CFRA

Industry Surveys

IT Consulting & Other Services

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NEW THEMES

What's Changed: We have identified three key themes for the IT Consulting & Other Services sub-industry. Head to page 12 for details.

What's Changed: The breadth of IT-related work has created a dichotomy in services offered, which the industry has identified as Global Business Service (GBS) and Global Infrastructure Services (GIS). For a breakdown of what each category entails, head to page 19

What's Changed: There is no denying that the Metaverse is gaining traction, a concept that may generate billions of dollars in economic value in the next decade. But it will not be without its challenges—our thoughts on this buzzword on page 27.

EXECUTIVE SUMMARY

CFRA's fundamental outlook remains positive on the IT Consulting & Other Services sub-industry. We highlight key themes, company-specific developments, and potential risks that could help outperformers in the increasingly challenging market backdrop.

Mixed Macro Signals Create Opportunity for Some…

While not fully immune to a more anemic macro backdrop, aggregate demand across the sub-industry has held up well so far in 2022, even with more elongated sales cycles and tightened IT budgets becoming an area of focus in recent quarters. Reason being, one of the first steps future (or existing) clients turn to in a weakening economic environment is to carve out costs and safeguard margins through an increased cut of digital-related work and automation, which require the engineering expertise and partnership of companies situated within space.

But Challenges for Others

More recently, a sharp dichotomy between different IT-related work has emerged. Global Business Services (GBS), which house more technical areas (i.e., engineering services, security, and analytics), is still firing on all cylinders, with client demand there for the taking for any company that has the right talent in the right seats to carry out larger-scale IT projects. On the other hand, companies with a heavier tilt toward Global Infrastructure Services (GIS), centralized around IT outsourcing (ITO), continue to grapple with ways to move up the IT stack toward higher-value GBS-driven work. Whether embattled by company image or simply overexposure to the wrong kind of work, we suspect some industry participants will continue to experience an uphill battle trying to achieve at-market (i.e., mid-single-digit) growth rates.

Margin Execution Begets Earnings Stabilization

Many companies have been hit with multi-faceted setbacks, forced to absorb billing rate concessions and wage inflation following the pandemic, resulting in margin pressure on both a gross and operating level. We would point out that most sales level agreements (SLAs) have billing rate increases that get layered in well after the initial bump in expenses and are just now getting pulled into discussions as tangible margin levers into the back-half of 2022 and 2023 – we suspect companies deploying cutting edge work (Globant and Epam) could have an easier path toward more optimized billing rates, while we have gotten the sense that clients have a tougher time justifying higher prices from legacy IT providers. We would also flag that sooner or later, most companies start to anniversary large spikes in labor attrition (30%+ in some cases), adding further catalysts to the fundamental outlook.

Tighter Interplay Between SIs and Software Vendors Leading to Higher Client Activity

Across our coverage, we have seen a common theme where software vendors have increasingly leaned on system integrators or SIs (i.e., IT Consulting and Services in this survey) to enhance selling motions to existing and/or potential customers. As a result, notable software providers (i.e., Snowflake) have disclosed that ~60% of bookings so far in 2022 were SI-driven due to the enhanced collaboration between the two parties. Going forward, we think the ability to co-create with software vendors and cloud hyperscalers (i.e., AWS and Azure) while also offering some internally developed solutions will become increasingly important. As a result, companies geared toward higher-demand areas should handily outgrow the IT services markets by three-fold or more.

IT Consulting & Other Services

Outlook: Positive

MARKET CAP BREAKDOWN*

RANK NO.	COMPANY NAME	MARKET CAP ($ billion)
1	Accenture	178.1
2	IBM	114.9
3	Cognizant	32.5
4	EPAM Systems	24.2
5	Gartner	23.9
6	Amdocs	10.0
7	Globant	9.4
8	DXC Technology	6.3
9	Endava	5.0
10	Thoughtworks	4.2
	Others†	8.7

Source: CFRA, S&P Global Market Intelligence.
**Data as of September 13, 2022.*
†Refer to the "Comparative Company Analysis" section of this survey for the list of companies.

ETF FOCUS

QQQ Invesco QQQ Trust	AUM ($M) 170,295.9	Expense Ratio 0.20
VGT Vanguard Information Technology	AUM ($M) 45,978.1	Expense Ratio 0.10
XLK Technology Select Sector SPDR	AUM ($M) 43,318.0	Expense Ratio 0.12
IYW iShares US Technology	AUM ($M) 7,097.1	Expense Ratio 0.43
FTEC Fidelity MSCI Information Technology	AUM ($M) 5,739.1	Expense Ratio 0.08

