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Degan Kettles

Daniel Mazzola

Benjamin Richardson

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The Path to Becoming a Fortune 500 CIO

To understand how to become a CIO, we examined the careers of 400 Fortune 500 CIOs, using data from LinkedIn profiles, and interviewed six Fortune 500 CIOs who are active with the Society for Information Management. We identified commonalities in education, timeline to becoming a CIO and prior work experiences, and compared these with other Fortune 500 executive positions. We found that: business education is critical; it takes longer to become a CIO; and CIOs need more diverse experiences. We identify the reasons behind these findings and the implications for establishing a career path towards becoming a CIO.¹

Degan Kettles

Brigham Young University (U.S.)

Daniel Mazzola

Arizona State University (U.S.)

Benjamin Richardson

University of Georgia (U.S.)

Investigating the Attributes of Fortune 500 CIOs

The Chief Information Officer (CIO) is the most senior technology officer in an organization. Individuals holding this role must be competent in both organizational leadership and technology. Given the pay and prestige associated with this senior role, there are many who admire those who hold this role and aspire to become CIOs themselves. But how does someone who aspires to become a CIO become one? There has been little previous research on this question, even after four decades of CIO studies.² In one study, the primary finding was that modern CIOs more often have business degrees than technical degrees.³ A second study⁴ proposed a theory that there are four stages of career development that a CIO progresses through with a variety of key factors at each stage. A third study⁵ looked at three aspects of the careers of top CIOs: their education, their career progression and the time it took to reach the top. Though interesting, the data set was relatively small and lacked any input from actual CIOs.



¹ We thank the Society for Information Management (SIM) for supporting this article.

² For a recent literature review of 466 research articles on CIOs, see Kratzer, S., Westner, M. and Strahringer, S. "Four decades of Chief Information Officer research: A Literature Review and Research Agenda Based on Main Path Analysis," *Data Base for Advances in Information Systems* (54:3), August 2023, pp. 37-74.

³ Anderson, J. and Ball, N. "The Educational and Career Backgrounds of CIOs," *Issues in Information Systems* (16:4), 2015, pp. 178-182.

⁴ Leahy, K. B. *The Making of a CIO: A Grounded Theory Study of Professional Development of Information Technology Executives*, Doctoral Dissertation, Capella University, 2013.

⁵ Mazzola, D. J., Louis, R. D. S. and Tanniru, M. R. "The path to the top: Insights from career histories of top CIOs," *Communications of the ACM* (60:3), February 2017, pp. 60-68.

Table 1: Analysis of Fortune 500 CIOs and C-Level Executives from LinkedIn*

Finding	Area
Only 18% of CIOs on LinkedIn have an MBA	Education
50% of C-level Fortune 500 Executives have a non-business first degree	Education
75% of C-level Fortune 500 executives have a business-based degree at either the bachelor's or master's level	Education
Half of all Fortune 500 CIOs have a master's degree	Education
32% of Fortune 500 CIOs have a bachelor's degree from a top-100 university	Education
60% of Fortune 500 CIOs have a master's degree from a top-100 university	Education
Fortune 500 CIOs took an average of 13 years to reach their first C-level position, compared to 10.9 years for all C-level executives	Time to the top
Fortune 500 CIOs took an average of 24 years to reach the Fortune 500 C-suite, compared to 22 years for all Fortune 500 executives	Time to the top
Fortune 500 CIOs with an MBA reached the C-suite 13 months earlier than those without one	Time to the top
Fortune 500 CIOs with a first degree from a top-100 university reached the C-suite 10 months earlier	Time to the top
Fortune 500 CIOs have on average eight work roles (e.g. project manager, etc.) on their resumé, compared to seven for other Fortune 500 executives	Work experience
Fortune 500 CIOs worked for an average of five years in each of their previous work roles	Work experience
Fortune 500 CIOs worked on average for five different companies before reaching their current position, compared to four for other C-suite positions	Work experience
90% of Fortune 500 CIOs were a CIO at a non-Fortune 500 company before becoming the CIO of a Fortune 500 company	Work experience

*Analysis of career progressions of 400 Fortune 500 CIOs and 2,842 Fortune 500 C-level executives

We instead wanted to get a CIO perspective on what is required to be a top CIO, using both quantitative and qualitative data (see Appendix A for a description of the research method). We first collected data on the career histories of 400 Fortune 500 CIOs from LinkedIn. We looked for patterns of CIOs' career progression, and compared and contrasted their career paths with 2,442 other Fortune 500 C-level executives who are not CIOs. We found commonalities in three areas: 1) education; 2) the timeline for getting a top CIO position; and 3) prior work experience (previous roles and the number of previous employers). The findings from this analysis are summarized in Table 1.

Though the commonalities we identified are interesting, the analysis does not explain

why they exist or how they might be relevant to aspiring Fortune 500 CIOs. For example, why does it take an average of 24 years for current Fortune 500 CIOs to reach that position, two years longer than for any other C-level executive?

To gain a deeper understanding of each commonality, we interviewed four current Fortune 500 CIOs and two former CIOs, all active with the *Society for Information Management*. They had worked in different industries (see Table 2, which also lists how each CIO is referred to throughout this article). We asked the CIOs to comment on each career commonality (education, timeline for getting a top CIO position and work experience) we discovered in the LinkedIn data. We also asked them to provide any other insights not covered by their previous

Table 1: Four Ways of Incorporating AI into the Board’s Annual Strategy Meeting

CIO Identifier	Fortune 500 Industry	Current or Former CIO
Lodging CIO	Lodging	Current
Electronics CIO	Electronic components	Current
Managed Solutions CIO	Office technology solutions	Current
Information Technology CIO	IT hardware and software	Former
Retail Pharmaceutical CIO	Healthcare and retail pharmaceuticals	Former
Convenience Retailing CIO	Convenience retailing	Current

answers. In Appendix B, we detail the responses that each CIO gave to the specific questions. From our analysis of their responses, we have identified the elements of a career roadmap for aspiring Fortune 500 CIOs.

Elements of a Career Roadmap for Aspiring Fortune 500 CIOs

There are three main elements of a career roadmap for aspiring fortune 500 CIOs: educational requirements, timeline for getting a top CIO position and work experience gained in prior roles. From our analysis of the LinkedIn profiles of 400 Fortune 500 CIOs and the responses from six Fortune 500 CIOs (four current, two former) to questions derived from the LinkedIn data, we provide guidance for each of these elements. We also include other advice provided by the interviewees.

Education Requirements

Value of an MBA Vs. Informal Business Education from Work Experience. The LinkedIn data and CIO responses clearly show that a Fortune 500 CIO must have a business education, either formally through graduate work, MBA programs and internal corporate training, or informally through work experiences. The LinkedIn data showed that 18% of CIOs have an MBA, compared to 21% of CEOs; the average across all C-level executives is also 18% (see Figure 1).

We asked the interviewed CIOs about the importance of a Fortune 500 CIO having an MBA.

Their responses emphasized that it depended on the type of CIO role. Some organizations, and even some industries, expect the CIO to manage the infrastructure (i.e., keep the lights on), but not participate in any discussions related to strategy or finance.⁶ This can be especially true in organizations where CIOs report to the chief financial officer.⁷ Hence, the need for an MBA may be driven by the job expectations.

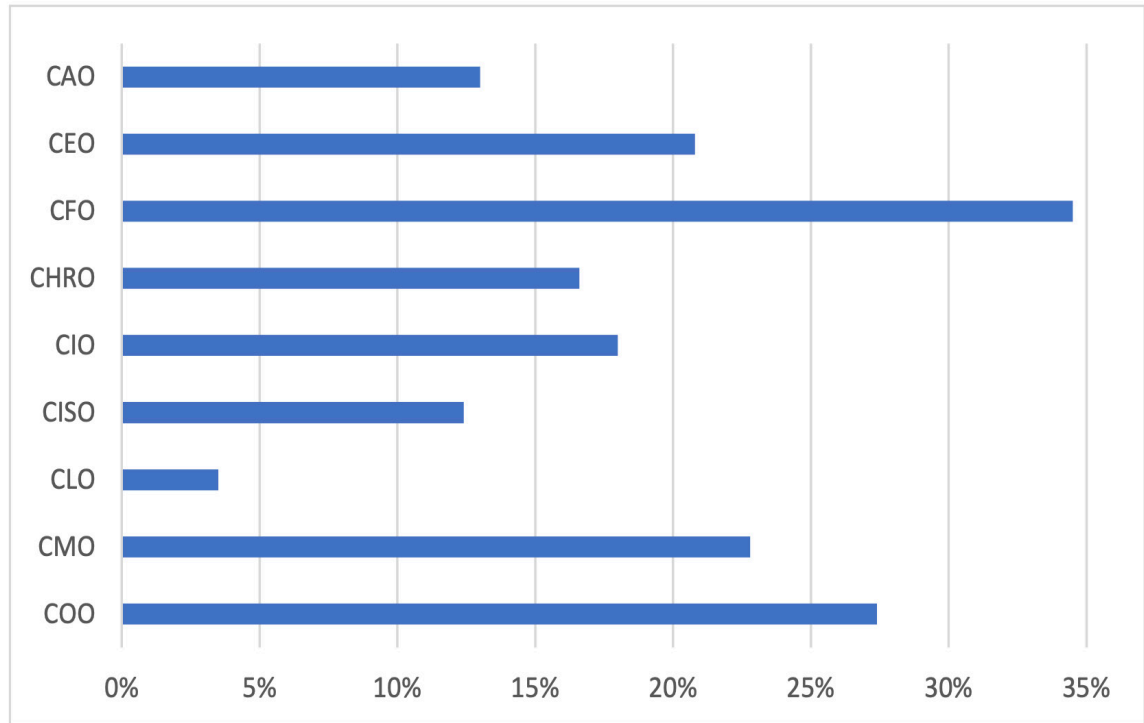
For example, the Electronics CIO did not have an MBA and said he was valued for his ability to improve processes with technology and was not asked to contribute in ways beyond that. On the other hand, the Managed Solutions CIO believes that market forces are making MBAs or equivalent knowledge more important than they used to be.

