect employees to learn on a continual basis, and they have accelerated timeframes for career development and skill building, urging investment professionals to focus on 12- to 18-month goals. They created career paths that are customized and may include many lateral moves. This organization is also coaching leaders and helping them coach their teams.

The CFA Institute Career Skills Framework is a competency model CFA Institute developed over the past several years as a tool to identify the activities practitioners undertake in the investment process and the technical, ethical, and professional and business competencies necessary to succeed. It is more action oriented than most competency models because it uses an activity lens to examine knowledge and skill requirements and is focused on skills needed for career progression. It is structured by occupation and is updated regularly with input from practitioners from around the world. See the appendix in the online section "Related" for the current version.

Progression of Skill Types

In broad terms, we have identified four types of skills needed throughout one's career: technical skills, soft skills, leadership skills, and T-shaped skills.

1. **Technical skills** include the most commonly covered capabilities in undergraduate and graduate degree programs and form the foundation of the CFA Program—for example, financial analysis, asset classes, and portfolio management skills. Technical skills also include more in-depth and emerging skills, such as ESG analysis and the use of artificial intelligence and machine learning techniques. Developing these technical skills is most important on a relative basis at the start of one's career.
2. **Soft skills** include skills related to communication, collaboration, relationship management, empathy, and creativity. Often, industry leaders report that soft skills are difficult to find in the industry, and this area deserves ongoing attention and growth for most investment professionals.[24]
3. **Leadership skills** include the abilities to articulate mission and vision, instill an ethical culture, manage crises, and maintain good governance. These skills become increasingly important over one's career trajectory.
4. **T-shaped skills** are a combination of deep knowledge in a single domain and wider knowledge of other fields and the ability to connect them. These are generally the most valued type of skills according to hiring managers.[25] T-shaped skills include being able to connect across disciplines, being systems savvy, understanding larger organizational contexts, having situational fluency/adaptability, cultivating a valuable network of contacts, and understanding and leveraging diverse perspectives. Individuals with T-shaped skills are especially helpful to organizations because of their ability to ask the right questions in the right context. In the section "Investment Skills Needed for Success," we further examine T-shaped skills in the context of the spectrum of domain expertise from specialist to generalist.

Exhibit 15 is provided for illustrative purposes to demonstrate how a typical career might progress in terms of skill development, with an emphasis on technical skills at the beginning and an increasing emphasis on the other three categories of skills as individuals advance along their career journeys.

Technical Skills

Given the wide range of technical skills that are useful in the investment industry, this category garners the most attention in skills discussions, and we will describe both the foundational skills and emerging skills in this category.

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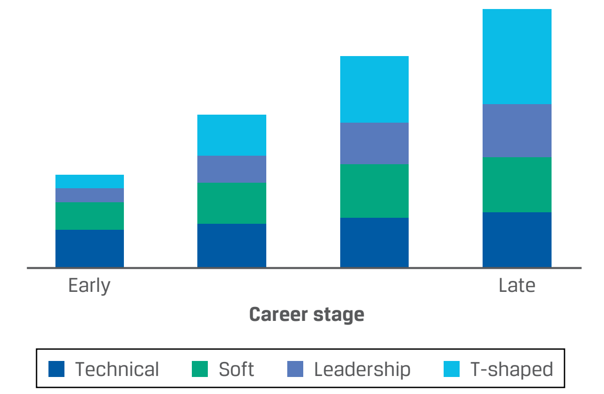
EXHIBIT 15. IMPORTANCE OF SKILLS IN CAREER PROGRESSION



Source: CFA Institute, *Investment Professional of the Future*.

The CFA Program is the industry benchmark for foundational investment knowledge, with a focus on investment analysis, portfolio management, and wealth planning. Its contents are regularly reviewed through a process called practice analysis, which gathers input from investment professionals to evaluate how the variety of topics should be balanced in the CFA Program curriculum, through a survey of CFA Institute members and discussions with an advisory committee.

Exhibit 16 provides examples of changes to the CFA Program in key topic areas since it began. In addition to the topics listed, there has been a move toward more coverage of real-world applications and examples in the curriculum, versus an emphasis on theory.

EXHIBIT 16. EXAMPLE CFA PROGRAM INNOVATIONS BY DECADE

Topic Area	1960s	1970s	1980s	1990s	2000s	2010s
Industry and company analysis	Impact of price controls	Labor unions	Porter's five forces	Industry classifications	International Financial Reporting Standards	Alternative data
Ethics	Nepotism	Insider trading	Front-running	Corporate governance	Enron scandal	Stewardship
Financial analysis	Time value of money	Capital budgeting	Leveraged buyouts	Modeling	Accounting shenanigans	Data visualization
Valuation	Capital asset pricing model	Black–Scholes–Merton	Yield to maturity	Economic value added	Enterprise value, multiples	Factors
Investment strategy and process	Yield calculations	Anomalies	Factor investing	Hedge funds	Multi-asset investing	Passive investing
Portfolio execution	Stock picking	Mean–variance optimization	Screening	Portfolio optimization	Electronic and high-frequency trading	Market fragmentation
Performance measurement and risk management	Sharpe ratios	Portfolio insurance	Performance attribution	Value at risk	Global Investment Performance Standards	Risk budgeting
Client management	Investment policy statements	Finance education	Values	Portfolio reports	Client list ethics	Social network updates
Financial planning	Defined benefit plans	401(k)s	Defined contribution plans	Monte Carlo simulation	Economic balance sheet	Robo-advice

EXHIBIT 16. EXAMPLE CFA PROGRAM INNOVATIONS BY DECADE (*CONTINUED*)

Topic Area	1960s	1970s	1980s	1990s	2000s	2010s
Wealth and risk management	Concentrated positions	Precious metals	Executive stock options	Stress testing	Risk attribution	Scenario analysis
Data analytics and visualization	Mathematics in finance	Regression in finance	Data vendor references	Excel shortcut references	Model testing techniques	Machine learning/ artificial intelligence
The world economy	Trade deals	Oil dependence	Foreign direct investment	Emerging markets	Quantitative easing	Global financial crisis
Instruments and products	Convertibles	Municipal bonds	Mortgage-backed securities	Exchange-traded funds	Credit default swaps	Cryptocurrencies
ESG investing	na	na	Negative screening	Socially responsible investing	Activism	ESG integration
Behavioral awareness	Anomalies	Loss aversion	Black Monday	Dot-com mania	Behavioral finance	Challenges to the efficient market hypothesis
Regulatory compliance	Securities law	ERISA	Consumer protection	Anti-money-laundering	Sarbanes–Oxley	Know-your-customer standards

Notes: na = not applicable. The exhibit compares the CFA Program curriculum over complete decades only. The 2020s decade is omitted to avoid invalid comparisons.

The 2021 practice analysis process yielded the topics in **Exhibit 17** as important areas of study for foundational competence (out of 88 topics). There is an ongoing utility of foundational knowledge, and these topics are likely to endure.

Exhibit 17 also lists 10 emerging areas of foundational knowledge from the practice analysis process (out of 20 topics surveyed). Macro factors, such as inflation, are prominent, as are AI and regulation. ESG integration is also listed. Climate change and cryptocurrencies were less highly rated in the context of this generalist program; however, there are opportunities for specialization in these areas.

While the CFA Program remains a generalist credential, the added complexity of investment practices has meant the addition of more specialized topics. This balance is articulated in the "Guide to 2022 CFA® Program Curriculum Changes"[26] in relation to machine learning:

The machine learning reading and the new case studies are designed to provide the generalist investment practitioner with the essential information, including key terminology, needed to interact effectively with machine learning specialists. The reading is designed to equip candidates with a basic understanding of the types of investment problems that machine learning can address, explain how the algorithms work, and provide the vocabulary necessary to interact with machine learning and data science experts. Although learners need not master the details and mathematics of machine learning, practitioners can play an important role in the implementation of these techniques by sourcing model inputs, helping interpret model outputs, and translating outputs into investment actions that increase the value of portfolios.

EXHIBIT 17. 10 MOST IMPORTANT FOUNDATIONAL COMPETENCE TOPICS AND EMERGING TOPICS ACCORDING TO 2021 CFA PROGRAM PRACTICE ANALYSIS

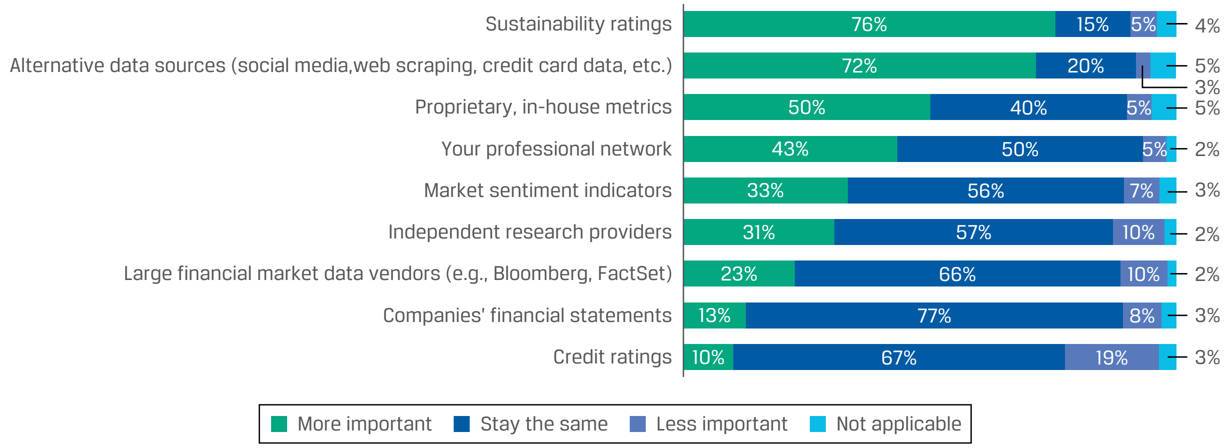
Important Topic Areas for Foundational Competence	Most Important Emerging Topics
Time value of money	Inflation risk and protection
Asset allocation	AI and big data applications in investment
Ethical practices	Systemic risk factors and considerations
Analysis of financial statements	Impact of regulation on the investment process
Types of fixed-income securities	Developments and opportunities in private capital
Portfolio construction and revision	ESG integration into the investment process
Equity portfolio management	Developments in ESG regulations and standards
Valuation of individual equity securities	Developments and opportunities in real assets
Fundamental fixed-income analysis	Impact investment strategies and approaches
Analysis of credit risk	Risk-factor asset allocation approaches and smart beta investment strategies

Source: Candidate Body of Knowledge survey of CFA Institute members, 11–25 October 2021 (*N* = 3,085).