BY THE NUMBERS

5% Projected IT Services budget growth in 2022

15% TCV growth disclosed by industry leader Accenture in its most recent quarter

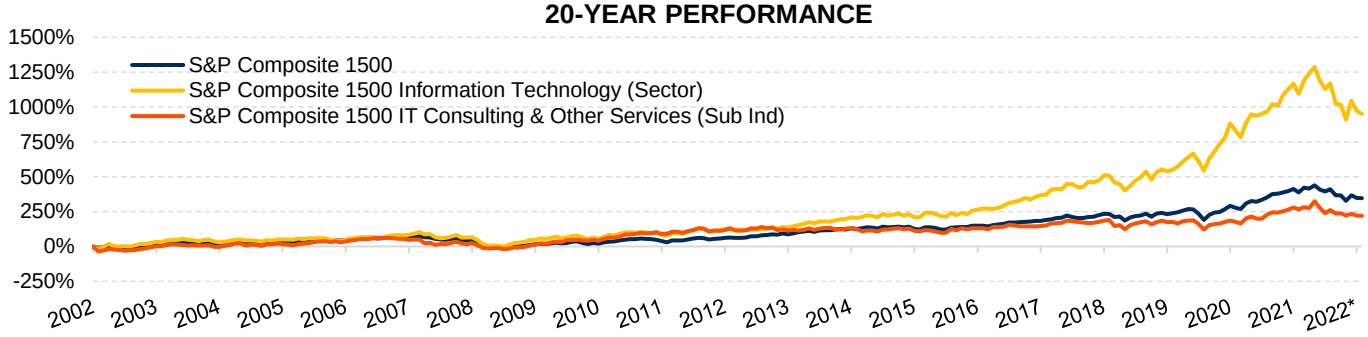
$550M or ~60% of bookings for Snowflake in H1 FY 23 were generated by SIs

70%+ Implementations that now require custom code from a system integrator

95% Microsoft's commercial revenue attributed to SIs in some form or fashion

186% ROI for some newer technologies implemented by SIs and software vendors

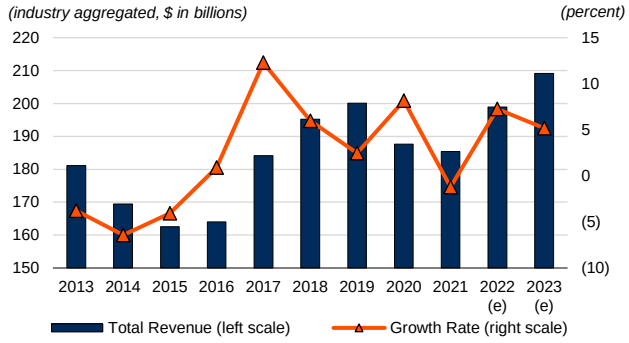
20-YEAR PERFORMANCE



*Data through September 3, 2022.
Source: S&P Global Market Intelligence.

FINANCIAL METRICS

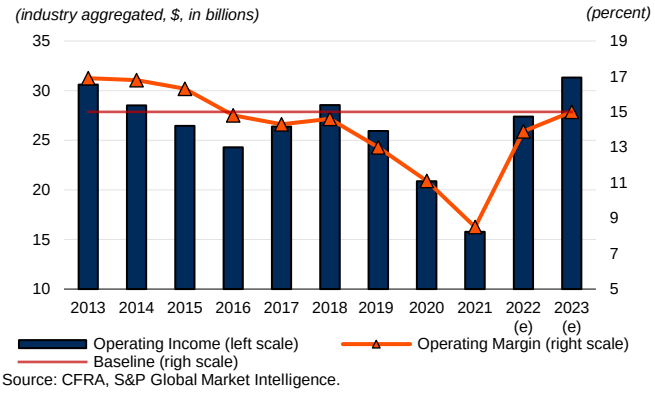
Total Revenue & Growth



Source: CFRA, S&P Global Market Intelligence.

- Industry-aggregated revenue growth is expected to grow 7.3% and 5.2% in 2022 and 2023, respectively, as larger-scale IT spending increased after the pandemic. However, CFRA expects revenue to be even higher in 2022 and 2023 as a stronger dollar would severely impact revenues for most multinationals.
- CFRA expects many future (or existing) clients will immediately look for ways to carve out costs through automation and deliver scalable IT solutions, which require the engineering expertise of many companies within the sub-industry. This point also segues why demand is holding up well so far, even though IT budgets are tightening in certain areas.
- Going forward, the key swing factor to posting healthy growth figures will come down to sourcing (and retaining) the right talent to take on new client projects. Leading-edge companies (Globant and Endava) continually post software-like growth because they can attract (and retain) the right people.

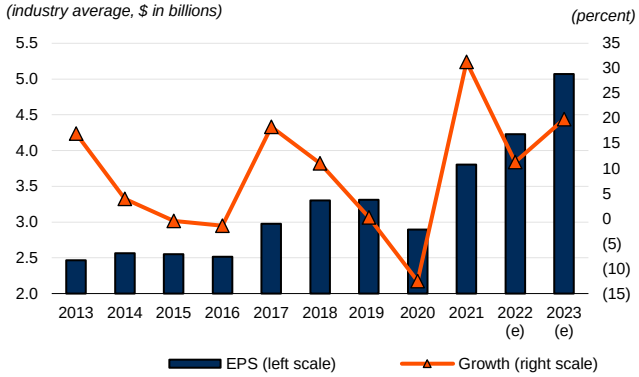
Operating Income & Margin



Source: CFRA, S&P Global Market Intelligence.

- By our estimation, operating margin will increase to 13.9% in 2022 and 15.0% in 2023. However, multinational companies will get hit on revenues and incur more costs due to a stronger dollar for the time being.
- While the incumbents are burdened by a traditional fixed pricing model, headcount utilization is increasing dramatically for some companies that have successfully modified their delivery models. We also note companies geared toward outcome-based pricing will stand a better chance of landing new client logos and generating more sustainable margins.