For informal management education through work experiences, we found that it is important to distinguish between IT- and business-related work experiences. A characteristic of an IT career is that individuals are rewarded for specializing in technical areas, such as becoming

6 See: 1) Banker, R. D., Hu, N., Pavlou, P. A. and Luftman, J. “CIO Reporting Structure, Strategic Positioning, and Firm Performance,” *MIS Quarterly*, June 2011, pp. 487-504; 2) Carter, M., Grover, V. and Thatcher, J. B. “The Emerging CIO Role of Business Technology Strategist,” *MIS Quarterly Executive* (10:1), March 2011, pp. 19-29; and 3) Leidner, D. E. and Mackay, J. M. “How Incoming CIOs Transition into Their New Jobs,” *MIS Quarterly Executive* (6:1), March 2007, pp. 17-28.

7 See: 1) Jones, M. C., Kappelman, L., Pavur, R., Nguyen, Q. N. and Johnson, V. L. “Pathways to Being CIO: The Role of Background Revisited,” *Information & Management* (57:5), November 2019, 103234; and 2) Kappelman, L., Torres, R., McLean, E. R., Maurer, C., Johnson, V. L., Snyder, M. and Guerra, K. “The 2021 SIM IT Issues and Trends Study,” *MIS Quarterly Executive* (21:1), March 2022, pp. 75-114.

Figure 1: Prevalence of MBAs among Fortune 500 Executive Roles



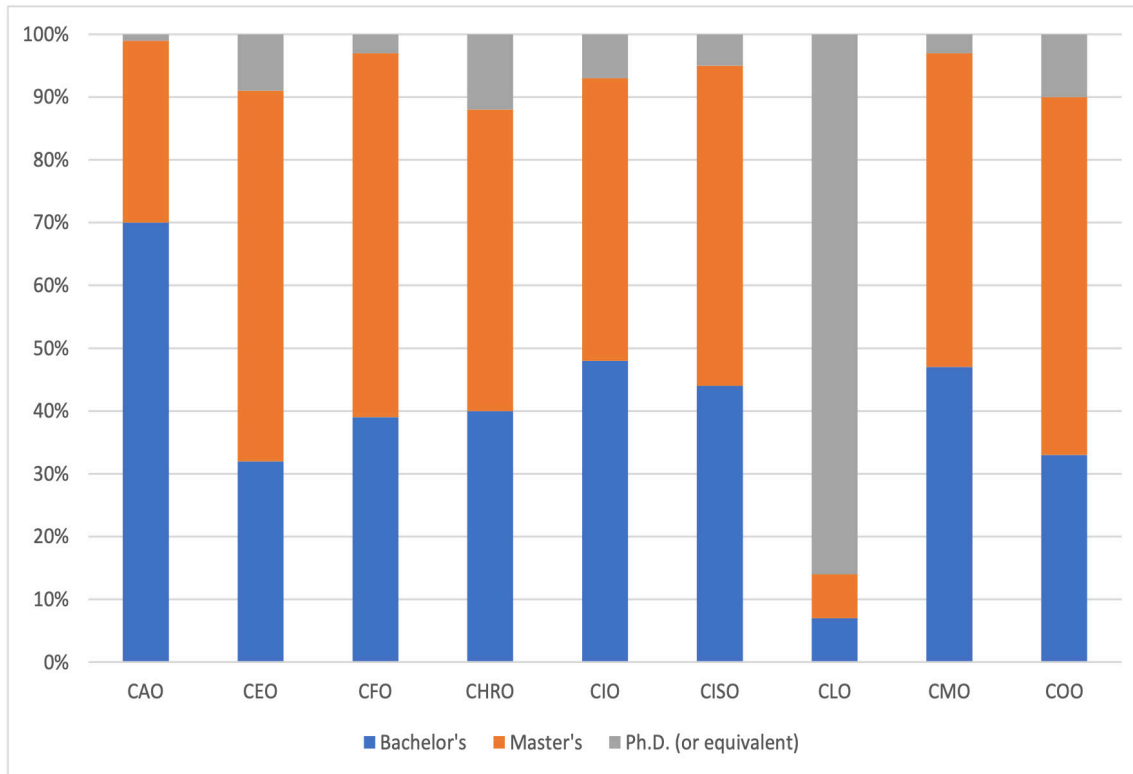
Legend: CAO—chief accounting officer, CEO—chief executive officer, CFO—chief financial officer, CHRO—chief human resources officer, CIO—chief information officer, CISO—chief information security officer, CLO—chief legal officer, CMO—chief marketing officer, COO—chief operating officer

an expert in a particular programming language. The reward and value system associated with becoming an IT specialist is at odds with the value system associated with an executive role, which requires understanding what brings value to the organization, including products, services and sales functions that generate income. Thus, IT workers seeking career progression to the C-suite must learn the language and values of business in addition to their technical knowledge. There is an exception, however. CIOs of organizations that view and manage IT as a cost center, where IT is not perceived as a strategic resource, may not need to speak the language of business, but simply need to provide reliable infrastructure services and keep costs down.

The CIOs we interviewed uniformly agreed that an ability to speak the language of business was important. For them, this meant being about to talk about finance, value creation and business

strategy. Often, an MBA was perceived as a tool to round out the business acumen of CIOs who may have come up through a technical path and therefore lacked general business knowledge. This raises the question of whether all CIOs should have an MBA. However, our interviewees gave several reasons for not supporting this view. One is that there are alternative ways to build business knowledge. One interviewee pointed out that all large firms have internal education programs to build the business knowledge of employees who are being groomed for leadership. Another acknowledged that business knowledge could be acquired on the job over time.

When examining the percentage of current CIOs with MBAs, we initially assumed that the degree had been a pre-requisite for their current positions and that they had financed it themselves. However, we also considered the possibility that CIOs could have obtained their

Figure 2: Highest Degree Earned, by C-Level Role

MBAs while already in leadership roles, with the cost covered by their employers. Upon raising this question with our interviewees, the general consensus showed that CIOs typically earned their MBA before attaining their CIO position and paid for it themselves.

Value of Non-Business Degrees Vs. Business Degrees. Because the LinkedIn data showed that many of the first degrees of current Fortune 500 C-level executives (including CIOs) are in fields unrelated to business, such as history or foreign languages, we asked the interviewees about their thoughts on this. They said it was common for CIOs to have a non-business first degree because they frequently came from computer science, engineering and related disciplines. Their view was that a bachelor's degree that aligned with their C-suite area of expertise was only necessary for chief accounting officers, chief financial officers and chief marketing officers.

A study by Anderson and Ball found that 38% of CIOs had first degrees in business topics, and just 34% in computer science, management

information systems or IT.⁸ Another study by Mazzola et al⁹ found that 24% had a first degree in business and 44% in information systems or computer science.

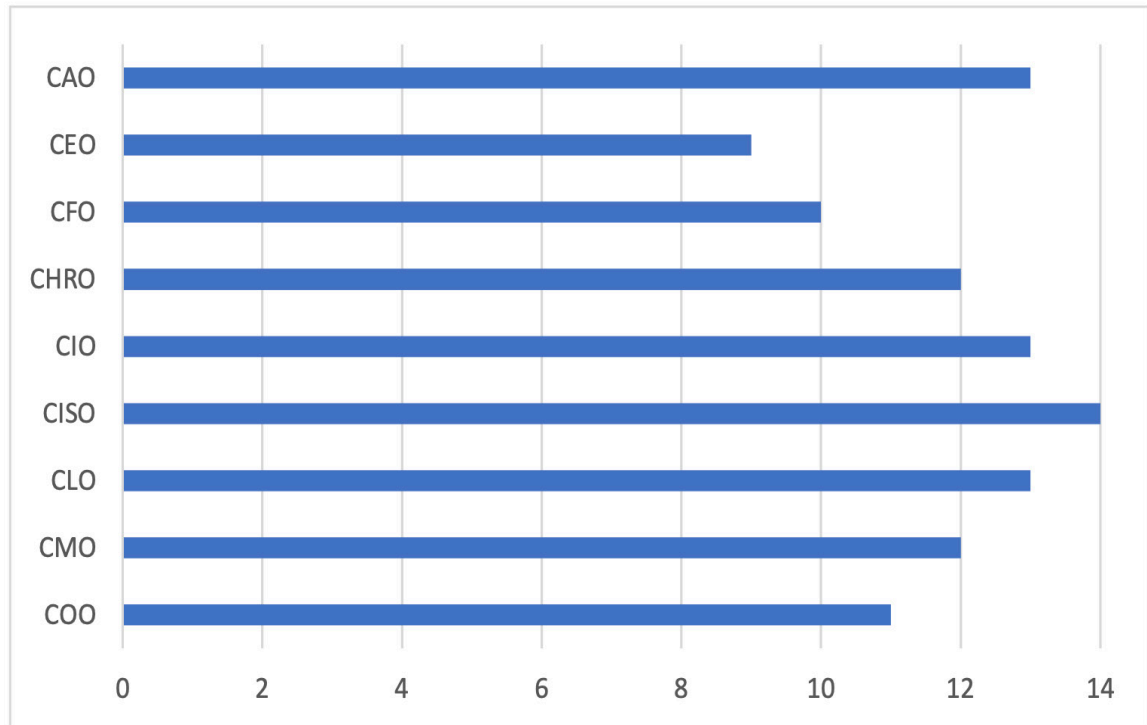
In their responses to a follow-on question, interviewees said that the fact that 75% of C-level executives eventually get some form of a business degree demonstrates that the knowledge obtained from a business degree is important for a C-suite role.