One area that will develop further is data sources, availability, and limitations. The 2022 practice analysis report[27] noted that "practitioners need to develop knowledge of the range of data sources available and their limitations, . . . recognize the lack of harmonization in how information is reported, and know how to source . . . primary data rather than relying on secondary sources. Developing judgment in determining what data are relevant and material is critical. An understanding of the limitations and variability of private company ESG disclosures (e.g., self-disclosure, level of auditing) is increasingly important."

We surveyed CFA Institute members to see how sources of investment decision making are changing, and as we demonstrate in **Exhibit 18**, respondents were most likely to say that sustainability ratings and alternative data sources will grow more important. Respondents also expect a proliferation of proprietary

EXHIBIT 18. RESPONDENTS' ANSWERS TO THE QUESTION, "HOW IMPORTANT DO YOU EXPECT EACH OF THE SOURCES OF INFORMATION TO BE IN THE FUTURE FOR YOUR INVESTMENT DECISION MAKING?"



Source: CFA Institute Skills and Careers Survey.

data measures. We note, however, that the exhibit illustrates only the expected change in importance of different information sources, not their absolute importance or expected usage overall.

Insights from CFA Institute Practice Analysis

The practice analysis team determined that practitioners will need to develop an understanding of how ESG scores are created and why differences exist among providers. Potential use cases for ratings and materiality frameworks, such as explaining the role of ESG ratings or materiality maps, act as a starting point in the analysis process. Practitioners must also understand the challenges in using these ratings and maps, such as when undertaking cross-sector analysis (where comparability is an issue) or in cases in which an investment time horizon differs significantly from that of the rating agency analysis.

Practitioners should also be able to describe how to integrate climate considerations into investment strategies, be aware of processes for constructing portfolios that are aligned with the Paris Agreement or that meet other regulatory targets, and be able to describe the types of resources used to enable this effort. For example, it is essential to understand how data providers can be used to assess key performance indicators relating to climate, carbon transition scores, carbon emission data, and stress testing.

Within investment roles, our industry discussions indicate that there are more-defined pathways developing with respect to technical skills, primarily between fundamental, bottom-up portfolio construction and top-down quantitative approaches.

Practitioners highlighted how "quantamental" approaches are increasingly relevant in the portfolio selection and construction process. Portfolio managers and quantitative analysts are working to define various quantitative and fundamental selection criteria, which then feed into the portfolio selection and optimization processes. We focused on this combination of human and alternative intelligence in our research report "AI Pioneers in Investment Management."[28] Most portfolio managers are fundamentally driven; however, they increasingly appreciate the additional insight provided by quantitatively driven analytical models. Quantamental strategies provide scope for portfolio managers to still exercise judgment when they make a portfolio decision.

Machine learning analysis was viewed by practitioners as being more suitable for short-term or medium-term investment strategies. In the long run, discretionary portfolio managers still must conduct fundamental analysis. Use cases for machine learning (ML) include optimization, factor analysis, fraud detection, scoring models, and security selection with supervised and unsupervised ML. Systematic and ML investment approaches may help remove emotions from the investment process, but they come with the challenges of communicating systematic (as well as black-box) approaches to clients. It is important to be able to explain and interpret such approaches.

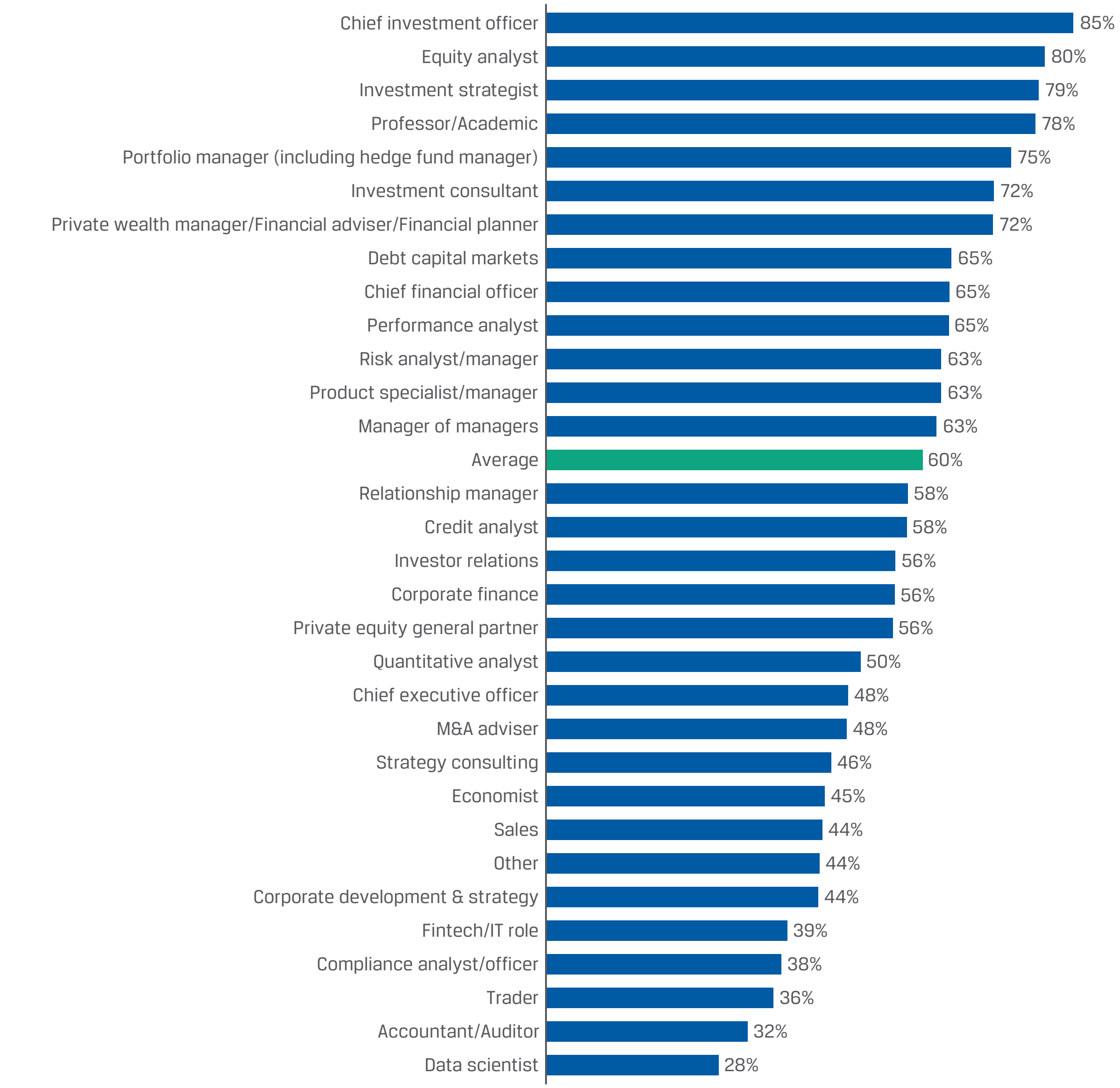
ESG and data analytics are competency areas that have been integrated across the CFA Program curriculum. This more holistic and system-wide approach can improve analytical judgments.

To assess the usefulness of the curriculum content, we asked survey respondents how useful the CFA Program material has been in each of the professional roles they have held. On average, across roles, 60% said the material was essential or very useful and just 5% said it was not useful. **Exhibit 19** shows that chief investment officers and equity analysts were most likely to rate the usefulness very high, indicating that this foundational knowledge was useful throughout their careers, providing building blocks for future knowledge.

Soft Skills

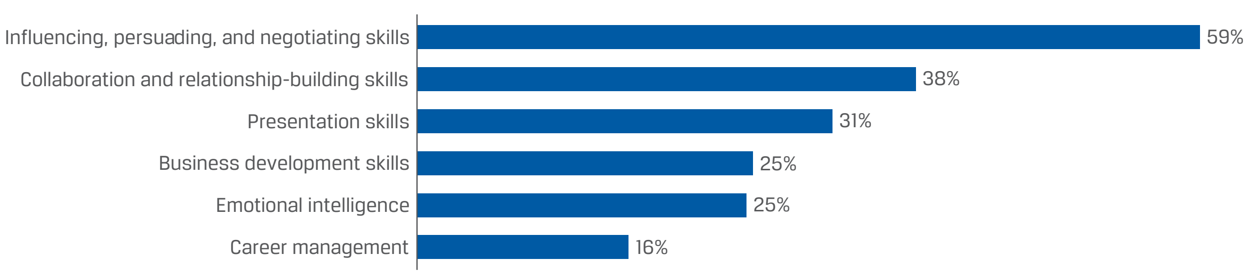
Soft skills, unlike technical skills, transcend roles, and in an industry known for technical and quantitative prowess, this is a very different area for professional growth. These competencies are similar to personal and business skills in the CFA Institute Career Skills Framework. Of the skills we included in our survey (see **Exhibit 20**), the most important soft skill category is influencing, persuading, and negotiating. This was the only skill category that a majority viewed as very important, and there are direct applications to the investment industry, such as convincing team members to buy or sell a security or change an asset allocation based on one's analysis. Soft skills are also useful in deal transactions and when working with clients. In fact, most of the other skills listed have an element of influencing embedded in them. The next most important category was collaboration and relationship-building skills, which again are useful both in interactions with colleagues and for external-facing roles.