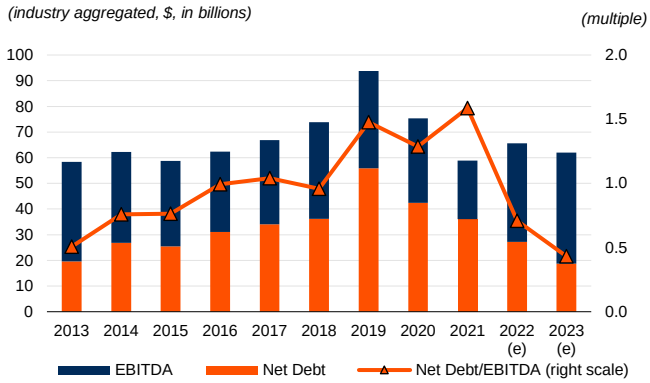
Earnings Per Share (EPS)



Source: CFRA, S&P Global Market Intelligence.

- CFRA expects EPS levels to increase with growth of 11.2% in 2022 and 19.8% in 2023, on a recovery in fundamentals across most of the sub-industry.
- Legacy companies continue to drive earnings growth through expense controls, while leaders benefit from sheer flow-through from top-line growth.
- CFRA expects travel reimbursements could be a future catalyst going forward. Most companies are reimbursed for on-site implementation, which has been reduced dramatically because of the pandemic. Any resumption will boost sales growth, but also add incremental operating expenditure. Some companies will be able to fully absorb it and drive steady earnings growth, and some will not, in CFRA's view.

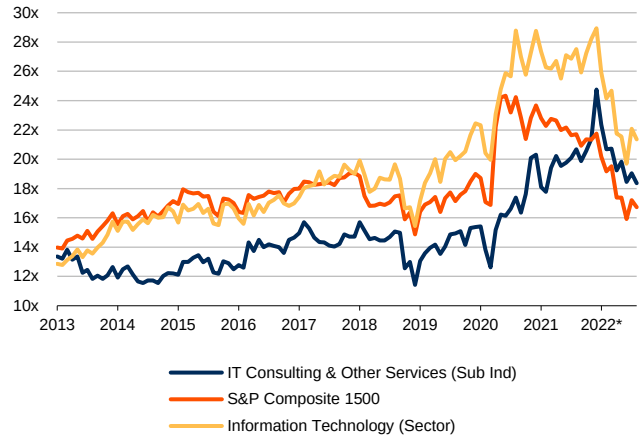
Leverage (Net Debt-to-EBITDA)



Source: CFRA, S&P Global Market Intelligence.

- Net debt-to-EBITDA continues to drop from peak levels at the end of 2019. Companies like DXC and IBM have directed more excess FCF to deleveraging efforts to bring debt levels to more manageable levels.
- Going forward, we think companies will put their balance sheets to work with organic investments and strategic M&A to enhance customer engagement prospects. Meanwhile, we think net debt-to-EBITDA will drop to 0.8x in 2022 and 0.5x in 2023 as companies start to repay credit facilities.

Forward Price-to-Earnings Ratio

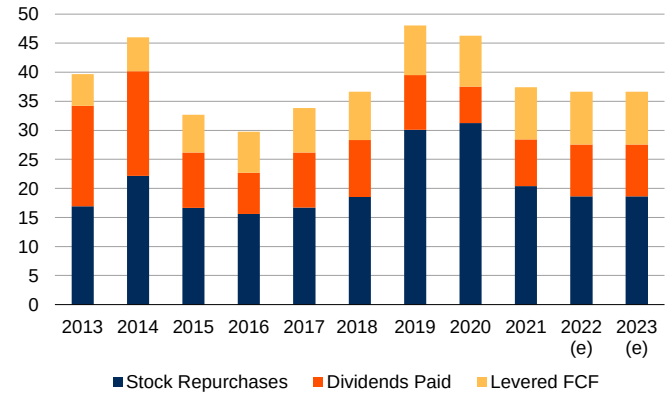


*Data through August 31, 2022.
Source: CFRA, S&P Global Market Intelligence.

- The forward P/E multiple for the IT Consulting & Other Services sub-industry contracted through June 2022, as did the IT sector, but started to rise to 18.4x in August 2022. The S&P Composite 1500 also continued to decline due to fear of a global recession amid a rising rate environment.
- The rising interest rate environment would mean longer duration assets (higher-multiple stocks) that earn more cash flow in the future get hit, as the discount rate rises, making them less valuable.

Free Cash Flow, Dividends & Buybacks

(industry aggregated, $, in billions)



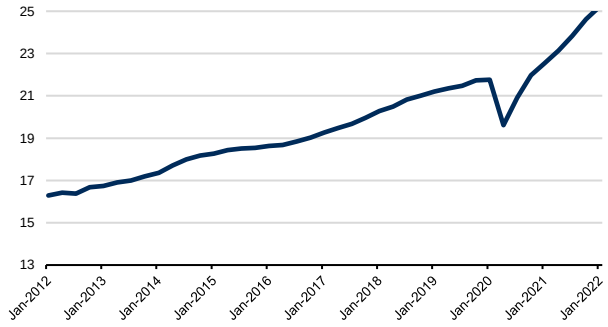
e-Estimate
Source: CFRA, S&P Global Market Intelligence.