Value of a Higher-Level Degree and Degrees from Top Universities. As Figure 2 shows, about half of Fortune 500 CIOs in the LinkedIn sample have a master's or Ph.D. (or equivalent) degree, often in a business-related area. The interviewees typically offered two reasons for this. First, a master's degree is often a reflection of a motivated person who has the drive to achieve goals and rise through the corporate ranks and become a CIO if given the opportunity. Hence, a master's degree is often an early signal of an

⁸ Anderson, J. and Ball, N., op. cit., 2015.

⁹ Mazzola, D. J., Louis, R. D. S. and Tanniru, M. R., op. cit., February 2017.

Figure 3: Years to First C-Level Position After University



individual's drive and ambition. Second, CIOs without first degrees in business need business-related education to qualify them for a seat in the executive suite. Figure 2 also shows the highest degree earned for the other C-Level roles.

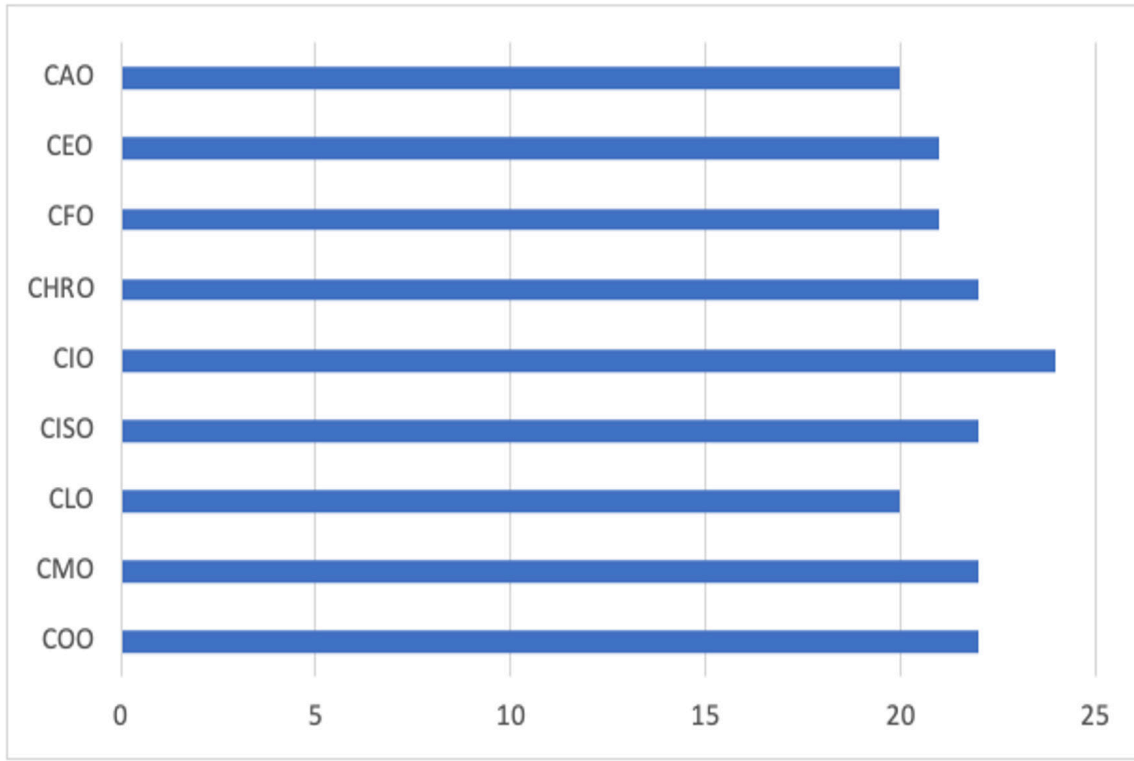
We also asked the interviewees about the importance of having a degree from a top-100 university (as ranked by the U.S. News & World Report). The LinkedIn data showed that of 60% of Fortune 500 CIOs had a master's or Ph.D. from a top university, but only 32% had a first degree from such an institution. Half of the interviewees mentioned lack of financial resources as a potential reason for not attending a top-100 university at the undergraduate level. But they offered mixed reasons for attending an top institution for a master's degree or Ph.D. Some said that a higher degree from a top school carries an aura that is important when hiring. Others said that drawing a distinction between the top-100 and other institutions for master's degrees was somewhat meaningless because the top 100 probably accounted for most higher degree education offerings. One said that the

choice of school was mandated. Hence, though different reasons were given for the value of a higher-level degree from a top university, most of the interviewed CIOs felt that a master's or Ph.D. degree needed to come from a top-100 university.

Timeline for Getting a Top CIO Position

Time to Reach First CIO Position. One of the standout facts from our research is that it takes CIOs an average of 13 years after leaving university to reach their first C-level role (usually not in a Fortune 500 business), longer than most other C-suite executives (see Figure 3). Our interviewees thought this is because the CIO position is responsible for more knowledge domains than other C-level roles and thus, to be effective, requires a CIO to have more diverse experiences. They also seemed shocked that it only took 13 years to reach the first CIO position. They felt that it should take longer. However, these CIOs had been employed by Fortune 500 companies for a long time and probably responded from the perspective of how long it took to become a CIO in a massive company. But

Figure 4: Years to First Fortune 500 Position After University



they noted that anyone can quickly become a CIO if they start a small company and give themselves that title, but that wouldn't be the same thing as working in much larger businesses.

Time to Reach a Fortune 500 CIO Position.

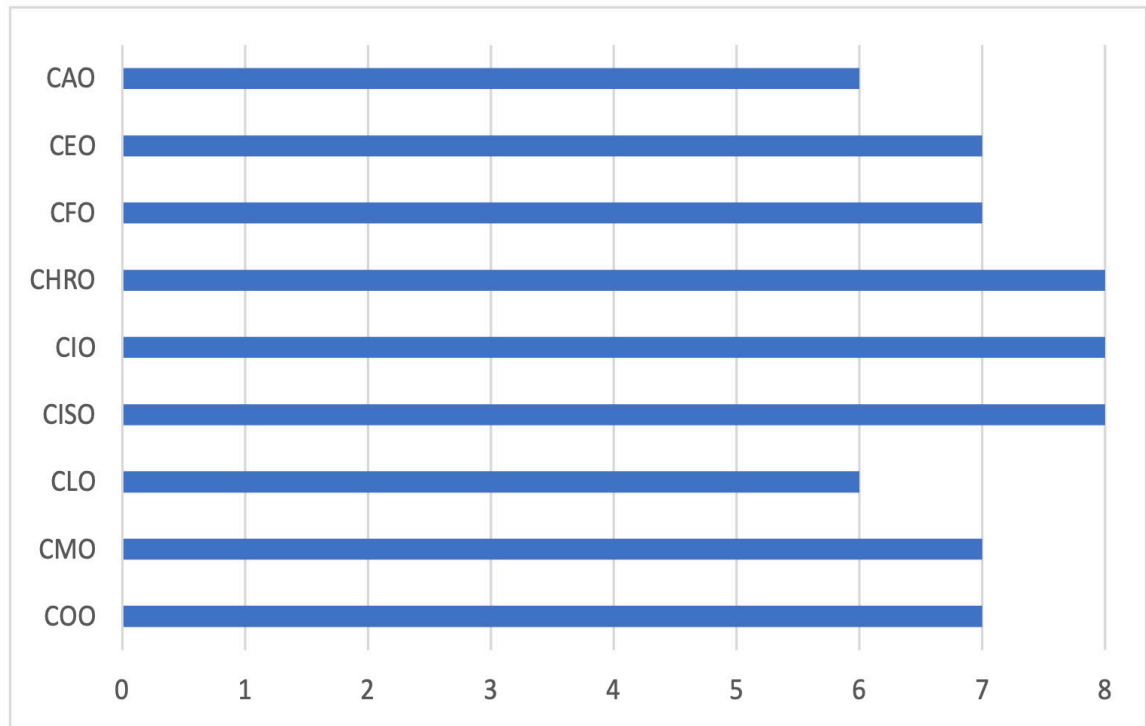
Our analysis shows that it takes an average of 24 years after leaving university to reach a Fortune 500 CIO position (see Figure 4), again longer than any other executive role (average of 21.5 years). A common theme in the responses from our interviewees was that it takes time for technical people to see and understand the businesses they work for through a strategic and value-oriented lens as opposed to a technical lens. In addition to understanding the business-oriented perspective, technical people need to learn to communicate effectively in that context as well. Ironically, a deep technical focus can help technical people advance in their early careers, but those skills are not highly relevant to the CIO role, which is more strategic- and leadership-oriented.

The interviewed Fortune 500 CIOs suggested that other business roles (e.g., accounting,

finance, marketing) learn the language and values of business faster than technical people who may inadvertently spend their entire careers using a different language and set of values. What this implies is that reaching the top in a technical field is harder and takes longer because it requires mastering two different work contexts.