EXHIBIT 19. RESPONDENTS' ANSWERS TO THE QUESTION, "HOW USEFUL HAS THE CFA PROGRAM MATERIAL BEEN TO YOU IN YOUR PROFESSIONAL ROLES?" (ESSENTIAL AND VERY USEFUL)



Source: CFA Institute Skills and Careers Survey.

EXHIBIT 20. RESPONDENTS' ANSWERS TO THE QUESTION, "WITHIN SOFT SKILLS, WHICH OF THESE SKILLS IS MOST IMPORTANT FOR YOU TO BUILD? (SELECT UP TO TWO)"

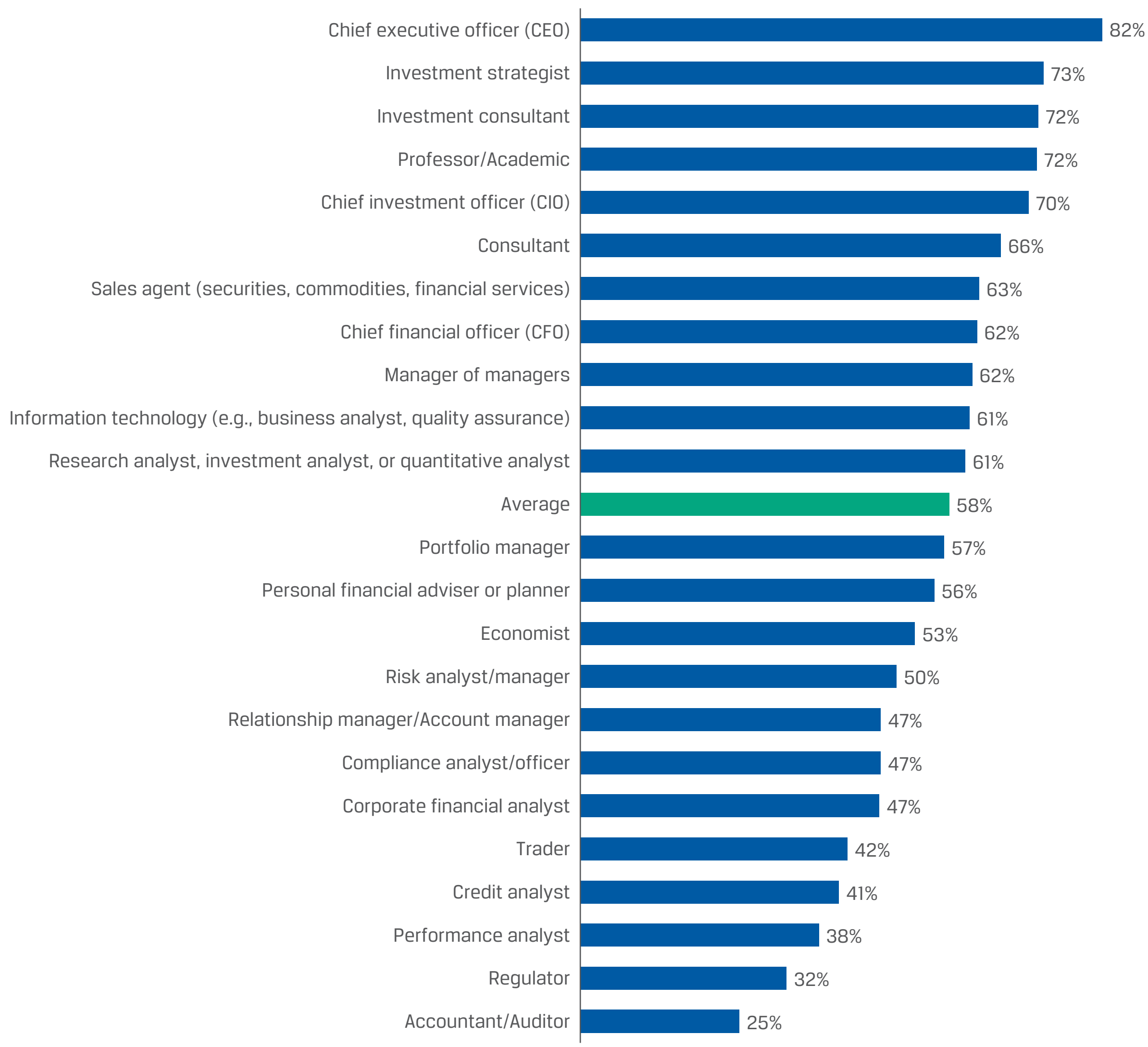


Source: CFA Institute Skills and Careers Survey.

Some of the skills that have become more important in the new world of work include more efficient time management; being effective at influencing, persuading, and negotiating; direct communication; and being more resourceful. The new working dynamic requires more planning and intentionality, including skill building. The findings in Exhibit 20 seem to imply that investment professionals are not concerned about actively managing their careers, though they do seek ongoing learning. Several roundtable participants mentioned that their organization has provided training on conducting video presentations, which is a common skill gap in the industry given the relatively recent emphasis on video calls. Our prior research found that of the different skills listed, soft skills were the ones that hiring managers had the most difficulty finding in the investment industry.[29]

Collaboration is an area where in-office interaction is still valued, especially when a significant amount of time is needed to solve a problem or to brainstorm ideas. A majority of survey respondents[30] agree (56%) or strongly agree (25%) that it is important for their role to brainstorm with others. Many industry leaders are concerned that the hybrid work environment hinders creativity.[31] Among the CFA Institute members surveyed, 58% say their work involves a high degree of creativity. **Exhibit 21** shows how this percentage varies by job role. CEOs are most likely to say their role has a high degree of creativity (82%), followed

EXHIBIT 21. RESPONDENTS' ANSWERS TO THE QUESTION, "MY WORK INVOLVES A HIGH DEGREE OF CREATIVITY" (STRONGLY AGREE AND AGREE)



Source: Supplemental CFA Institute Member Survey.

by investment strategists (73%). Those least likely to require creativity (less than 40%) hold process-oriented roles, such as accountant/auditor, regulator, and performance analyst.

Leadership Skills

The most important leadership skill, according to industry leaders, is the ability to articulate mission and vision,[32] and the more industry dynamics change, the more this skill is needed. The disruption to work has meant that leaders need to be steadfast in purpose while motivating their teams in new ways. The CFA Institute report *Future of Work in Investment Management: Changing Organizational Cultures* provides guidance for senior executives concerned with building more effective, cohesive, and purposeful cultures and teams as they address the realities of the future of work.

One of the most common observations in the roundtables and interviews we conducted was that managers and leaders will need to adapt their skillsets to succeed in a more flexible and dispersed work environment. Among the investment professionals we surveyed, only 58% are confident in the ability of leaders to manage teams in a hybrid work environment.[33] Many investment organizations are providing related training, though much will be learned through experience.

One of the characteristics that is more valued now is the ability to handle uncertainty. A risk manager described how he would watch and listen to the trading floor to sense what levels of risk were evident; if the floor was too loud or too quiet, it was a sign of trouble. These signals are now largely unobservable.

Leaders also need to recognize that it is often more difficult to build empathy and emotional intelligence in a remote or hybrid setting. As noted in the report *Future of Work in Investment Management*, "Leaders' responses—whether good or bad—to the stresses of the pandemic in their employees' lives will have lasting effects on relationships" (p. 27).

Executives in general have become more tech-savvy and self-sufficient during the COVID-19 disruption to work and in some cases may find that simple administrative tasks are easier to retain than to delegate. In *Investment Professional of the Future*, we recommended that all investment professionals needed to become more tech-savvy, and doing so has become even more important in the last two years. We explore specialized technology skills further in the section "Building Effective Teams."

T-Shaped Skills

T-shaped skills are a combination of deep knowledge in a single domain and wider knowledge in other fields and the ability to connect them, and it takes time to acquire enough knowledge to have these skills. Although technical skills are often the focus, when industry leaders are asked what the most important skills for future success will be, they are more than three times as likely to say T-shaped skills than technical skills.[34] Those in the later stages of their career are more likely to have T-shaped skills, but there are ways to build them intentionally.

T-shaped skills require diverse knowledge, and the most practical ways to build these skills are to have a diverse set of professional colleagues to learn from and to read a wide variety of books and articles. These two concepts allow individuals to practice applying domain knowledge to other areas of life. A list of book recommendations by entrepreneurs and investors illustrates that leaders tend to read on a wide range of subjects.[35] This knowledge accumulation builds a foundation that can enable connections and new ideas. When asked how to become smarter, Warren Buffett famously gave the advice to read 500 pages a day (as he does of company reports) because "that's how knowledge builds up, like compound interest."[36]