- Capital returns have been largely centered around buybacks and dividends, given the cash generative business model.
- In view of where market multiples are now, CFRA expects legacy companies like DXC and IBM to avoid larger-scale M&A and return cash to shareholders via buybacks. CFRA believes companies with sustainable free cash flow profiles in this market environment are more highly coveted.
- At the same time, legacy companies like DXC and IBM are stuck in a rut and trying to compete for business and human capital. CFRA believes companies that deliver high dividend yields like IBM would provide an inflation hedge in 2022.

KEY INDUSTRY DRIVERS

Gross Value Added (GVA)

(in million of dollars, quarterly, seasonally adjusted)

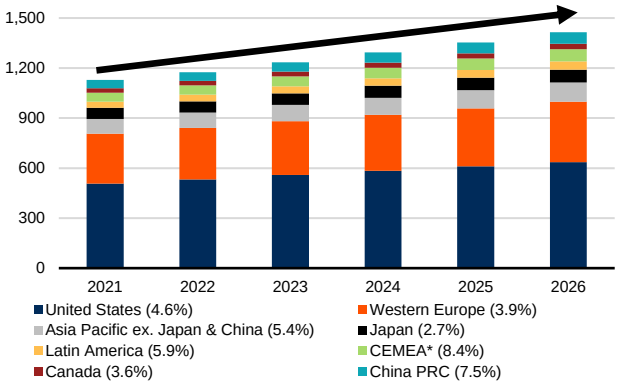


Data through January 1, 2022.
Source: Board of Governors of the Federal Reserve System.

- Following the rebound in 2020, gross value added (GVA) – a metric that measures the total value added to the economy – increased from its March low of $19.6 trillion to $25.2 trillion in January 2022 (latest available).
- GVA is at its highest peak showing further uptrend as business conditions return to normal and enterprises spend more on IT services despite a slowing global economy pointing towards a recession.

IT Services Spending by Region

(in $, billions; 5-yr. CAGR is marked in brackets in the legend by each geographic area.)

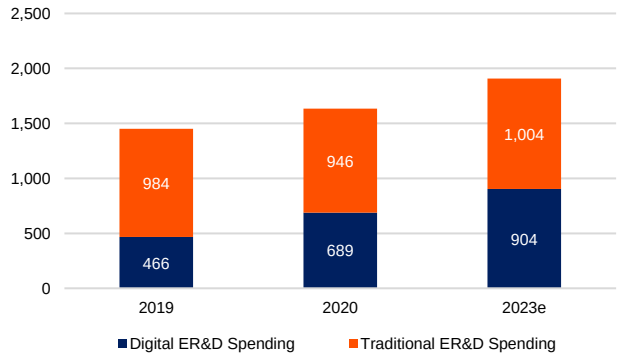


*CEMEA: Central and Eastern Europe, the Middle East, and Africa.
Source: IDC, July 2022.

- Despite the lockdowns in major cities, China is expected to see high growth from 2021-2026 with a 7.5% CAGR. Central and Eastern Europe, the Middle East, and Africa (CEMEA) will also fare much better than all other regions, with a forecasted 8.4% CAGR from 2021-2026, as the European Union and other governments targeted to improve digital transformation post-Covid-19, according to IDC.
- The U.S., which is the largest region in terms of total dollar spend, is expected to grow steadily at a 4.6% CAGR during the same time frame. Latin America is also expected to grow at a high rate of 5.9%, as these countries are increasing spending on IT infrastructure, especially in cloud-centric infrastructure and automation platforms.

Engineering Research & Development (ER&D) Spending

($, in billions)



Source: Zinnov.

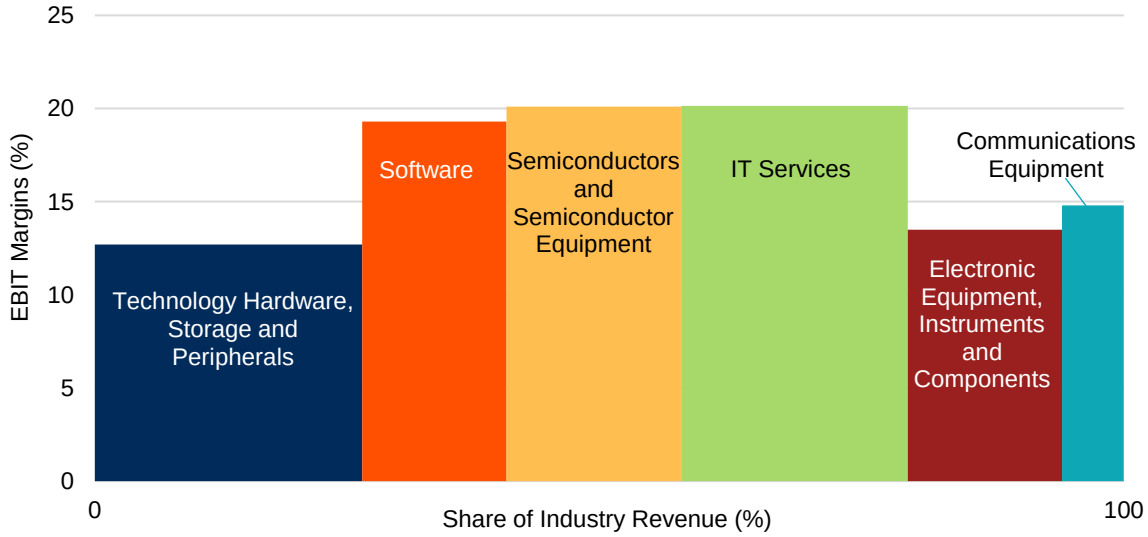
- Total Engineering, Research, and Development (ER&D) spending is expected to only grow at a 5.2% CAGR from 2020 to 2023, but the digital portion of the mix is expected to grow at a 9.4% CAGR during the same time frame.
- Digital engineering remains a key growth engine for the digital portion of ER&D spending to integrate new solutions and accelerate existing engineering products by leveraging cloud platforms, AI, analytics, automation, and cybersecurity.