Impact on Time to the Top of a First Degree from an Elite institution. The LinkedIn data indicates that a first degree from an elite university shortens the time to reach the C-suite by 10 months. However, the interviewed Fortune 500 CIOs thought that it wasn't an MBA or attending an elite university that sped up a person's path to becoming a CIO but, rather, it was the characteristics of the person. These CIOs reflected on the hundreds of people they had worked with and felt certain that some people were simply more driven and ambitious than others. It was the driven people who got MBAs or attended top universities or sought leadership opportunities. Even though the data showed that having an MBA and attending an elite

Figure 5: Average Number of Work Roles Prior to Fortune 500 Position



university sped up the path to becoming a CIO, our interviewees resoundingly said that this was a symptom of the individual, not the cause of their advancement.

They also said that, in many organizations, it would be impossible to interview for a CIO position without having attended the right schools or having an MBA because the hiring process is often controlled by HR professionals rather than functional managers or executives.

Work Experience in Prior Roles

Number of Prior Roles. As shown in Figure 5, the LinkedIn data shows that Fortune 500 CIOs have worked in an average of eight roles before taking on that position, one more than the average for other C-level executives.

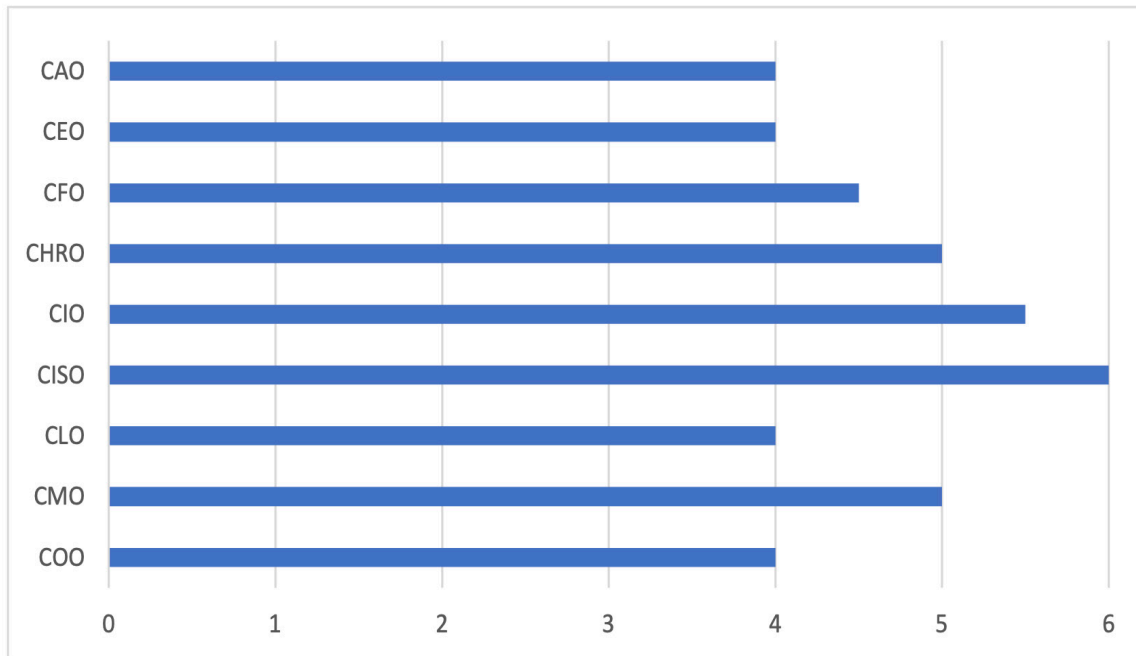
We asked the interviewed Fortune 500 CIOs about their thoughts on the prior work experience needed to become a top CIO. Their responses were consistent. Each saw the CIO role as being distinct from other C-level roles because the CIO manages more diversity than other functions. CIOs need to understand more

distinct roles than their counterparts, so they need more varied work experiences, and it simply takes longer to obtain those experiences. To manage an organization's IT function, CIOs need to understand what the many different roles underneath them do. CIOs therefore need to experience more roles than their C-suite peers before being ready to assume command of their division.

Number of Prior Employers. As shown in Figure 6, CIOs have worked on average for more companies than other C-level Fortune 500 executives. Our interviewees gave a variety of reasons for this: fluidity of the IT skillset when moving across companies, boredom in roles, advancement opportunities, pressure from recruiters to take new roles, the need for multi-disciplinary experience and being moved out of executive levels when organizations want a new perspective.

Prior CIO Experience Outside the Fortune 500. The LinkedIn data shows that 90% of Fortune 500 CIOs had prior CIO experience in non-Fortune 500 businesses. The interviewed

Figure 6: Average Number of Companies Worked at Prior to the Fortune 500



CIOs emphasized that Fortune 500 companies try to make safe hires when selecting for executive positions and will thus prefer to hire experienced CIOs with successful track records. Other studies of CIO turnover show that organizations often look for specialized expertise or entirely different approaches to management, when choosing a new CIO.¹⁰ This would explain why internal employees seldom transition into the CIO role at a Fortune 500 company.

Other Career Advice Offered by Interviewees

The final insight provided by the interviewed Fortune 500 CIOs was the importance of individual characteristics in ascending to the Fortune 500 executive ranks. Though the LinkedIn data suggest taking certain steps, such as getting an MBA or a degree from a good university, was important, the interviewees believed these findings are misleading.

Throughout their careers, they had encountered individuals with personal drive and high work ethics who start at the bottom of companies and bubble up to the top. Driven individuals typically seek out further education from elite institutions after working in their first post-university roles. They also seek out learning experiences and challenges. Moreover, they were often flagged as up-and-comers in organizations and given internal opportunities to develop themselves, particularly to obtain business knowledge and not just IT knowledge. They were willing to forgo vertical growth in an IT specialization to gain lateral growth into other areas of their discipline. Finally, up-and-coming CIOs established social networks of advisors and mentors to guide them throughout their careers.

We summarize all our guidance for creating a career roadmap that leads to a Fortune 500 CIO position by paraphrasing one of our CIO interviewees, who said that starting to think about becoming a top CIO in your mid-40s is too late. An aspiring Fortune 500 CIO needs to understand the experiences they need early in

¹⁰ See: 1) Applegate, L. M. and Elam, J. J. "New Information Systems Leaders: A Changing Role in a Changing World," *MIS Quarterly* (16:4), December 1992, pp. 469-490; and 2) Leidner, D. E. and Mackay, J. M., op. cit., March 2007.

their career and seek them out, rather than wait for them to happen.

Concluding Comments

While the CIO role is a coveted goal for many IT professionals, only few attain it— particularly within the pool of Fortune 500 companies. The primary reason is that many do not take the necessary steps that current CIOs have taken. More critically, most lack the knowledge of what these steps are, rendering their efforts toward this career goal ineffective. The data in this article highlights three key areas that aspiring leaders should focus on to maximize their chances of reaching a top IT leadership position: business perspective, work experience, and strategic career planning.

Gain A Solid Business Perspective

Understanding the business side of organizations is crucial. The annual SIM IT Trends study shows that 25% of CIOs come from areas outside of IT.¹¹ This indicates that without a solid business perspective, IT employees may be overlooked for leadership roles. Acquiring business knowledge can be achieved in many ways: through a business degree, corporate training, or on-the-job experience. However, a formal business degree from a top university is often the most reliable method, as it helps candidates pass HR screenings and avoid career progression barriers. As one of our CIOs with a computer science background shared: “I got to a point in my career when I started to realize that to be part of the strategic conversations and to be able to understand how to drive strategic value with technology, I needed to understand how business worked. My MBA catapulted me in my career.”

Diversify Work Experiences

To effectively manage the IT function, a leader must understand its various roles. After all, and as noted by one of our CIOs: “IT is the most diverse of all the business functions.” Aspiring leaders should therefore aim to have experience in multiple IT roles, even if this means moving laterally within the organization. While this

approach counters the natural tendency of individuals to stay in familiar roles where they have the most experience and can achieve the most pay, our study suggests experiencing eight different work roles is paramount during one’s career. Additionally, working at different companies is advisable. Aspiring CIOs should aim to work for about six different companies to gain diverse perspectives and leadership styles and spend about 2.5 years at each. Networking and mentorship play also pivotal roles, as noted by one of our CIOs: “Always know who your advocates and mentors are.” Building strong relationships with mentors and industry peers can provide invaluable guidance and open doors to new opportunities.

Dedicate Time for Strategic Career Planning

Timing and pacing are crucial for career progression. Aspiring Fortune 500 CIOs should aim to secure their first CIO position around 13 years post-education and a Fortune 500 CIO role by 24 years. Organizations favor individuals who demonstrate a clear upward trajectory. Moving too slowly can signal a lack of drive, while advancing too quickly may raise concerns about maturity and readiness. From our conversations, we also learned that there is something more than just age or timing at play: “There is something intangible that allows some candidates to resonate with leaders and be accepted.” Soft skills, particularly communication, are critical. Apart from being competent in the general areas of business, communicating clearly, concisely, and critically is a vital skill for becoming a CIO.

Adaptability and lifelong learning are also essential. Aspiring CIOs should continually seek out new learning opportunities and stay abreast of industry trends. As noted by one of our CIOs “Whatever you think you know today will be outdated soon because something new will come along tomorrow.” This mindset of continuous improvement and flexibility will be vital for navigating the path to the C-suite.

In conclusion, the path to becoming a Fortune 500 CIO requires a unique blend of technical expertise and business acumen. Aspiring CIOs must be ready for a longer, more diverse journey compared to other executive roles. Our research provides valuable insights into the key areas a

¹¹ Johnson, V., Maurer, C., Torres, R., Guerra, K., Mohit, H., Srivastava, S., & Chatterjee, S. (2024). The 2023 SIM IT Issues and Trends Study. *MIS Quarterly Executive*.

future CIO should focus on and offers a roadmap for to reach the pinnacle of IT leadership in the corporate world.