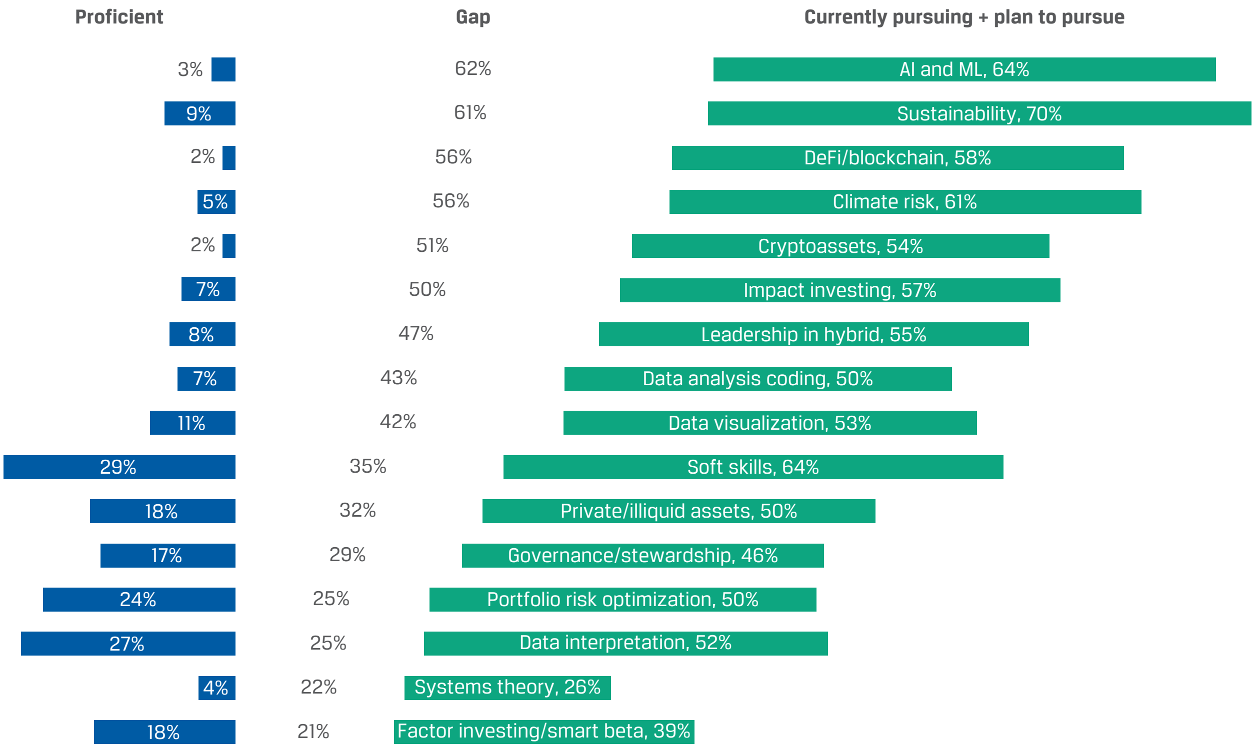
In the section "Building Effective Teams," we explore T-shaped skills further and compare them to T-shaped teams.

Skill Availability and Areas for Development

We analyzed 16 trending skill areas to determine which skills investment professionals are pursuing currently, which they plan to pursue, and in which they already are proficient. From our survey, we found that soft skills are the skills the largest number of respondents say they are proficient in, though this proportion of respondents is still only 29%, reaffirming the perception of hiring managers that there is a need for more soft skills among industry professionals. The next most prevalent skills are data interpretation (27% of respondents said they are proficient) and portfolio optimization (24% said they are proficient).

The skills that most investment professionals are interested in learning more about include sustainability (70%), artificial intelligence and machine learning (64%), and soft skills (64%). The largest gaps between demand for learning and supply of talent are in artificial intelligence/machine learning and sustainability, followed by decentralized finance (DeFi)/blockchain and climate risk, as shown in **Exhibit 22**.

EXHIBIT 22. SUPPLY AND DEMAND SKILLS GAPS



Source: CFA Institute Skills and Careers Survey.

As we look more closely at the interest in pursuing these skills, it is interesting to note the desire for learning compared with the action taken to accomplish it. As in many professions, investment professionals are interested in learning but are time constrained. The "saying/doing ratio" in **Exhibit 23** indicates how many of those who are interested in gaining a skill or knowledge have already started to pursue it. The larger this ratio, the more potential there is to increase learning in the industry by providing relevant and accessible educational material. For example, AI has a ratio of 3.0, meaning that for every person currently pursuing this skill, there are three more who intend to do so. At the other end of the spectrum, soft skills is the only area where the majority of respondents interested in it are currently pursuing it. Soft skills are an example of a type of skill that can be gradually practiced during the typical workday and for which incremental improvements may not always require formal or structured training. Of all the skills we included in both the 2019 and 2021 surveys, only factor investing decreased in prioritization according to the saying/doing gap.[37]

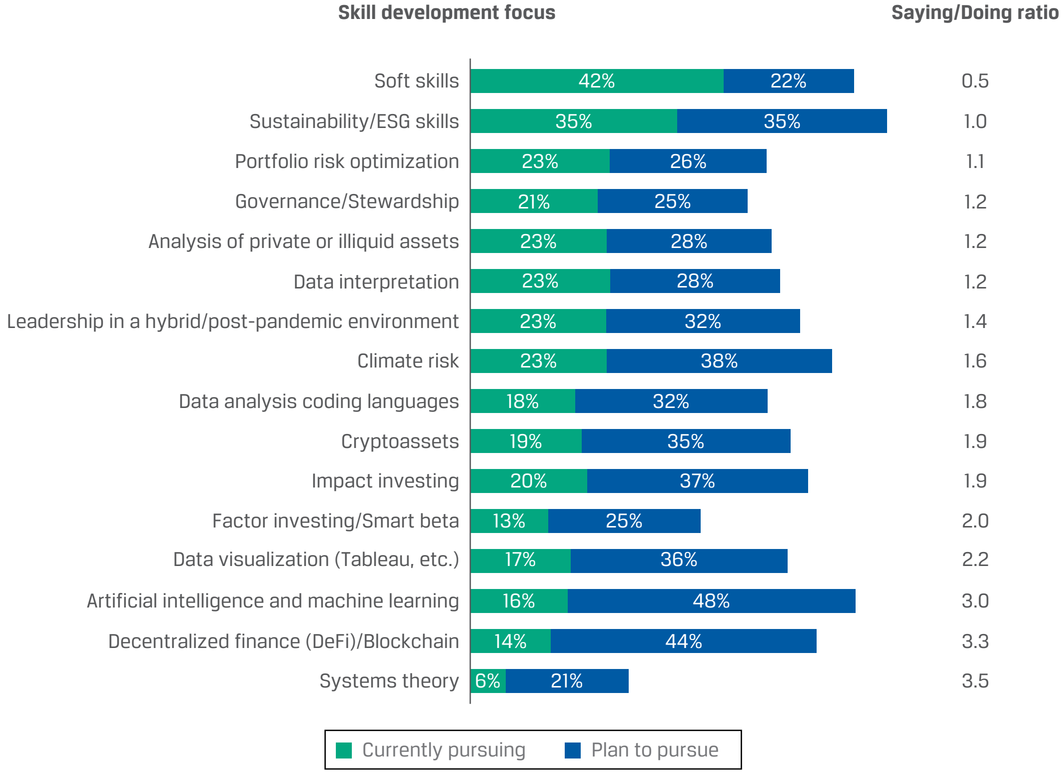
In our roundtables, participants confirmed that demand for ESG upskilling is high, and because it is a wide-ranging field, organizations need to consider which groups of employees to prioritize for training and the different needs across investment staff, risk managers, and compliance personnel. Indeed, **Exhibit 24** shows that sustainability/ESG skills and data visualization increased the most in terms of demand in the last two years.

Typically, we find that interest in learning new skills decreases over time and that those late in their careers have less time to leverage new knowledge and are likely to have accumulated a larger base of existing knowledge. It is therefore interesting to see in **Exhibit 25** that when it comes to AI and ML, about 20% of respondents are currently pursuing increased knowledge in these areas, regardless of career stage. More than twice as many intend to pursue such learning later. This is a strong indicator of how much respondents anticipate that AI will change the investing landscape.

Components of Employer Demand

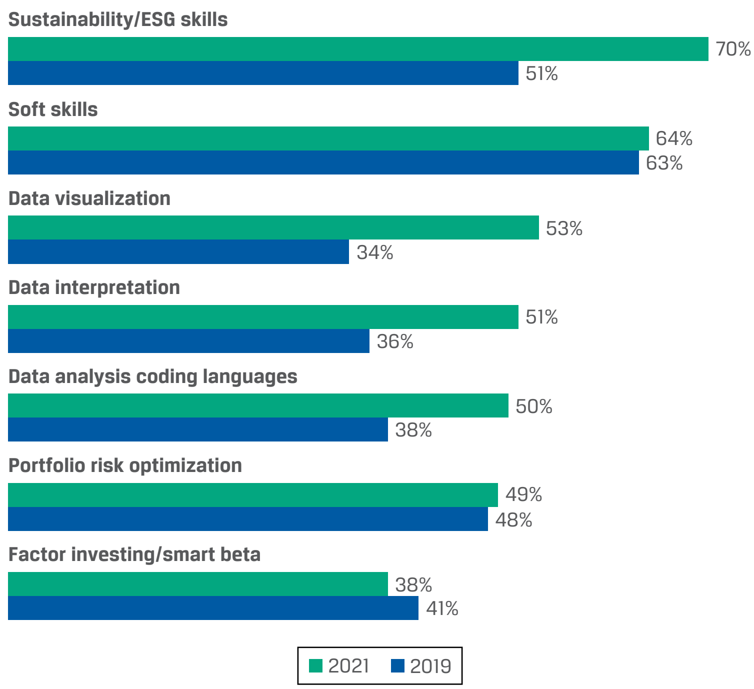
Finding top talent is a major concern for half of investment firm leaders, and a third say it is a moderate concern, as shown in **Exhibit 26**.

EXHIBIT 23. SAYING/DOING RATIO: COMPARISON OF THOSE WHO PLAN TO PURSUE A SKILL VS. THOSE CURRENTLY PURSUING IT



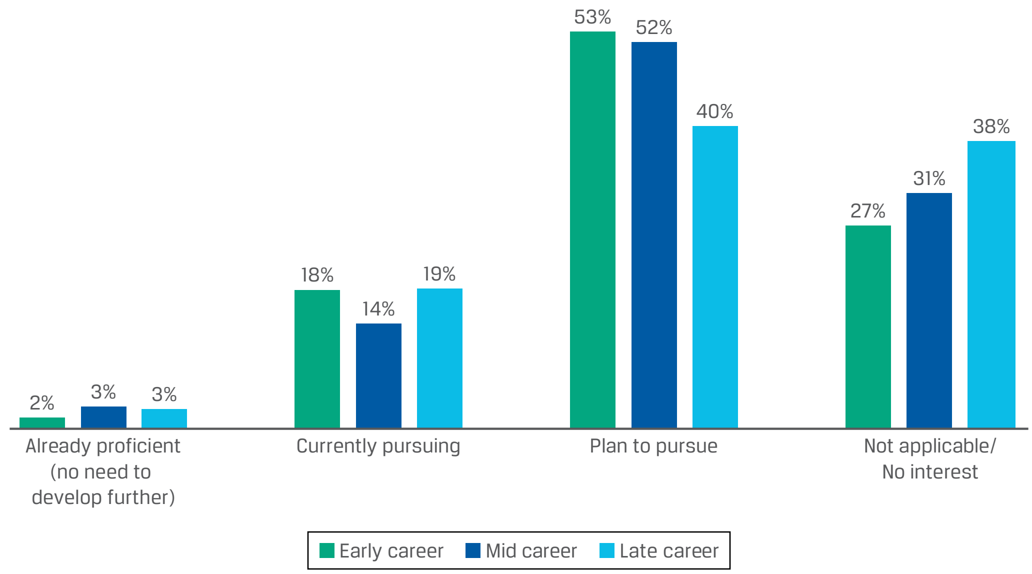
Source: CFA Institute Skills and Careers Survey.