INDUSTRY TRENDS

Profit Pools

IT Consulting & Other Services is one of two sub-industries (the other being Data Processing and Outsourced Services) in the IT Services industry, which is one of six industries within the Information Technology sector. (CFRA covers the entire IT sector with seven different Industry Surveys.) When assessing the Information Technology sector holistically, IT Services is ranked towards the upper end on an EBIT margin basis and overall share of industry revenue. Technology in general, we think, is incredibly deflationary. We suspect the reason behind the above-average profitability of the IT Services industry is its ability to substitute technology (*e.g.,* robotic process automation/RPA) for fixed assets (*e.g.,* labor). As the business model turns into a more "capital-lite" structure, profitability increases, even if revenues and contract flow are flat and/or do not rise at the same rate as EBIT levels.

PROFIT SHARE MAP OF INFORMATION TECHNOLOGY SECTOR
(for the last twelve months ended second quarter of 2022)

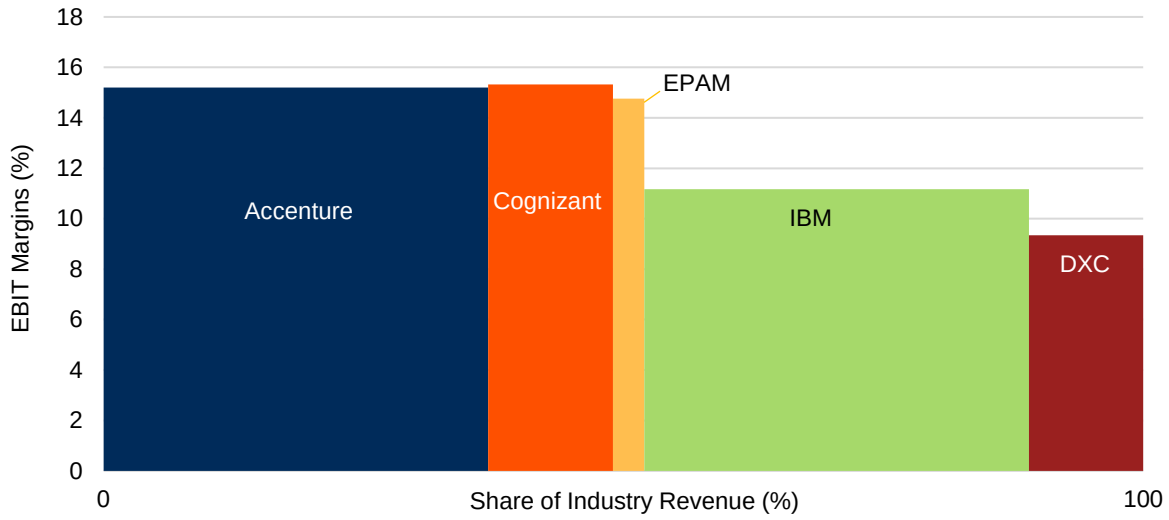


*Companies within the S&P Composite 1500 Index as of August 31, 2022.
Source: CFRA, Company Reports.

Cognizant dethroned Accenture in terms of margin profile as it reinvigorated growth by sharpening its digital engineering capabilities both organically (strategic partners and investments) and inorganically ($3.2 billion in M&A since 2019). Accenture – with strong consulting practices in cloud, security, and analytics – came in second based on margin profile, as business conditions ease and pent-up demand for IT modernization materializes

Another element that we think contributes to the standout margins across the consultancy and services space is the overall change in the delivery model and pricing structure of contracts from the big new trends, such as automation and cognition. The overall transition to shorter-duration contracts and outcome-based pricing from more commoditized structures likely results in premiums for service providers that can yield tangible results across key performance indicators (KPIs) to grow customer relationships.

PROFIT SHARE MAP OF IT CONSULTING & OTHER SERVICE SUB-INDUSTRY*
(for the last twelve months ended second quarter of 2022)



*Companies within the S&P Composite 1500 Index as of August 31, 2022.
Source: CFRA, Company Reports.

The IT Consulting & Other Services sub-industry remains crowded, as a small number of companies command a large amount of market share (*e.g.,* IBM, Accenture plc, DXC Technology, Cognizant Technology Solutions Corp., and EPAM). These larger vendors use their reputation, expertise, financial flexibility, and marketing prowess to secure contracts. While technologies and consumer tastes have enabled some newer companies to emerge, it often takes considerable time, resources, skill, and even luck to supplant the incumbents.