Appendix A: Research Method

The quantitative data used in this research came from public profiles on LinkedIn, a professional networking social media site. We began with a list of the Fortune 500 organizations and visited their websites to gather the names and positions of each C-suite executive. We limited our list of executives to those that fall within nine traditional roles: chief accounting officer (CAO), chief executive officer (CEO), chief financial officer (CFO), chief human resources officer (CHRO), chief information officer (CIO), chief information security officer (CISO), chief legal officer (CLO), chief marketing officer (CMO) and chief operating officer (COO). After creating the list of executives, we searched for them on LinkedIn and downloaded their LinkedIn profiles as JSON files. We gathered a total of 2,842 profiles. Subsequently, we used custom python scripts to parse the JSON files and create database tables representing profiles, education, companies worked at and roles. The number of records per role type ranged from 197 for COOs to 400 for CIOs, meaning that we had at least 197 records for each role we analyzed. We then queried the database tables to create summary statistics related to our research questions.

After creating a list of findings and graphs from the quantitative data, we sought out CIOs with Fortune 500 experience. The authors of this article are two professors, both members of the *Society for Information Management* (SIM), and a doctoral student. SIM is a national organization comprising nearly 4,000 IT leaders, including many Fortune 500 CIOs. Following Institutional Review Board approval for our research study from our universities, we reached out to nine CIOs with Fortune 500 experience that are active with SIM and successfully interviewed six of them. These interviews were conducted over five weeks via Zoom and recorded. The responses were summarized and, where necessary, reworded for clarity when incorporating them into this article.

Appendix B: Interview Questions and Responses

Questions About Education Requirements

We asked the six Fortune 500 CIOs seven questions related to the educational requirements for becoming a top CIO.

Question 1. What is Your Perspective on the Importance of a Fortune 500 CIO Having an MBA?

Our LinkedIn data shows that only 18% of CIOs have an MBA, compared to 12% of chief information security officers, 21% for CEOs and 35% for chief financial officers.

Lodging CIO. I got my MBA because I thought it was important for a CIO. My first degree was in computer science. I got to a point in my career when I started to realize that to be part of strategic conversations and to be able understand how to drive strategic value with technology, I needed to understand how business worked. My MBA catapulted me in my career. CIOs without that business lens won't be as successful. They will probably be the type of who cuts costs and maintains infrastructure. But they won't be transformative or innovative. Overall, I'm surprised the percentage is so low for the other roles.

Managed Solutions CIO. I'm a business CIO, not a technology CIO. Talking to other C-suite executives in business terms (e.g., finance) is super important. An MBA helps ground you in that, even though you can get that grounding in other ways. If you want a seat at the table with the other business leaders, you must be able to think, talk and understand in ways that are meaningful to them. The role is shifting more toward business. There used to be a lot of value in managing IT infrastructure and operations, and even development to some extent, but that importance is lessening as more people are buying and renting IT solutions.

Information Technology CIO. I think an MBA helps, particularly with financial aspects and understanding the language of business.

Pharmaceutical CIO. I expected the percentage to be much higher. I believe an MBA is incredibly important. Those with an MBA seem to

be more well-rounded and have better business acumen. Those that don't may be good leaders, but I don't see them as well-rounded. Early IT career development focuses on technology, rather than relationships and the connective tissue of organizations.

Convenience Retailing CIO. I don't have an MBA. It's a fine line whether an MBA is important. An information security specialist should have additional education, but I spent seven years running operations in a major restaurant chain. After that I learned to match technology solutions to operations. Leaders should find their own style and own it and not be afraid to call out their gaps.

Question 2. Do Employers Commonly Pay for CIOs' MBAs or do CIOs Get them Before They Become a Fortune 500 CIO?

Lodging CIO. I haven't noticed a consistent pattern, but it seems like a perk provided by some companies. I feel that my MBA qualified me for prior promotions, which led to a Fortune 500 CIO role.

Electronics CIO. I paid for my staff to get an MBA. It contributes to getting a CIO position, but it is not right for everyone. Highly technical people with less business experience need it. That being said, you need to get an MBA before you become a CIO.

Managed Solutions CIO. I think people typically pay to get an MBA before becoming a CIO. It is a prerequisite for getting the experience to earn a seat. It's much harder to get your first CIO position than the second one. Getting that first position depends on whether your resumé causes someone to look at you in the first place. It seems unlikely you'll have the time or inclination to get an MBA after you become a CIO because you are so busy.

Information Technology CIO. In most cases, people get an MBA before they are even considered for a CIO position.

Pharmaceutical CIO. The idea that companies will fund investments in higher education with no strings attached is dated. However, my company did pay for me to get an MBA.

Convenience Retailing CIO. You get an MBA before you get the role. You don't have time once you are in the all-consuming CIO role.

Question 3. Does it Matter if the First Degree Is Not Related to Business?

The LinkedIn data implies that a business-oriented first degree is not necessary to becoming a Fortune 500 C-level executive (including a CIO). Though 50% had business-related first degrees, 50% had degrees in a variety of subjects, including English, political science, Russian and computer science.

Lodging CIO. I'm not surprised that only 50% have business degrees because CIOs probably have first degrees in computer science or information systems. You need to be familiar with an engineer's role to manage them. But I wouldn't look at each role the same because they have different educational needs.

Electronics CIO. For some roles you need a degree in the business discipline you aspire to, like finance, IT and marketing. Others, not so much. When I'm looking at a candidate, I'm more concerned about the rigor of the degree rather than the topic. Is it from a reputable institution that provides a complete education?

Managed Solutions CIO. It's not important what the first degree is in.

CIO. I'm a sociology and Russian double major, with a double minor in chemistry and history. To my mind, the first-degree topic doesn't necessarily matter. The emphasis of the CIO role is understanding technology, articulating it in business terms and linking it to the mission of the organization you are part of. So, the role is inherently non-technical on the communication side, but the technical side is also required.

Pharmaceutical CIO. I think education in the general sense matters. Education teaches people how to think. My bias and experience are that people with higher-level degrees think differently than those without them.

Convenience Retailing CIO. Having a non-business first degree is not a barrier. It is hard to ask 18-year-olds to make long-term decisions. Over time, they gravitate toward business because they can make money.

Question 4. Following on from the Previous Question, What Are Your Thoughts on Fortune 500 C-level Executives Having Some Type of

Business-Based Degree (Especially Higher-Level Degrees)?

Lodging CIO. That make sense to me. You need a formal business-based education in publicly traded major companies. You need to understand how to drive business value. The best IT leaders are those who can take off their technology hat and put on a business hat.

Electronics CIO. I don't have a view on this.

Managed Solutions CIO. It makes sense because you need a grounding in business principles like accounting finance, marketing and legal.

Information Technology CIO. Logically, this makes enormous sense. The language of business revolves around financials, statistical manipulation, understanding of varying models on a global basis (e.g., Michael Porter's concepts, etc.). For those without a business degree, most Fortune 500 companies provide business-level training for executive development. We had mandatory yearly refreshers for C-suite executives and lower executives.

Pharmaceutical CIO. 75% is a little higher than I would have expected, but I like it.

Convenience Retailing CIO. I'm not surprised. My view is that aspiring CIOs should get an MBA, not an IS-based higher degree.

Question 5. What Are Your Thoughts on the LinkedIn Data Showing Approximately Half of CIOs Have a Higher-Level Degree?

Lodging CIO. Having a higher-level degree is an indicator of the type of person. Some people are driven to succeed outside of the path they are on. Those that pursue continuing education are driven enough to work their way into a CIO role. Or for people like me, they see it as a necessary step to get into this role.

Electronics CIO. About 50% is what I would expect.

Managed Solutions CIO. A higher degree is part of getting you to a top CIO position. It is an important part of establishing executive presence. But advanced technical degrees are not as important.

Information Technology CIO. 50% seems low. I would have guessed 70%-75%. You need the language and culture of business inculcated

into the individual, and post-graduate education does that better than undergraduate education.

Pharmaceutical CIO. I'm not surprised. 50% makes sense when you consider the range of companies in the Fortune 500, from digital natives to traditional industrial companies to service industries.

Convenience Retailing CIO. The landscape is changing. More people are being appointed to top CIO positions without degrees. Yes, a higher-level degree is a benefit, but it's not a necessary requirement.

Question 6. What Are Your Thoughts About the Benefits of Attending an Elite Institution?

The LinkedIn data shows that over 60% of CIOs in the Fortune 500 have graduate degrees from the top-100 universities, whereas only 32% of CIOs received bachelor's degrees from elite institutions.

Lodging CIO. That finding relates to several things, including accessibility. At an earlier stage in life, people may not be able to attend an elite university because of finances. Later, when studying for a higher-level degree, they may have more financial means and will likely choose the school that will be most helpful in getting them to their next higher job role. The first degree launches you into the job market, but the second degree determines how big of a leap you are going to make. The second one matters more than the first.

Electronics CIO. The institution you get your academic qualifications at is relevant and important. Maybe they couldn't afford to go to a top school for their first degree. But they might be more discerning about the institution they choose for their higher-level degree.

Managed Solutions CIO. A first degree is your table stakes. Unless you work on Wall Street or want to work at a top consultancy firm like McKinsey or Bain, I don't think the institution matters that much. Career progression is more about the job opportunities you find and how you grow individually and in terms of responsibility. Education qualifications just get your foot in the door. Also, the top-100 universities are a pretty broad group. Yes, the top 10 are certainly elite, but to my mind the lower 90 can't really be considered as elite.