EXHIBIT 24. INTEREST IN LEARNING NEW SKILLS (CURRENTLY PURSUING OR PLAN TO PURSUE)



Source: CFA Institute Skills and Careers Survey.

EXHIBIT 25. INTEREST IN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING BY CAREER STAGE



Source: CFA Institute Skills and Careers Survey.

Overall, there are three components that hiring managers that source talent in investment management appear to value: *skills*, *grit*, and *experience*.

Skills

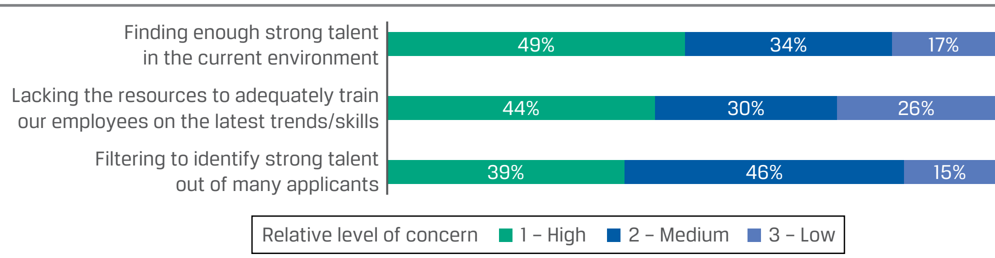
Most employers are interested in the same types of skills that CFA Institute members are pursuing, such as specialized knowledge of data analytics and sustainability. There is, however, growing demand to fill roles that benefit from T-shaped skills. Product managers and those focused on client solutions need a wide range of skills to make connections, and rotational programs and special projects can help cultivate a broader perspective and relevant skills. Many organizations also struggle to upskill employees as the industry changes, which is the other side of the "buy or build" equation when it comes to embedding new skills in an organization.

Given the challenging recruiting landscape and competition from technology firms in particular, some investment firms are reframing how they think about training and are focusing more on transferability of skills and upskilling existing employees. Information technology (IT) has evolved from being a functional department to now being a strategic priority alongside several other business lines. One roundtable participant noted that in the current environment, clients no longer ask business and finance questions separately; they are linked together.

Grit

Another important factor for employers is grit, or "passion and perseverance for long-term goals,"

EXHIBIT 26. RESPONDENTS' ANSWERS TO THE QUESTION, "WHAT ARE THE MAJOR CONCERNS FOR YOUR FIRM TODAY WITH REGARD TO HIRING AND SKILLING NEW OR CURRENT TALENT?" (ASKED OF EMPLOYERS)



Source: CFA Institute commissioned survey of 259 investment industry employers in December 2021.

as defined by Angela Duckworth.[38] Many firms hire CFA charterholders because completing the CFA Program is a signal of dedication to an investment career and to the investment industry owing to the program's rigor and difficulty; some employers tell us this signal matters even more than the knowledge gained through studying.

In his book *Outliers,* Malcolm Gladwell popularized the idea that it takes 10,000 hours of practice to become an expert in an area.[39] But the underlying research included something more: The practice should be deliberate and guided, meaning that teachers play an important role in ongoing progress.[40]

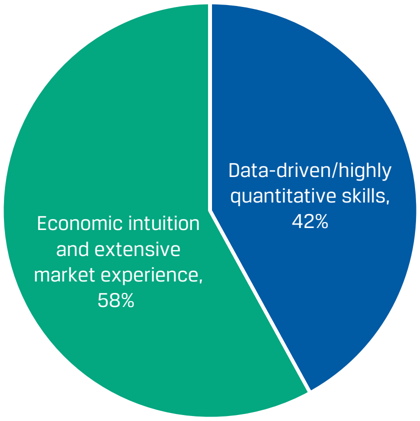
If we apply this benchmark to the investment profession, the typical CFA charterholder will earn the designation after about 5,000 hours. This total includes 4,000 hours of relevant work experience and about 900 hours of study to pass the three levels of the CFA Program. The level of guidance and teaching in the work experience time will vary, but we estimate that new CFA charterholders are halfway to being experts. The next several years of their careers are the ones that can help them achieve mastery.

In a previous study,[41] we found that investment professionals spend about one-third of their work time learning something new, versus doing familiar work. Lifelong learning is an essential element of ongoing success, and employers are looking for those with a growth mindset.

Experience

Clients of investment advisers value experience and economic intuition as important qualities, even in comparison to technical and quant skills, as shown in **Exhibit 27**. The value of experience is part of the compensation equation, and some recruiters are concerned that compensation packages have risen to unsustainable levels.

EXHIBIT 27. RESPONDENTS' ANSWERS TO THE QUESTION, "WHICH SKILLSET IS MORE IMPORTANT TO YOU IN A FINANCIAL ADVISER?" (RETAIL INVESTORS)



Source: 2022 CFA Institute Investor Trust Survey.

How Learning Approaches Are Changing

In this section, we discuss the ways in which the approach to learning is changing.

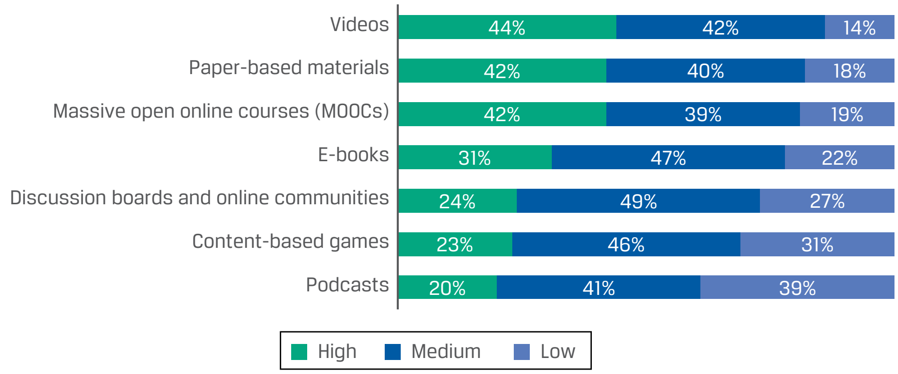
The Learning Experience

The adaptability gains that all professionals have made in their work life carry over into their learning experiences. Learning and development leaders have had to adapt during remote work periods and assess how well employees can learn different topics in different modes. Those at investment firms have found that training on technical topics on a remote basis has been well received, but for less technical topics, staff are more engaged in person. Global organizations, which were already forced to manage a dispersed workforce prior to the COVID-19 pandemic, have seen benefits of their experience in delivering consistent learning experiences across their workforce through online platforms, enabling an easier transition to a hybrid learning approach.

Students have been at the forefront of this change and increasingly expect innovative learning formats as learning preferences evolve. Among CFA Program candidates or potential candidates we surveyed, the most preferred modes of learning are videos, paper-based materials, and MOOCs (massive open online courses), as shown in **Exhibit 28**.

Twenty years ago, a CFA Program candidate had one way to study—with physical books (or paper study guides derived from the books). Today, of the 50% of candidates who download a PDF of the curriculum, only 20% print it. Instead, most students for the CFA Program exams visit a learning ecosystem (LES), which is "a cutting-edge digital platform that consolidates the entire curriculum and all study tools including practice question bank and mock exams [and] features a personalized study plan that can adjust the learning path to suit individual strengths and weaknesses."[42] Our analysis of candidate behavior shows that candidates who regularly use the LES are twice as likely to pass than those who do not.

EXHIBIT 28. RESPONDENTS' ANSWERS TO THE QUESTION, "WHAT ARE YOUR PREFERRED MODES OF LEARNING?" (ASKED OF CFA PROGRAM CANDIDATES OR POTENTIAL CANDIDATES)



Source: CFA Institute commissioned survey of 921 CFA Program candidates or potential candidates in December 2021.

Notes: Respondents were asked to rate each item from 1 (most preferred) to 7 (least preferred). "High" includes those rated 1 or 2; "medium" includes those rated 3, 4, or 5; and "low" includes those rated 6 or 7. On an absolute basis, the learning mode with the highest proportion of 1 ratings was paper-based materials (25% rated these 1).

A learning ecosystem can also incorporate new techniques that have been shown to improve learning, such as providing bite-size content, instilling habits, and showing progress. This individually targeted approach to incentivizing learning, often paired with gamification, allows organizations to more granularly identify the effects of educational stimuli. Educators and training providers can specifically see how their content is being consumed and which behaviors or materials are correlated with topical mastery. Learning providers need to continually adapt to cater to the evolving needs and digital preferences of learners.

Double-Loop Learning

Chris Argyris coined the term "double-loop learning," defined as the type of learning that goes beyond cause-and-effect analysis to question initial frameworks and assumptions.[43] Single-loop learning is traditional problem solving and is consistent with one's existing mental map. Calculations and cause-and-effect linkages work well in a single-loop world. Because the world has become more complex and abstract, however, it is more important to question assumptions and broaden one's frame of reference.