Given the sub-industry is amid a digital refresh cycle, companies will focus on tapping into higher skilled workers to develop and deploy newer products like cloud and edge computing to the market. According to a survey conducted by International Data Corp. (IDC), organizations will be keen on shifting their interest towards gaining an increasingly skilled workforce in areas such as data science, analytics, and AI to cope with the accelerating adoption of cloud and service provider models, plus increasing automation in the market. The holy grail in a headcount business like this is a company that can grow revenues but not have to grow headcount in lockstep.

In CFRA's view, companies could yield increasingly favorable pricing on products and services by further leaning on modern software and computing power, deploying automation, or simply getting more efficient and pruning capital-intensive businesses or services that are key factors across most companies. Subsequently, we think that shifting away from commoditization would help establish improved margin outlooks across the sub-industry.

Consolidation continues to occur as large vendors acquire smaller firms to gain expertise to reach critical mass-market segments or geographic areas. In addition, smaller firms may seek merger and acquisition (M&A) deals with other firms as a way of building the size and technical expertise necessary to compete for larger contracts.

Key Themes Going Forward

Tighter Relations with System Integrators (SIs) and Software Vendors

IT consulting companies are generally referred to as: 1) SIs, given they are sought after by customers to stitch together software and hardware applications that are tailored for individual needs; or 2) Partners, as they work closely with software companies to help sell specific applications, IT stacks, and services. ForgeRock, a digital identity vendor with a valuation of almost $2 billion, has disclosed that its partner generating leads resulted in 44% of the company's new annual recurring revenue.

Client Demand Continues to Outstrip Labor Supply

If the companies can display they have the proper talent to deliver on tasks (engineering services, systems integration, and analytics), the demand is there for the taking. From CFRA's observations, we are seeing clients pushing back on price increases (*e.g.,* DXC), questioning if they have the right labor to carry out the project. The easiest way is to split it between Global Business Services (GBS) and Global Infrastructure Services (GIS).

Margin Execution Remains a Core Emphasis

Contract pricing increases are embedded into sales level agreements (SLAs) but get layered into the work well after the wage increases occur to retain people. CFRA understands most of the companies involved in cutting-edge work (Globant, Endava, and EPAM Systems) get pricing hikes to support margins, but worried about the legacy guys (DXC Technology, Cognizant, and IBM). Any bigger mix of GIS work usually means more fixed contracts (vs. cost plus), which is harder to turn a profit in the current competitive environment. The stronger dollar comes into play as well. Not only does it impact revenues for overseas operations, but it puts upward pressure on expenses, compressing margins and cash flow.

Porter's Five Forces

In 1979, Michael E. Porter of Harvard Business School devised Porter's Five Forces, which provides a framework for industry analysis. Below are the five parameters on which IT consulting & other services companies can be analyzed, and the implications for the sub-industry.

IT CONSULTING & OTHER SERVICES VERTICALS PORTER'S COMPETITIVE MATRIX

	COMPETITIVE RIVALRY AMONG EXISTING FIRMS	CUSTOMER BARGAINING POWER	SUPPLIER BARGAINING POWER	THREAT OF SUBSTITUTION	THREAT OF NEW ENTRY
TRADITIONAL	**Moderate** Legacy relationships remain the largest component of revenues, but high switching costs and limited innovation leave little rivalry.	**Moderate** Pricing is largely commoditized, leaving some flexibility for customers to substitute service providers, given ample choices.	**Low** Repurposed workloads have little pricing premiums, leaving little room for service providers to bargain, even in higher demand markets.	**High** A large number of companies offering little product differentiation drive a perfectly competitive market.	**Low** The large capital outlay and scale needed to properly address client needs create high barriers to entry for traditional work.
DIGITAL	**High** Competition remains fierce as newly produced software applications can quickly make others obsolete.	**Moderate** Bargaining power at the customer can be limited at times, given the highly niche cloud-based products and applications.	**High** A limited set of competitors and highly specialized set of internally developed software platforms leave ample room for contract pricing premiums.	**Low** Unique and technical products restrict the level of like-kind substitutes. Patents largely insulate companies that operate in this sub-industry.	**Moderate** High initial barriers to entry, largely crafted by sizable intellectual property (IP) and extensive R&D protect companies in this industry from new entrants.

Source: CFRA.

Following the table from previously, CFRA went in-depth on Porter's Five Forces for the IT Consulting realm as below:

Industry Rivalry (Moderate/High)
International Business Machines Corp. (IBM), Accenture plc, Cognizant Technology Solutions Corp., DXC Technology Company, and Kyndryl Holdings combined are expected to account for around 93% of sub-industry revenues for the trailing twelve months as of the second quarter of 2022. This constitutes what we think is a notable concentration in the industry, which suggests a lack of competition.

Rivalry intensity can be determined by industry concentration and the number and diversity of participants, as well as category growth, innovation, switching costs, and expenses. CFRA sees mature IT Consulting & Other Services sub-industry growth and relatively high switching costs in multiple areas (generally).