Information Technology CIO. My gut reaction is that attending an elite university is not that important. But that reaction needs to be qualified according to whether the corporation pays for the degree or where it is located. At some organizations I worked at, there were geographically convenient schools to attend and, at others, the organization strongly recommended certain universities. Some companies would send executives to local elite universities as part of a developmental program, so the choice wasn't made by the individual. I was offered the chance to go to Harvard or MIT by my organization, but those opportunities were only offered at lower levels of management. More senior executives weren't offered that opportunity. The organization expected you get an advanced degree to qualify you to become a senior executive down the road.

Pharmaceutical CIO. Organizations hire graduates of top-tier institutions because of the reputation of those institutions. A degree from an elite university creates an incredible pedigree for the alumni. It is easier to get hires approved if candidates come from the better schools compared to the lesser schools.

Convenience Retailing CIO. Too much emphasis is put on the benefits of degrees in general. I went from an \$8.25 an hour manager at a restaurant to a leading technologist. I don't think the school I attended would have changed my situation.

Question 7. What Other Insights on Education Would You Share with Aspiring Fortune 500 CIOs?

Lodging CIO. Anyone in a CIO or chief technology officer role needs to think like a business person. You must be able to measure value and success in the same way as the company does—through the prism of the profit and loss statement. Most likely what got you to a top CIO position was a technology background, not a business background. You need to find a way to bridge that gap. It could be through taking non-technology roles to get some breadth or through education. You need to become better positioned to wear everyone else's hat.

Electronics CIO. Getting a robust first degree is important, but your grade point average (GPA) doesn't matter particularly. There is a lot

of benefit in rounding out your education with post-graduate education. An MBA is especially beneficial for people with technical first degrees. When I interview people, I tend to discount them if their master's degree is an extension of their bachelor's degree. The institution they studied at matters too.

Managed Solutions CIO. There is a lot of focus on management education, but there is little education on leadership. Management education is overrated. It is really hard to learn leadership. You may have to find that on your own, outside of a university education.

Information Technology CIO. At the executive level today in the Fortune 500 there are 30 people who have worked for me and over 200 in the Fortune 2000. My single greatest competency in working with them was being able to communicate in a non-technical manner. I am highly technical and self-taught, but the ability to communicate and think critically and concisely and link ideas together, is the single strongest competency that organizations I worked for were looking for. Being competent in other areas, like finance, accounting and organization dynamics, were equally important, but clearly communicating with critical thinking was by far the most important.

Pharmaceutical CIO. I've worked in an expatriate role, so I put a lot of importance on language. Deep industry experience is also important, but you don't get that in the classroom.

Convenience Retailing CIO. Starting again, I would have studied for a master's degree early in my career. I would get an MBA on top of a computer science degree.

Questions About the Timeline for Getting a Fortune 500 CIO Position

The five questions put to the interviewed Fortune 500 CIOs about how long it takes to become a top CIO and their responses are set out below.

Question 1. What Are Your Thoughts About the Time Taken for CIOs to Reach their First C-Level Position Compared to Other C-Level Executives?

The LinkedIn data shows that Fortune 500 CIOs took an average of 13 years to reach their first C-level position (almost always outside of the

Fortune 500), which is longer than the average for other C-level executives.

Lodging CIO. I'm surprised it is that low because CIO roles are hard to obtain. Those who do make it are extremely motivated and have to have a lot of luck. They must have the right mentors and advocates (which are two different things) along the way. There are a lot of people who believe they are working toward becoming a CIO and are progressing slowly, and I think this data tells us that those who are moving slowly are beaten by someone with more drive and passion to get there. If employers take a risk on who they appoint as a first-time CIO, they want someone who has a steep career trajectory.

Electronics CIO. I was a little surprised by that number but, after thinking about it for several days, I don't really have a comment.

Managed Solutions CIO. That sounds short to me. It took me about 14 years.

Information Technology CIO. Thirteen years sounds about right. It took me about that long and it was considered very, very fast. However, I had a previous career in the military, so it was 23 years after I graduated. When I was appointed, I was told that my life experiences were what qualified me for the position. I think that if I had gone to a smaller organization (I started at a Fortune 100 company), I could have been a C-suite executive at 28 or 30. Becoming the CIO of a Fortune 500 product-based organization will probably take longer because you need to learn manufacturing and distribution. But becoming the CIO of a fintech or brand organization will probably be quicker because the depth of knowledge needed is less.

Pharmaceutical CIO. Before seeing this data, I would have guessed 12 to 15 years, because of the range of experiences you have to go through to become seasoned enough to sit at a senior level. Recruiters used to tell me, "With your experience, if you were only X years older, I could get you this job." It was frustrating when they would tell me that. The reality is that if you have some gray patches in your hair, you are viewed as older and more mature.

Convenience Retailing CIO. I used to work in operations. Operations are straight-forward—you get good at it quickly. In technology, I couldn't move up until I went sideways. I won't move directors up quickly until they have moved

laterally to widen their experience. There are no lateral moves in operations. In technology, you need it.

Question 2. What Are Your Thoughts on Fortune 500 CIOs Taking Longer than Other Executives to Reach the C-Suite?

According to the LinkedIn data, it takes 24 years to become a Fortune 500 CIO, compared to an average of 21.5 years for other executives.

Lodging CIO. My perspective is that vacancies for top CIO positions are few and far between because many incumbent CIOs do not want to move on. It is a good role to have. I think it is important to dig deeper into this data. If companies see technology as a cost center, a necessary evil, then the CIO's role is less demanding; you just have to keep the lights on and no one will be mad at you. Therefore, the role at the company will be held by a CIO for a long time and replacements will have a hard time getting into that position. If the technology group is seen as a business enabler, the role is more demanding and I would expect the tenure of the CIO to be shorter, not because the CIO has failed, but because entrepreneurial people are probably moving on.

Electronics CIO. That timeline means people are appointed as Fortune 500 CIOs in their mid-40s, which is consistent with CIOs being in the broad age group of 40s and 50s. But I don't have any insights as to why it takes longer for CIOs to reach the top.

Managed Solutions CIO. I think that not everyone aspires to be a Fortune 500 CIO. I wasn't seeking it. I was looking for challenges and places where I could make a difference, and working with people that I liked.

Information Technology CIO. I'm dead average. I thought I was special (laughs). The larger the company, the greater the complexities—financial, for example. There are mental tiers that we discuss among CIOs in the industry—the growing mental tiers you encounter in a \$100 million or lower company, a \$500 million company, etc. Once you get above about \$2 billion, it doesn't matter if you have 12 or 12,000 people on your team, the complexities related to regulations and oversight is extraordinarily complex. In the U.S., complying

with the regulations in California, Illinois and New York regulations is staggeringly complex. Operating in just one additional state significantly increases the complexity of regulations. Multiply the complexity by an order of magnitude when you leave the borders of the U.S. You need to understand how data can be hosted, how it can be transacted, understanding who, what, why, when and how data can be owned. All of that is the job of the CIO, so it's no wonder it takes longer to reach the C-suite.

There is a reverse pyramid of complexity that happens when the size of the business goes above two billion dollars. The accounting side is heavily involved, also human resources. There are also differences in regulations at the county, city and state levels. It takes time and effort to understand the complexities of safeguarding your company in terms of data usage. The complexities can arise either because of scale or the specific industry. Businesses operating in the government, pharmaceutical, healthcare or financial sectors will face large-scale complexities regardless of size. Fifty-million-dollar companies in those sectors have similar complexities as two-billion-dollar companies.

Pharmaceutical CIO. I think it takes CIOs longer to reach a Fortune 500 C-suite because they require time to learn how to communicate in a language that the business understands. It takes technologists a long time to understand how business value is created. Moreover, companies need to learn what they need from a CIO candidate and that also takes time. Many executives at the point of retirement still don't understand the value of the systems that run their companies. They don't understand where technical people are coming from and what they do. It is like a dating game: there is something intangible that allows some candidates to resonate with leaders and be accepted. Technologists need a base of experience before they can communicate with business leaders in meaningful ways. Business leaders want to feel that you get it.

Convenience Retailing CIO. My view is that the difference comes down to what an organization thinks makes a CIO. In a small organization, you can have small responsibility and be called the CIO. Small shops may inflate titles.

Question 3. Do You Think an MBA is the Catalyst for Any Executive Reaching the C-Suite Earlier?

Our data suggests that, across all disciplines, executives with an MBA reach the C-suite 13 months earlier than those without one.

Lodging CIO. Yes, but I would have thought that an MBA had a bigger impact. I frequently tell people either to get a degree or to go through the school of hard knocks. A year working on a degree is an accelerator that brings you twice the impact of a year of experience.

Managed Solutions CIO. This finding emphasizes the credibility gained by having general business knowledge. By itself, a degree isn't the thing that matters; it either opens the door for you or gives you the skills to make a difference once you get in the door. My credibility comes from having previously been in enterprise sales, so I can talk credibly to salespeople. I also used to run marketing for a publicly traded company. Hence, I have perspective and experience when I talk to people about marketing. Having an MBA fed into the credibility I had in those roles. You get credibility through experience or education, or both.

Information Technology CIO. No, I don't think an MBA is the catalyst for reaching the C-suite earlier. Individuals who make the effort to get an MBA are the ones looking to grow and advance. I used to keep a list of employees who approached me to talk about either furthering their education or pursuing more challenging work roles. Invariably, they were selected by other executives for advancement. My perception is that it is mostly about the individual and how they are willing to grow themselves and challenge themselves, and getting an MBA is an indicator of that.

Pharmaceutical CIO. Yes, I believe that is true. In publicly traded companies, the candidates who are put in front of hiring managers have to have a post-graduate degree. The need for an MBA is institutionalized in the HR environment. The experience I had is that I wouldn't have even made the list if I didn't have an MBA.