In his book *Range*, David Epstein described how the world has become more abstract and conceptual over the years, and as vocations have developed to be more connected across different regions and more team oriented, the way we think has changed.[44] We have moved from discrete and concrete problem solving to much more complex and interdisciplinary approaches. This trend toward complexity and abstraction has led the population overall to be more adept at identifying categories and patterns over time, as demonstrated by increases in intelligence test scores and the practice in the educational community of recalibrating the average score of intelligence tests for each generation.[45]

In investing, the rise of derivatives and digital assets provides examples of increased levels of abstraction from the underlying assets. Furthermore, the skills investment professionals are most eager to learn now are related to sustainability and technology. Both are complex and require iterative thinking to master. It is not surprising, therefore, that neither of these skillsets fits neatly into a single category of the CFA Program curriculum. Instead, they are interspersed through curriculum areas as integrated concepts that use system-level thinking.[46]

Effective learning requires experimenting, and newer analytical techniques enabled by greater computing power allow analysts to model different scenarios and test their assumptions more readily. We have the tools in place to embrace double-loop learning and avoid the risk of cognitive entrenchment wherein experts lose creativity and flexibility.[47]

Summary Points

- **The skills pathway:** Technical skills are most important at the start of one's career, with soft skills, leadership skills, and T-shaped skills (a combination of deep knowledge in a single domain and wider knowledge in other fields and the ability to connect them) growing in importance over time.
- **The skills in high demand:** New sources of data will affect the skills needed for investment decision making, and the skills that most investment professionals are interested in obtaining include a foundational understanding of artificial intelligence and machine learning, as well as knowledge of sustainability issues. The most important soft skill category is influencing, persuading, and negotiating. Some of the skills that have become more important in the new world of work are more efficient time management; being effective in influencing, persuading, and negotiating; direct communication; and being more resourceful. Managers and leaders will need to adapt their skillsets to succeed in a more flexible and dispersed work environment.
- **The talent factors**: Employers seek a combination of skills, grit, and experience.

BUILDING EFFECTIVE TEAMS

In this section, we discuss the impact of teamwork on an investment professional's skills and learning. Given the prevalence of teamwork in the investment industry, a natural question to ask is how teamwork will affect the skills required of those serving on highly functioning teams.

We first examine the continuum of specialization and its implications for modes of teamwork. We then discuss how working under the increasingly popular hybrid work arrangements may affect teamwork and what it means for skills and learning.

T-Shaped Skills, T-Shaped Teams, and the Continuum of Specialization

The idea of specialization dates back at least to the days of Adam Smith, who, in his *Wealth of Nations*, attributed "[t]he greatest improvements of the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied," to "the effects of the division of labour" (p. 5).[48] Labor economists today generally agree that the trend of increasing specialization will continue because it is in everyone's interest.[49]

Similarly, we have witnessed the increase of specialization in the modern-day investment profession. When Warren Buffett started his investment partnership in the 1950s, he was a one-man team and his investment universe was also limited. This experience was common for investors of that time. Specialization in a more formal sense began with the institutionalization of the investment business and the rise of mutual funds and investment trusts of various types in the 1970s. As shown earlier, in Exhibit 16, the CFA Program curriculum has been adapted to account for more complexity in the markets.

Today, it is not unusual for a global multi-asset manager to invest in hundreds, if not thousands, of (underlying) investment instruments across a dozen or more asset classes in dozens of countries and markets around the world. Specialization has become a necessity rather than an option.

That said, we see different modes of specialization in today's investment management industry, with different implications for individual investment professionals' skills and learning. For investment professionals to be able to acquire the optimal skillset for their defined role(s) on an investment team, they must have a sound understanding of where their team operates on the specialization spectrum and how this orientation may change.

Next, we'll address these issues using the examples of important modes on the specialization continuum.

T-Shaped Skills

"T-shaped skills" has been a popular term in business circles in recent decades.[50] Despite the allure of specialization, professionals on a team must find ways to connect with others so that they can be effective individually and collectively. As noted previously, individuals with T-shaped skills have both subject matter expertise (the vertical bar of the T) and a conscious pursuit of commonality, connection, and collaboration with adjacent domain areas (the horizontal bar of the T). The concept was not specifically developed for the investment industry and certainly applies to a broad set of environments and contexts. **Exhibit 29** shows that the T-shaped skills mode is in the middle of the specialization continuum.

In a zero-to-full-specialization continuum that characterizes the degree of specialism in an investment team, investors in the 1950s were typically at or near the zero end of the spectrum; most were generalists, and investing was arguably more art than science. As the profession has progressed in the decades since, skill needs have shifted toward the right side of the spectrum, and the T-shaped skills mode has become more prevalent.

Today, specialization exists in most investment industry roles, though to a varying degree. We asked survey respondents about the percentage of their work that requires specialization, and the results are summarized in **Exhibit 30**. Although responses are clustered toward the middle, indicating a balance of *time using generalist and specialized knowledge*, there are some roles that *require more specialized knowledge*, such as trader and credit analyst. Such roles as relationship manager and CEO are more likely to have a mix of skills and regularly use nonspecialized skills.

EXHIBIT 29. THE SPECIALIZATION CONTINUUM

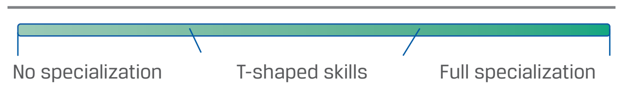


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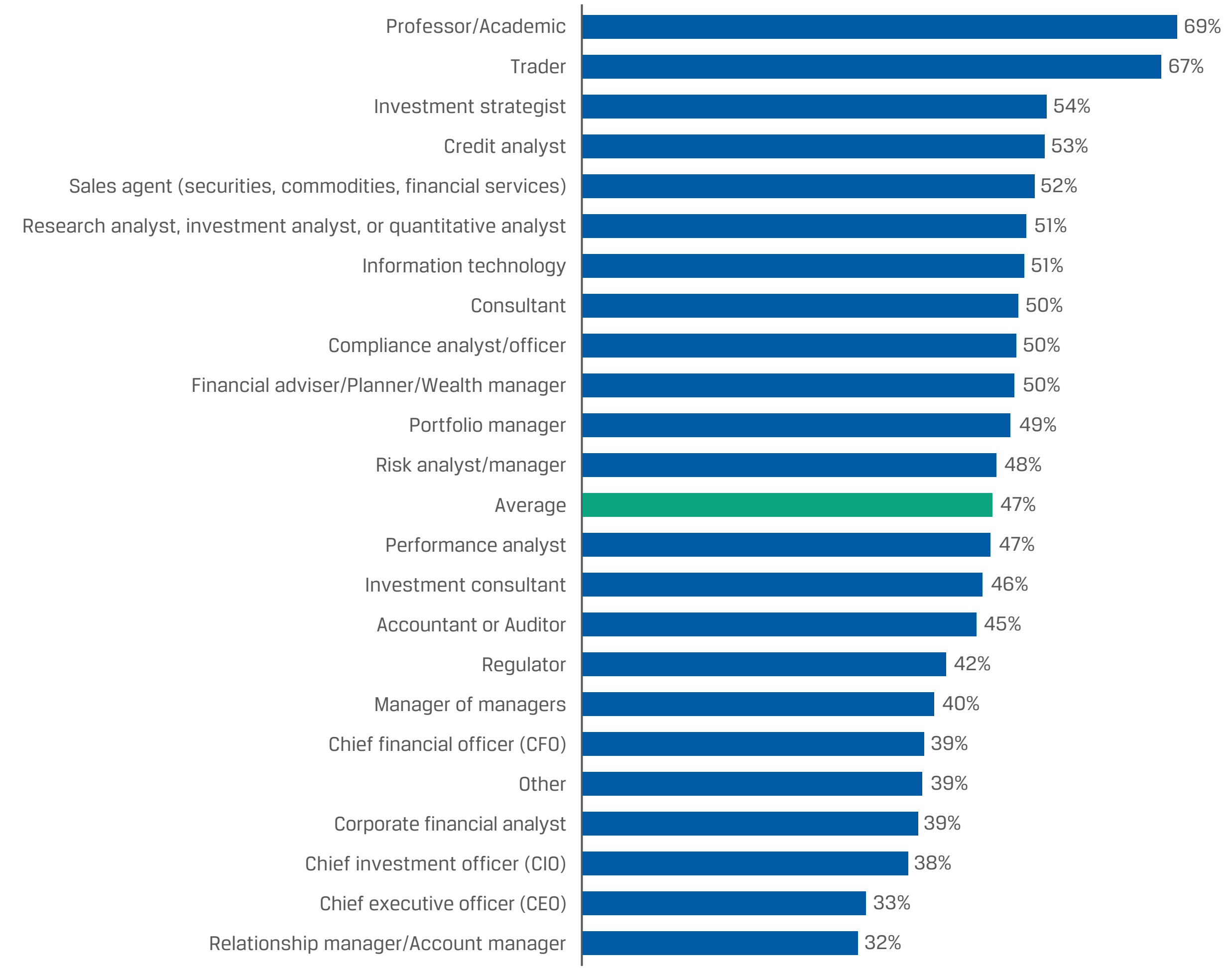
EXHIBIT 30. PERCENTAGE OF RESPONDENTS WHO SAID THEIR ROLE PRIMARILY RELIES ON SPECIALIZATION



Note: The data show the proportion of respondents indicating that more than 50% of their role requires specialism as opposed to a broad circle of competence.

Source: CFA Institute Investment Professionals Survey.

Under the T-shaped skills mode of teamwork, investment professionals are expected to have domain expertise. The vertical part of the T in the T-shaped skills mode would include those asset-class-, industry-, geography-, and job-role-specific knowledge competencies that would, for example, differentiate between a European REIT analyst and an Asian emerging market bond portfolio manager. The horizontal part of the T could include many other areas of expertise, with the skills and desire to make connections across the team.

Over time, as predicted by Adam Smith's division of labor theory, the optimal skills mix has been moving rightward from the zero-specialization end of the spectrum. The following industry factors have contributed to the move toward more specialization:

Internationalization

In recent decades, we have witnessed an increase of international allocation by major asset owners, as well as in model portfolios of retail brokers and financial advisers. When Dennis Stattman proposed a 40% international allocation for the Merrill Global Asset Allocation portfolio in the late 1980s, it was a revolutionary idea.[51] It is far more common to see that type of allocation to international stocks and bonds for US investors today (and sometimes a higher international allocation for investors in the rest of the world given the more limited size of their home markets).