Threat of New Entrants (Low/Moderate)
Barriers to entry remain high, as establishing the necessary scale, scope, and reach requires significant capital rigor for newcomers. However, to enter specific markets (*e.g.,* public sector IT), CFRA thinks some competitors have displayed a willingness to sacrifice margins with pricing concessions to gain more loyal longer-term customer relationships.

Another strategy that has been gaining momentum involves focusing on smaller and shorter-duration contracts, which often involve reduced upfront costs and a more streamlined, asset-light business model that can provide a faster return on investment. Still, CFRA thinks well-executed small- to medium-sized businesses (SMBs) can be awarded entry, albeit usually with niche products and a confined geographic reach.

While smaller private companies in the IT Consulting & Other Services sub-industry remain plentiful, newly formed primary market companies operating on a larger scale across numerous channels will likely remain scarce for this sub-industry. Overall, CFRA thinks the investment cycle presents digital growth opportunities and remains advantageous for new entrants that can generate value for clients.

Threat of Substitutes (High/Low)
Although there are many companies in the IT Consulting & Other Services sub-industry on a business-to-business (B2B) basis, there is considerable stickiness in the offerings along with switching costs.

Consumers can more easily make choices in terms of consulting, including Accenture and Cognizant, or CACI and Leidos on the public-sector side. However, businesses often have a harder time making related changes.

CFRA thinks B2B IT infrastructure providers, whose function it is to enable key business operations, are often inculcated deep within companies. Many of these relationships are based on multiyear contracts that provide recurring revenues.

Bargaining Power of Suppliers (Low/High)
The IT Consulting & Other Services sub-industry is unique in that there are no significant suppliers. However, CFRA thinks IT consulting professionals are vital for companies, and competition for this talent makes it harder for smaller companies to attract and retain skilled workers.

Bargaining Power of Customers (Moderate)
Clients initially have power when deciding on key services relationships. However, in CFRA's view, the power shifts to suppliers as partnerships become longer and more comprehensive.

Competitive Environment

Cheaper is Not Always Better…

The importance of finding "cheap" IT consulting & other services will likely fall by the wayside for customers post-Covid-19, in CFRA's view. Companies that were part of client-facing industries before the pandemic will need to rapidly transform and put digitalized capabilities on the "fast-track." Think about everything that is still done manually to run a business that needs to now change – keeping track of product orders, invoices to customers, and accounts payable, which can all be automated.

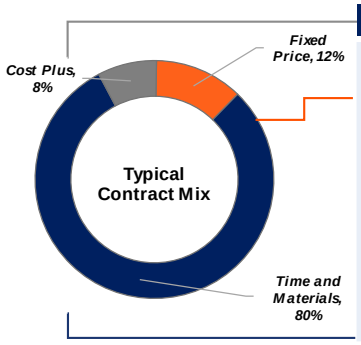
As a result, CFRA forecasts that the companies included in this sub-industry will be increasingly measured on total ROI – or, in other words, total profit increase delivered for the client.

A key takeaway is that IT consulting & other services companies that cannot achieve impactful ROI improvements for their clients will be increasingly exposed and put at a competitive disadvantage for new business opportunities. The most typical example CFRA sees is companies still stuck in prior cycles (*e.g.,* labor arbitrage) instead of driving new sources of productivity for clients. In other words, most of the companies that could struggle are tied to outsourcing activities involved in legacy infrastructure (*e.g.,* hardware vs. cloud) that are lower margin. These types of companies will likely struggle in the next stage following the pandemic.

The Covid-19 crisis rapidly intensified digital transformation. From a competitive point of view, legacy IT consulting companies that fail to achieve customer satisfaction by providing more value-oriented services (such as cloud, automation, artificial intelligence, etc.) could struggle, in CFRA's opinion.

Future Billing Rate Increases Will Need to Be Justified

Despite the strong link between fixed pricing and labor costs largely associated with the sub-industry over the past few decades, firms that can successfully break this characteristic could drive margin expansion going forward. As client demand drives companies to implement digital platforms with software-centric workflows, under normal circumstances, this could bring the opportunity to establish deeper customer relationships, minimize customer attrition, and drive margin expansion.



Time & Materials

How They Work
- *Billed using hourly, daily, or monthly rates for software engineering and/or services*

Pros
- *Clean cut and can include premiums for higher-value work*

Cons
- *Can lead to commoditized price structure for traditional providers*

Fixed Price

How They Work
- *Perform agreed upon work for fixed price.*

Pros
- *Can lead to higher profit contribution if executed correctly*

Cons
- *Higher-risk and can lead to incremental costs if unforseen events occur*

Cost Plus

How They Work
- *Company is reimbursed for costs and charged fees upon completion of the contract.*

Pros
- *Easy to forecast given cost structure*

Cons
- *Usually concentrated around lower-margin work*

Source: CFRA, Company Filings.

Redefined models will likely lead the pricing equation for contracts, with a shift away from commoditization (fixed prices) towards shorter duration contracts and outcome-based pricing (cost reimbursement and/or T&M contracts). Although the cost-reimbursement contract generally offers lower margin opportunities than fixed-price contracts, cost-reimbursement contracts tend to minimize financial risk, which means contractors may earn more margin if the material costs less than anticipated. Contractors may have the chance to make an additional profit with performance incentives. As such, pricing would rely on actual business outcomes and how much value can be added to the firm. Under

normal circumstances, this could aid consulting companies by allowing for a more favorable pricing framework and a richer mix of business, in our view.