Convenience Retailing CIO. There may be an indirect link. It has to do with your determination. In some cases, it may be a job requirement.

Question 4. Does a First Degree from an Elite University Shorten the Time to Reach the C-Suite?

Our LinkedIn data suggests that, across all disciplines, getting an undergraduate degree from a top-100 university shortens the time to reach the C-suite by 10 months.

Lodging CIO. That finding may be correlated with an individual's motivation. Someone who goes to MIT, rather than a community college, to study computer science is putting in a different level of effort. Your effort level is the driver of your career trajectory. Your first degree is related to how quickly your career progresses, but it is not the main driver. That degree, and the personal networks you form, sets you off on your career. Your first jobs, and the pace of your career trajectory, will be different depending on the university you went to, but individual motivation is a key driver and that is what you are seeing in your data.

Managed Solutions CIO. The best and the brightest go to the best universities, so they are going to progress the fastest regardless.

Information Technology CIO. Yes, a first degree from an elite university accelerates your career.

Pharmaceutical CIO. I'm not surprised by your data. If you go to a top university, people tend to believe you have learned more. When interviewing, hiring professionals give preference to candidates from better schools, at least in the first interview. I had a colleague who went to Wharton and was aggressive but not exceptionally bright. Nevertheless, he achieved a lot in his career. I asked him what made the difference in his career and he said that he had leveraged the network he built as a Wharton alumnus throughout his career. He said his education wasn't any better than one from a state school.

Convenience Retailing CIO. Your data goes against what I've previously said, so I have no strong opinion.

Question 5. What Other Insights on How Long It Takes to Get to the Top Do You Have for Aspiring Fortune 500 CIOs?

Lodging CIO. I disagree with those who think that getting to the top will eventually happen

regardless of what they do. It takes time and effort to become a Fortune 500 CIO. If you aren't actively engaged in making it happen, it will never happen. I recommend you use the time you have to fill in the gaps in your skillset. That could involve taking roles in different parts of IT. To get more breadth of experience, I worked in ecommerce, call center applications and finance, and was a product manager, to ensure I was the best qualified for the CIO role when it came, because these positions don't come up very often. If you are working really hard in just one IT role, somebody else will be more qualified in terms of breadth of experience, so be smart while waiting for the role to become available.

Electronics CIO. Aspiring Fortune 500 CIOs should consider getting a post-graduate business education, whether you pay for it or the company does. They should seek out relationships outside of the IT bubble. Walk in the shoes of a chief marketing officer, go on sales calls, stand on the manufacturing floor. Some people only see through the technology lens.

Managed Solutions CIO. It depends on the size of the company. My grandson asked me how he could become a CEO in three years, I told him he should start his own company, but then said "What are you talking about, you bozo, you're still in college." You need to consider the scope of responsibility you want. Being the CIO of a 100-million-dollar company is different from a \$350+ million one. To prepare yourself, you need business acumen and knowledge, you need technical acumen and knowledge, and you need it across all the technical disciplines (project management, infrastructure, development, packaged software). Spending three years just doing one thing like software development will only prepare you for being a director of development. It takes a while to know enough, and then know enough to know what you don't know so you can get help.

Information Technology CIO. To a certain extent, the longer it takes to get to a top CIO position the better. A background of working purely in IT is a detriment. If CIOs have been in the role for four or less years, I shrug my shoulders and see them as less successful. If they have been in their role five or more years, I give them credit for being successful. If you aren't good at your job, you'll be gone before five years.

If you are not competent, companies won't want to pay the financial packages to buy you out and you'll be asked to sit back and twiddle your thumbs while other more competent people do the job for you. Often, the CIOs who struggled only knew IT. They did not know distribution, or supply chain, or human resources, or finance, or sales or R&D.

I prefer to develop executives outside of the IT function. By working in other functions, they gain an understanding of what the organization actually does. IT is not the business—it is the fabric that ties the organization together. Many executives who grow up within IT have trouble articulating what their company actually does. I spent seven years outside of IT being rotated around different business functions.

Pharmaceutical CIO. I keep going back to the soft skills needed to become a top CIO. Computer science graduates don't have these skills. I saw the same thing in industry. When people were highly qualified, but didn't have the right soft skills, I couldn't get them promoted to the next level. Reputations are built in organizations, and it is much easier to sell people who communicate well and are social. In contrast, you aren't going to be promoted because you were a good programmer. You don't want to promote the guy who eats from a brown bag in a corner. Instead, you favor someone who seeks out the marketers and eats with them or the sales leader.

Convenience Retailing CIO. My advice is be patient. Be prepared to take a risk. I spent 25 years at a major restaurant chain and then moved companies. That decision accelerated my career growth.

Questions About Prior Work Experience

The three questions about the prior work experience (roles and companies worked for) needed by an aspiring Fortune 500 CIO, and the responses provided by the interviewed CIOs, are set out below.

Question 1. What Are the Reasons for Fortune 500 CIOs Having More Prior Work Roles on their Resumés than Most Other C-Level Executives?

Our LinkedIn data shows that Fortune 500 CIOs have an average of eight prior work roles (e.g. project manager, junior programmer, etc.),

compared to an average of seven for most other Fortune 500 executives, and they worked in each of these roles for an average of five years.

Lodging CIO. I'm surprised the gap between CIOs and other roles isn't bigger. There is a huge number of different IT roles that report to a CIO. There are far fewer roles reporting to other executives (e.g., chief financial officers). I believe that, to be an effective leader, you need to be able to lead all the roles underneath you. That is what I did in my career. Very intentionally, I took on a bunch of different roles. You have to be able to understand the different jobs to be able to lead those jobs.

Managed Solutions CIO. There is a lot more to understand and learn in the IT function. Typical IT career progression goes through junior developer, analyst, project manager, team leader, manager of a function, then director, and every role has very different skillsets. The developer and analyst roles are wildly different, as are the analyst and project management roles. Some people never make the transition when the opportunity to move to a new role arises. But in other disciplines, such as sales, the role isn't fundamentally different as you progress from internal sales to external sales, then to sales manager and then to sales director. As a sales career progresses, you take on management responsibilities, watching someone else's quotas rather than your own, but the job isn't that much different. The various roles in IT are all different.

In my most recent role, I had to explain to the CEO that IT people aren't interchangeable. He was assuming that I could take anyone of my team of 30 and assign him or her to solving a problem I have. I had to explain that you can't assign a help desk person to solving a network problem. This was a new perspective for the CEO, who was a sales guy. In sales, if there is a need for a sales guy in a territory, anyone in the sales team will do. I explained that, as a CIO, I might have one database analyst, one network person, one phone person and one system administrator, and that none of those people can do the other person's job. That was mind blowing for the CEO, who initially saw all IT people as being the same.

Information Technology CIO. IT is the most diverse of all the business functions. Just because you understand networking, doesn't mean you understand storage; just because you understand

storage doesn't mean you understand compute; just because you understand networking, storage and compute, doesn't mean you understand programming; just because you understand programming doesn't mean you understand application layers and middleware; just because you understand middleware and lower software layers doesn't mean you understand architectures for transference of data in datacenters; just because you understand everything about data centers all the way up and back down and out into the cloud doesn't mean you understand the processing that is occurring within them.

Sometimes the IT function is represented conceptually as having six pillars or domains, but I've seen it broken out into as many as 20 separate pillars. Each is discrete. So, to me, it seems logical that you need more role experiences within IT to understand it. In accountancy and finance, there are probably five pillars. In finance, ultimately you are figuring out how to leverage other people's money to absorb your risk. There are a few ways to do that, but it is calculation-based. The IT function is much more diverse and complex. The only other area that I have seen that is similar in terms of diversity is product development.

Pharmaceutical CIO. Your data on prior work experience is a surprise to me but, reflecting on new hires, they not only have to understand their domain, but also need to understand how to manage a project. Over time they need to manage larger and larger projects. They need a wider range of skills than people in other functions. IT people have more responsibilities throughout their career. They need to acquire more tools than others as they progress in their careers.

Convenience Retailing CIO. Your data is a reflection of the complexity of the technology world. I won't move people up until they get the experience. You need a full year in a role, perhaps 18 months, before you are fully skilled. However, after 2.5 years you get bored and look for new challenges.

Question 2. Why Is it that Fortune 500 CIOs Have Previously Worked for More Companies than Other C-level Executives?

The LinkedIn data shows that the average number of previous companies for Fortune 500

CIOs is nearly six, compared to five for other C-level executives, suggesting that a CIO needs to work for more companies to make it to the top.

Lodging CIO. When you are a technologist, the vertical market doesn't matter as much. You can be a Java developer anywhere. Especially at the lower levels, you can chase pay raises and move around. However, when you get higher in an organization, you become more "sticky" because your experience starts to bring value to the table.

I'm biased against people who bounce around too much because they don't take the time to build the rapport with a mentor and advocate who will nurture them and guide their progress to the next higher role. The exception is if you are chasing someone and following on their coattails. You need at least three years at a company to be successful in senior leadership roles, like VP roles. You need that long to understand a company. The speed of transition differentiates people who will become CIOs rather than consultants. Consultants solve a problem and hand a solution off to someone else, but a CIO has to be accountable for a solution delivered today and that is still around tomorrow. You see things through a different lens when you will be somewhere for a longer period of time.

Electronics CIO. I have a sense that CIOs move around more than other C-level executives. As a technologist, you typically can work in different companies, so you don't build up narrow domain expertise for a particular type of business. The same applies to other functional experts like HR leaders and chief financial officers. It would be harder for people who specialize in a particular business to move around. Technologists are blessed because IT is increasingly relevant to all types of businesses, and there is a wealth of frequent opportunities available to them. Turnover of IT professionals is driven by the wealth of career opportunities.