Internationalization opens up new markets and necessitates more specialized knowledge. For example, to be a successful investor in the onshore

RMB bond market requires significant specialized knowledge of local market conventions and local market dynamics, including policy orientation and industry/company fundamentals. To be able to communicate that knowledge to a global investor base is also a skill that is vital and often difficult to find.

Alternative Asset Classes

Private market investments have grown from being a small or negligible part of the investible universe to a sizable allocation in institutional portfolios. The popularity of private markets and alternatives can be traced to the success of the university endowment model pioneered by Yale's longtime chief investment officer David Swensen.[52] Yale's approach, mirrored by other US university endowments, included a significant allocation to less liquid assets, including such assets as private equity, venture capital, real estate, natural resource funds, and absolute return strategies. The strong performance track record of these endowments[53] led to broad interest among asset owners around the world and, through their influence, among other investors.

Private investments and alternative asset classes require specialized skills and knowledge. For example, a private equity investor needs to have at least some essential knowledge about deal structures and term sheets plus knowledge about and skills pertaining to the industry and companies that they invest in.

Financialization and Complex Products

With the growth in markets and investible assets over the decades, the financial industry has engineered new products to both manage risk and cater to investor demand. The proliferation of products, particularly complex products, has required more specialized skills. For example, bond markets witnessed the growth of securitization and the packaging of bonds into more complex products, such as mortgage-backed securities, in the 1980s, followed by collateralized debt obligations and credit default swaps. These complex structures required more specialized knowledge.

Financial derivatives were launched and traded on exchanges in the 1970s to allow commodity producers to hedge risks. Over time, the universe of derivatives expanded alongside the growth in underlying markets, enabling trading in futures, options, and swaps on such financial instruments as equity indexes, government bonds, interest rates, and foreign currencies. Over time, the list of derivative instruments has grown more exotic and complex, requiring more specialized skills. The frontier of specialized knowledge continues to expand as previously complex products become more widely understood and absorbed into the generalist skillset, fueling the cycle of new product development.

The creation of exchange-traded products (ETPs) is a more recent example of the growth of complex products. Take, for example, a synthetic ETP based on an equity index. It may contain a basket of derivatives contracts, such as futures based on the index of the underlying securities, thereby embedding leverage. That it trades on an equity exchange alongside plain-vanilla stocks illustrates how even a product that is simple at face value can be comparatively complex—requiring an ecosystem of product developers, index sponsors, authorized participants, and others.

Industry Concentration

The asset management industry has become more concentrated over the years, a trend that continues. The annual Willis Towers Watson report on asset managers indicated that in 2021, of the largest 500 asset managers, the top 20 controlled 44% of assets under management (AUM), compared with only 29% in 1995.[54] As firm size increases, the product line often increases as well. Since firms can benefit from economies of scale, larger firms provide the ability to develop and hire more specialized roles.

The level of industry concentration increases with the fund industry's maturity, and hence the level of concentration is higher in the United States, lower in Europe, and even lower in the Asia-Pacific region. The fund industry's total AUM in a country also plays a role, and there is a higher level of concentration in larger markets.

The influence of regulation has also grown alongside the maturation of the fund industry. With larger firms serving larger client bases with more diverse and complex product offerings, regulations have developed that attempt to keep pace with industry developments, protect investors, and maintain efficient markets. One result of these developments has been growth in the number of compliance roles at investment firms.

Quantitative Investing

Quants began to join the investment profession en masse in the 1980s.[55] They study the quantitative relationship between different variables to determine, among other things, how to price derivatives, measure and forecast risk, and in some cases, forecast investment returns.

The Black–Scholes model is often cited as the harbinger of quant investing. In Myron Scholes's account[56] of how he developed the model with Fisher Black and why quants often (succeed and) fail at their tasks,[57] he explained that truly understanding how the model works requires much specialized training in mathematics, science, and statistics that was not offered to business majors at the time the model was developed. In addition, with the recent advancement of machine learning applications and big data in the investment process, the need for data science specialists is likely to increase.

Overall, the more of these factors that a team must consider, the more they are likely to need team members with specialist skills, at present and in the future.

T-Shaped Teams

Among the factors listed above, the T-shaped skills model may apply less well to quantitative investing because the additional skills needed are less adjacent to the skills of fundamental analysts. This issue becomes more significant as the investment industry in general begins to embrace AI and big data technologies (where sometimes even traditional quant analysts may not have enough specialist skills to play the role of data scientist).

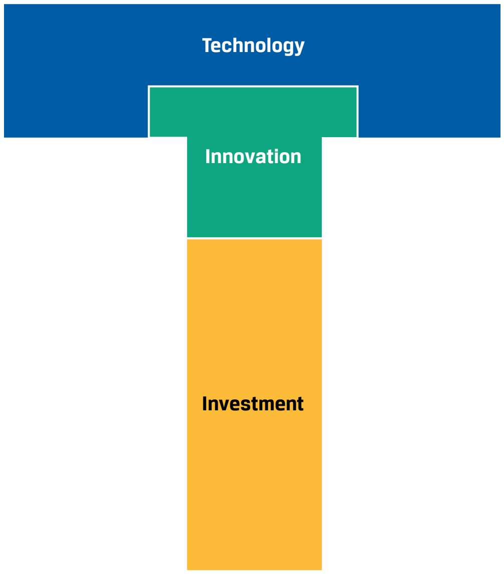
Next, we consider T-shaped teams, a more special case of teamwork in the context of AI and big data adoption. Introducing AI and big data into investments brings about unprecedented challenges in teamwork since the two most important functions on the (future) investment team—investment professionals and data science professionals—often come from completely different backgrounds. **Exhibit 31** shows that the T-shaped team mode is significantly closer to the full-specialization end of the specialization continuum than to the no-specialization end.

It is important to note that the T in T-shaped teams takes on a rather different meaning than the T in T-shaped skills[58] (see **Exhibit 32**).

In a T-shaped team, both the horizonal and vertical bars of the T require more specialist skills

EXHIBIT 31. THE T-SHAPED TEAM MODE'S PLACE ON THE SPECIALIZATION CONTINUUM IS SIGNIFICANTLY CLOSER TO THE FULL-SPECIALIZATION END

EXHIBIT 32. T-SHAPED TEAM



Source: Larry Cao, "AI Pioneers in Investment Management," CFA Institute research report (30 September 2019). www.cfainstitute.org/en/research/industry-research/ai-pioneers-in-investment-management.

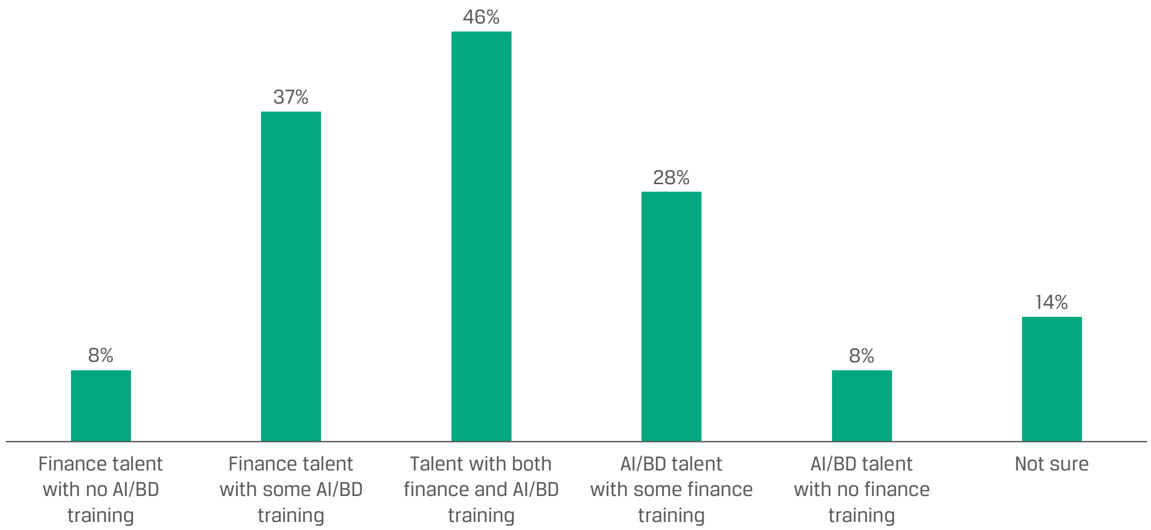
(data science and investment, respectively). T-shaped skills play a significant role in the innovation function, pictured as the small T adjoining the investment and technology functions. The T-shaped team mode's positioning in Exhibit 31 reflects the fact that the vast majority of the team members are specialists. The innovation function is characterized by communication and strategic management on top of training in investments and data science.

Application to Teams Using AI and Big Data

T-shaped teams are the most effective organizational structure for financial institutions to embrace AI and big data. Although we first made this argument in *Investment Professional of the Future*[59] as an extension of the artificial intelligence + human intelligence (AI + HI) framework from philosophy to execution, we have become even more convinced by the experience of practitioners incorporating AI and big data into their business processes. Virtually all those who were successful in their efforts to receive the benefits of incorporating AI into their investment process followed some variation of this approach.

The reason that a specialist-leaning model works effectively in this context is not because of lack of demand for multi-talented professionals. In fact, **Exhibit 33** shows the results of a recent survey in six major markets in Asia suggesting that demand is

EXHIBIT 33. PERCENTAGE OF FIRMS INTERESTED IN DIFFERENT AI/FINANCE HYBRID SKILLSETS



Source: Hong Kong Institute for Monetary and Financial Research, "Artificial Intelligence and Big Data in the Financial Services Industry: A Regional Perspective and Strategies for Talent Development," HKIMR Applied Research Report No. 2/2021 (October 2021).

highest for those professionals with both finance and AI/BD (big data) training.[60]

The challenge of obtaining these professionals, however, is twofold: First, data science and investment are distinct disciplines that require significant effort. We estimate that a CFA Program candidate needs to spend approximately 900 hours to pass all three levels of the CFA Program exams. Similarly, we estimate that a student needs at least as much, if not more, time for their data science training.[61] Neither estimate includes the time needed for continuing education. As such, the supply of professionals well versed in both finance/investment and AI/big data is limited.