Managed Solutions CIO. You need different kinds of experiences to become a CIO, and sometimes you need to move to a different company to get that experience. You might be a good analyst at the company you are at, but there might not be a good project management opportunity. You have to make the leap to grab the opportunity you want.

Information Technology CIO. As a disclaimer, I haven't moved around, I grew from the bottom

to the top in the same organization. There is adage in IT that, to progress your career through different roles, you have to wait for those in place to retire. There may be senior programmers who have been at your organization for 15 to 20 years, so the odds are low of getting promoted to a senior programmer position with these people ahead of you. So, to get promoted, you go somewhere else. Career progression in IT requires either your existing company having a very large organizational structure or moving to a different company.

A driven IT professional will want to learn new skills. If the company has standardized its IT for a decade or more (e.g., using the PHP programming language) and you want to learn Java, you either need to learn in your own time or move to a new company. And you'll have to move again if later you want to change from Java to Python. Companies tend to standardize on new technologies only when their existing ones have gone out of support, not because a new technology came along. People don't migrate ERP platforms because SAP or Oracle or Microsoft came out with something new. They migrate because their business model can no longer exist on the 25-year-old ERP stack they have in place.

Pharmaceutical CIO. Part of the reason for CIOs having more previous employers is senior people being placed by recruiters. Having placed you once, a recruiter will come back to you again. Technologists also become aware of the value of multi-industry experience in terms of their long-term career value.

Convenience Retailing CIO. An aspiring Fortune 500 CIO should work for at least a few companies. It is a disadvantage that I only worked at one during my career path. You need exposure to different perspectives and leadership styles. The sweet spot for experience at a company is 2.5 years.

Technology management is hard. You'll never be good enough, fast enough or cheap enough. It is a juggling act. There will come a time when your answers are not good enough you will be moved out. Also, companies look to refresh their technology strategy.

Question 3. What Is Your Reaction to Only 10% of Fortune 500 CIOs First

Becoming a CIO at a Fortune 500 Company?

Lodging CIO. That make sense. Most big companies don't want to take a chance on an unproven person. The consequence of getting it wrong is too great.

Managed Solutions CIO. Typically, you get promoted to your first CIO position from within your existing non-Fortune 500 company and later move on. That wasn't the case for me, but I think I was atypical.

Information Technology CIO. It makes sense and relates to my personal experience. The global CIO for my company was adamant that I either leave the company or take a role under one of my peers and experience disagreeing with most of their decisions. I took the role and it was brilliant. Until you've been put into a hostile pool, you'll never understand the glory of barely succeeding. If things are going well, you at best have 51% support. When things are going poorly, at best you have 49% support. You have to learn to work in an environment where everything that fails is your fault, whether you have been there 10 years or a day. Everything that succeeds is because of sales and marketing. If sales or marketing or finance ever fails, they find a way to link it back to IT. The role I took was chief technology officer/CIO for a product group. I was the person who went to meetings to get yelled at, took incident response calls at 2 am on Christmas Day, went to Israel to talk to border security groups and rode in squad cars in Moscow to defend communication outages. It was the single greatest development opportunity in my life. As a CIO in a different or smaller organization you will get beat up a lot. Having the tenacity to take that experience without losing composure, and figuring out how to make things better, is fundamental to succeeding in the Fortune 500.

Pharmaceutical CIO. That percentage doesn't surprise me. CIOs have about a three-year lifespan. I know how it works. Recruiters aren't allowed to approach people they have placed, so they "trade cards" and share the contact info of people they have placed previously. They know they can entice people with pay and position after about three years. Once you've got a CIO position, you know you can get another, and it will become increasingly lucrative. As a candidate, it is hard not to go for it when recruiters dangle the

opportunity in front of you. Moreover, recruiters at this level are taking home over a million dollars a year, so they aren't doing too bad doing what they do.

Retail Convenience CIO. I do think you need the seasoning before becoming a Fortune 500 CIO. My company looked at me specifically because of my experience in an adjacent space.

Other Advice from the Interviewed Fortune 500 CIOs

After the CIOs had been asked questions about education requirements, timeline for getting a top CIO position and prior work experience, we asked them if there was any other advice or insights they would like to share with aspiring Fortune 500 CIOs.

Lodging CIO. The high-level advice I always give covers four areas. We already talked about two of these (education requirements and prior work experience). The third area is to expand your sphere of influence. Your work role gives you a limited scope of responsibility, but there are always voids of work that need to be done that nobody else is taking care of. Take over those voids and that becomes your new scope. Do it in a politically appropriate way. Fourth, always know who your advocates and mentors are. I know exactly who I leaned on throughout my career and what I took from them. As a mentor, I have five people who followed me into my current role—that is how we operate.

Electronics CIO. There is only one person responsible for your career and that is you. Take ownership of your career through education and work experiences.

Managed Solutions CIO. Mimic the behavior of the role that you want. My advice to people in their mid-career is to do the job of the role you want, so other leaders realize one day that you already do the work required for that job. Make them surprised that you are not a VP, because you already act, talk and dress like one. If you have those characteristics, and are running the biggest projects at the company, then they might as well make you a VP. Conversely, people who sit around and say "when I'm a VP I'm going to ..." will never be a VP, because they are waiting for people to tell them it is okay to do those things.

Getting hired for a CIO position is a weird experience. It is so much more difficult than for

other disciplines. Typically, the people hiring you don't understand what you do. Their expectations are: "We're hiring for a CIO, who must be strategic, must be comfortable speaking to the board, must understand business strategy, must contribute to the executive vision, must know C++ and have five years of experience with SAP." But that's not what CIOs do. However, if you send in your resumé without recent SAP experience, you can't get an interview.

There was a job once that I really wanted, and the headhunter knew me, but he told me he couldn't put me up for it because I didn't have both recent SAP experience and a lot of retail experience. I said, "That's not their freaking problem, they don't know how to run an IT shop, they've had three attempts to implement SAP and they've all failed." The headhunter said I know you are the right guy for the job, but I'm telling you, I can't even put you up. By the way, the guy they hired was quickly fired, and they kept repeating the same mistakes. This is not uncommon at all.

Some time ago, five different people, including my current CEO, sent my resumé to another company's CEO, but we couldn't get past the recruiter because he felt I didn't have sufficient experience to do the coding in SAP personally. Again, the company was looking for the wrong thing (a CIO who could code). I've implemented all of the main ERP systems from a project management perspective, but it didn't matter.

Information Technology CIO. One of the best pieces of advice I ever received was "get over yourself." As a technologist, you become expert and very fluent. But technologists are often the downfall of an organization. Individuals get tied to certain preferences: Apple vs. Microsoft, SAP vs. Oracle, Java vs. Python, Apple vs. Android, off the shelf vs. custom development. Get over yourself; whatever you think you know today will be outdated soon because something new will come along tomorrow. If you think you are the brightest person in the room, find a different room. To implement that advice, go find people doing something you don't understand and ask if you can watch them and if they'll teach you. Also, find people who disagree with you about a technical solution and have them explain why and what; don't argue with them, just listen. Let them teach you what they know and what led to that

decision. At the end of the day, there is no perfect technology, or all companies would just fold into one. There is no single right answer, but there are all kinds of wrong ones.

Pharmaceutical CIO. I'd reinforce the importance of soft skills. But multi-industry experience is also extremely valuable. The only industries that don't value multi-industry experience are automotive and aerospace. In those industries, you get credit for being a decade-long employee. For example, people in automotive believe that the only people who can do automotive are people in that space, and aerospace is even more that way. Those of us who have experience in multiple industries realize that the automotive and aerospace industries have the same challenges as other industries, but because of their pride or ignorance they aren't willing to admit it. All you can do is smile and nod your head and wait for them to come to correct realizations on their own.

Retail Convenience CIO. A senior manager in his mid-40s once asked me what he had to do to progress toward a top CIO position. But it was too late. He hadn't diversified his skills and training earlier in his career. My advice is that, early on in your career, you should understand what you want and what motivates you (money, title, making a difference). But be aware of what you ask for. There are headaches and travel and tradeoffs with more senior roles. You must be willing to move around and take on different roles to make it to a more senior role. If you get too far in your career before diversifying your experiences, the path forward is harder. Start young, have the right motivations, the right experiences and take stretch assignments.

on IT leadership, neurodiversity in IT and IT pedagogy.

Dan Mazzola

Dan Mazzola (dan.mazzola@asu.edu) is a Clinical Professor of Information Systems at the W. P. Carey School of Business at Arizona State University and Assistant Department Chair and Faculty Director for the Master of Science in Information Systems Management program. He brings 20 years of industry experience to the classroom and research. He has served as Director of Education for the Society for Information Management (SIM) Arizona chapter and as a member of the SIM Academic Council. His research interests include IT leadership, workforce development, the role of AI in business and the impact of neurodiversity on IT careers.

Benjamin Richardson

Benjamin Richardson (b.richardson@uga.edu) is a doctoral student in the Department of Management Information Systems at the University of Georgia. His research encompasses two main areas: the intersection of cognition and human behavior in information systems and executive technical leadership. His investigations cover topics such as human-AI augmentation, algorithmic aversion, decision support systems and the pathways to becoming a top-level chief information officer (CIO).

About the Authors

Degan Kettles

Degan Kettles (degan.kettles@byu.edu) is an Associate Teaching Professor in the Information Systems Department at Brigham Young University. He previously held management roles in the technology industry and now teaches courses on IT strategy and leadership to graduate students. He is an active participant on the Society for Information Management (SIM) Academic Council. His recent research focuses