Second, even if there were an ample supply of such professionals, the cost–benefit analysis might still not justify significant hiring because most of the tasks in AI- and big-data-adoption projects require largely specialist skills. (This is not to say the innovation function professionals are not important. Quite the contrary: The small number of tasks they perform is arguably the most strategically important.)

Although the T-shaped team mode remains a special case today on the specialization spectrum, we believe it will increasingly become the norm in the investment profession in the coming years. Future investment teams will be T-shaped teams, which will have important implications for the industry's talent development. In the long run, however, we do expect to see at least some of the data science skills become part of the generalist skillset.

Application to Teams Conducting ESG Analysis

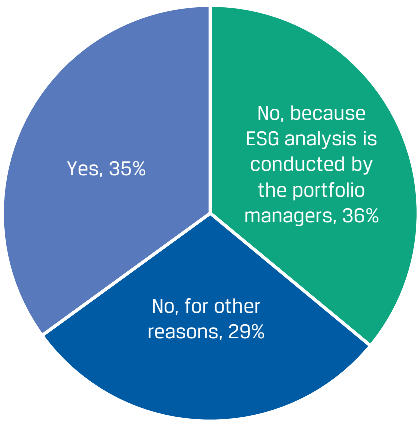
As shown earlier (see Exhibit 22), sustainability skills are in high demand. Is ESG analysis a specialist or generalist skill? What is the best kind of team to perform ESG analysis?

We first look at the difference in training adoption between sustainability and machine learning. In the case of sustainability, many investment professionals are beginning to attain these skills or deepening their knowledge base. In 2019, the saying/doing ratio for sustainability was 1.4, meaning that for every person pursuing sustainability skills, there were 1.4 who planned to do so. Now the ratio is 1.0, with an equal number of people pursuing the skill and planning to do so. In contrast, for AI and machine learning skills, the saying/doing ratio is 3.0, meaning that many people aspire to learn these skills but few are doing so, since these skills are less adjacent to their current knowledge base.

In prior research,[62] we found that the structure of teams with ESG responsibilities varied. About one-third had dedicated ESG specialists, one-third considered ESG expertise something that portfolio managers must incorporate, and one-third did not have in-house ESG expertise, as shown in **Exhibit 34**.

For those organizations with ESG specialists, about half were in a separate function and half were embedded in the investment teams. The approach to ESG analysis (e.g., full integration versus exclusionary

EXHIBIT 34. RESPONDENTS' ANSWERS TO THE QUESTION, "DOES YOUR ORGANIZATION EMPLOY DEDICATED ESG ANALYSTS?" (EXCLUDES THOSE WITHOUT ESG STRATEGIES)



Source: CFA Institute, *Future of Sustainability in Investment Management* (2020).

screening or a thematic approach) is an important aspect since the workflow is different for different strategies. There is not a one-size-fits-all approach, but many organizations are blending approaches by having portfolio managers learn more about ESG analysis and at the same time adding some ESG specialists who are available to teams for the technical aspects of ESG analysis. Although the depth of expertise can vary in ESG analysis, in most cases an ESG expert can and should have T-shaped skills to connect investment topics with sustainability issues. Only the largest firms are likely to have a group of climate specialists that could be joined with an investment group to form a T-shaped team.

The main argument for the long-term need for ESG specialists is that the data are becoming more complex and the generalist approach of the past will not continue to be the most efficient or effective. It is not possible for someone with another "day job" to stay on top of the developments in ESG analysis, and not staying current is a significant risk. Another challenge is the multi-disciplinary nature of sustainability, requiring knowledge and expertise that straddle disparate subject matter areas.[63]

Teamwork in a Hybrid Setting and Implications for Skills and Learning

Prior to the pandemic, 49% of CFA Institute members we surveyed said they could perform at least half of their essential duties from home. That number increased to 81% when considering post-pandemic working arrangements.[64] Here, we review how switching to a hybrid setting affects teamwork and the implications for skills and learning.

The Good News

The main issues, from the skills and learning perspective, involve the impact of hybrid work arrangements on team productivity and creativity.

Here, we can apply the knowledge management framework that Hansen, Nohria, and Tierney discussed in their 1999 paper,[65] with some caution. They argued that companies need to choose between two strategies of knowledge management—either codification or personalization—depending on their overall business model. Using the consulting industry as an example, they described the two different models. Such consulting firms as EY provide "information system implementation by codifying knowledge,"[66] and their teams usually comprise a large group of generalists to conduct analysis in a scalable way. In contrast, such firms as McKinsey provide "creative, analytically-rigorous advice on high-end strategic problems by channeling individual expertise,"[67] and these teams tend to be a smaller group of specialists with a bespoke approach.

Much more investment work is codified now than in previous years as a result of specialization, which advances the frontier of knowledge. In such a setting, hybrid arrangements often can improve team productivity as individual team members save time from not commuting and traveling. This assertion is corroborated by many industry leaders who report more benefits than expected from work-from-home arrangements. The overall productivity increase resulting from working from home is also backed by academic studies.[68]

The Bad News

It is an understatement to say that there have been some challenges for investment professionals in the pandemic. As we know from our own experiences and from press reports, working from home in some cases may hurt productivity,[69] at least in part because many have suffered from a lack of social interaction during the pandemic. Firms and professionals interested in expanding their knowledge and network into a new industry, country, or company during the period of remote work because of the pandemic would have had a harder time building trust with new colleagues.

Even established investment professionals will likely find the lack of in-person interaction eroding the social capital they developed over the years. Although established professionals are the most fortunate because it is likely they have built a stronger network than others, they still face the challenge of maintaining their social capital where in-person networking has been restricted or made absent by the pandemic. Industry professionals have been mostly drawing on existing contacts instead of building new, durable relationships during this period, and the strength of these networks may decay without in-person connection.

What appears to have suffered the most, however, is creativity,[70] which takes place on the frontier of knowledge development and often requires team collaboration. How to develop and integrate AI and big data into the investment process is a good example of our point. While investing and data science are both well-developed disciplines, integrating them successfully requires creativity and hence the need for the innovation function staffed by professionals with multi-disciplinary skillsets.[71] As shown earlier, in Exhibit 21, 58% of investment professionals surveyed said that their work involves a high degree of creativity.

In the *T-Shaped Teams* report, we highlighted the importance of staff co-location, product iterations, and regular team reviews in this process.[72] Co-location increases formal and informal synchronous communication, reduces silos, and as a result, fosters creativity. Remote work en masse makes working creatively with a team much more challenging.

A research paper from Microsoft's New Future of Work Initiative[73] reviewing the firm's shift to firmwide remote work confirms our concerns. Their researchers found that remote work caused the collaboration network to become more heavily siloed and static, likely to the detriment of the transfer of knowledge and the quality of workers' output. Part of the challenge was that remote work caused communications among workers to become less synchronous and less "rich," making it more difficult for workers to convey and process complex information.

There Is Hope

Hybrid arrangements reflect the realization that in-person communication and collaboration are important. While we know that creativity does not happen on demand, we also know that there are steps we can take to prepare ourselves to be creative.[74]

One way to approach the challenges we face—particularly for those who do not work in the same function—is to synchronize, at some regular cadence, a specific workday that staff are all expected to be working in the office.

Regular team meetings are also beneficial where hybrid settings will likely be the norm, particularly in the case of global teams. Among other things, team meetings allow staff to share ideas, build on the ideas of others, and collectively solve common problems.

Summary Points

The vast majority of investment professionals today work in teams, which has the following implications for their skills and learning:

- **The specialization trend:** As the investment industry becomes more complex over time, leaders must find the best ways to leverage specialist and generalist skills and combine the two into effective teams. Professionals with T-shaped skills can help bridge gaps in understanding between different specialties and with generalist investment professionals. For example, an environmental, social, and governance (ESG) expert can and should have T-shaped skills to connect investment topics with sustainability issues.
- **The T-shaped team model:** In the case of adopting AI into the investment process, more specialists are needed because of the lack of individuals with both finance and data science training and the high barriers to acquiring subject matter depth in both areas. Combining finance specialists, data science specialists, and product innovators with T-shaped skills—the T-shaped team—is the most effective approach in this context.
- **The codification of knowledge and team effectiveness:** Team productivity tends to improve in hybrid and remote work environments in cases where knowledge (or workflow) has been codified and team members' social capital is strong inside and outside the team. Productivity typically suffers when these factors are not present.

CONCLUSION

The way the industry operates is undergoing transformational change, even while its purpose remains steadfast. Organizations are integrating extra-financial factors into their investment decision making, and they are re-engineering their processes to gain an edge through the use of AI and new data sources. Leaders face significant competition for talent, and employees face a perpetual learning curve as new markets, asset classes, data sources, and investing techniques proliferate. Together, these factors will shape a very different future of work in investment management.

Changes are needed across the industry to prepare for a transformational future. Investment organizations and investment professionals must make continuing education a priority for personal, professional, and organizational development. We make several recommendations for both cohorts:

Recommendations for Investment Organizations

- Expand candidate pools beyond finance-only backgrounds, and understand the opportunities and limitations of a flexible hybrid work environment to attract and develop talent.
- Invest more purposefully in internal talent development programs, and act as stewards of human capital.
- Evaluate the need for specialists and generalists, and understand when and how to build T-shaped teams.

Recommendations for Investment Professionals

- Be flexible and agile to be effective in a hybrid work environment in which enhanced skills in communication, influencing, and creativity are needed.
- Continue to add new skills and refresh existing ones as new analytical methods disrupt existing job roles.
- Develop generalist and specialized skills to work effectively in teams and to create more career pathway opportunities.

Continuous Investment in Human Capital

The investment industry depends on human capital, and continuous development is essential for investment professionals and the industry overall to remain relevant amid ongoing change. Industry leaders must recognize the value of continuous investment in human capital and its impact on raising standards for a more effective and adaptable investment industry, for the ultimate benefit of society.

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