The Covid-19 crisis resulted in most clients hitting the pause button on large IT projects for the first half of 2020, particularly clients from impacted industries, such as airlines, retail, and finance. As a result, most IT consulting & other services companies saw a large revenue dip from the pandemic in the second quarter of 2020 result. In such circumstances, pricing, cost controls, and headcount reduction are the key levers to pull. Most companies reported solid revenue growth and operating margin in the third quarter of 2020, mainly driven by cost management measures. Looking ahead to 2022 and into 2023, companies will have to prove worthy of billing rate (*i.e.,* contract price) increases. We think some companies more acutely focused on technical work, such as EPAM, Globant, and Endava, could have an easier time justifying higher billing rates to grabble with inflationary pressures in the form of higher wages and relocation costs out of 'hot spot' areas in Ukraine.

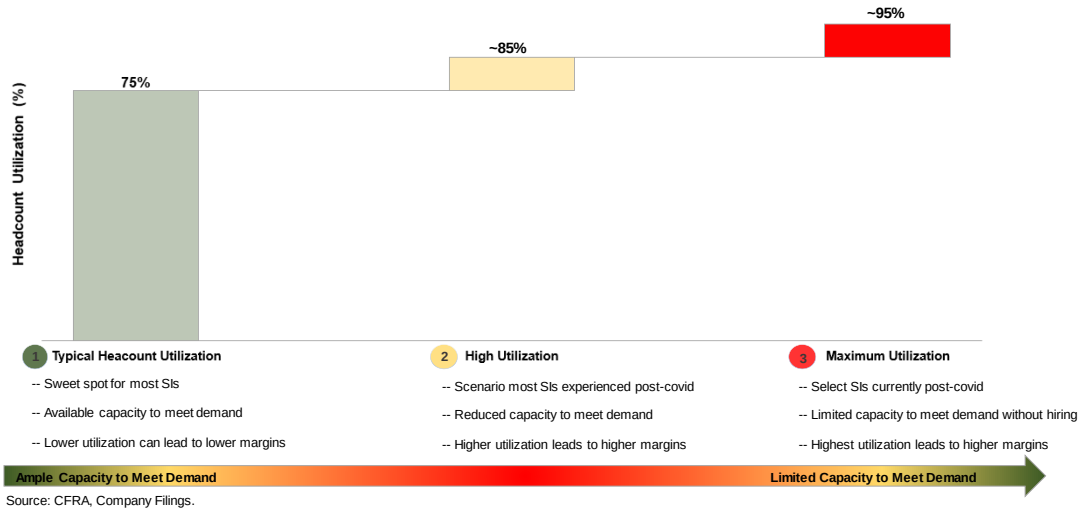
Headcount Utilization and Growth – Key Profitability Metrics

Headcount utilization rate is a commonly used metric among IT consulting & other services companies and is critical to the profitability of IT services companies, given there is no final "product" placed in the hands of a client. The headcount utilization rate measures the proportion of billable hours to total working hours. Other than headcount utilization, the second key to determining a company's profitability is headcount growth. If headcount growth exceeds revenue growth, it may lead to a decline in headcount utilization, which, in turn, could be negative for the company's profitability.

Reducing headcount could be an effective strategy to maintain profit margins. However, as most enterprises are adapting to new digital services, we see an increasing need for the right talent to provide cloud, security, and automation services. We think inappropriate cost-cutting measures could create a situation in which there is insufficient talent to meet a client's needs, resulting in a lower billable rate and hurting margins.

As clients embrace new ways of working since the outbreak of Covid-19, headcount utilization increased for some IT services companies that successfully implemented remote delivery of workflows for clients.

As shown in the chart below, lower utilization would mean there would be more capacity available for companies to take on new work without hiring new headcount, which ties into talent shortages. The mixed impact on the fundamentals is that higher utilization leads to better productivity, which translates to higher margins but with lower available capacity for new sales growth, and vice versa for lower utilization.



Source: CFRA, Company Filings.

Operating Environment

The IT Services industry is largely characterized by mature revenue profiles and an exclusive set of dominant incumbents. That said, a silver lining has formed, as the term “digital” was coined by Accenture in 2013 to highlight its specific approach of working closely with clients to implement better ways to conduct business.

As the catch-all “digital” work drives higher levels of benefit for clients, the pivot likely cascades through companies in the sub-industry, resulting in new winners and losers. The correct makeup of human capital becomes increasingly vital, in our view, as it empowers companies with the correct DNA to build, scale, and deliver digital work, instead of heavily leaning on strategies revolving around M&A. A real-world example highlighting the importance of talent is having the correct product development and operations (*e.g.,* DevOps) team to build cloud-native applications rather than redeveloping single-purpose workloads tucked away on centralized servers, which constrain usability for clients.

Companies have also amassed a broad repertoire of expertise across all lines of consulting and services for enterprises, creating wide moats that distinguish them from other peers and allowing them to capture pockets of digital (or software-led) spending that grow at materially higher rates of 15%+ in many cases. The digital element will become increasingly crucial as it makes up a larger portion of client budgets, in our view, as spending could be reserved for software-led services that are considered “core” and resistant to a sharp retrenchment in demand.

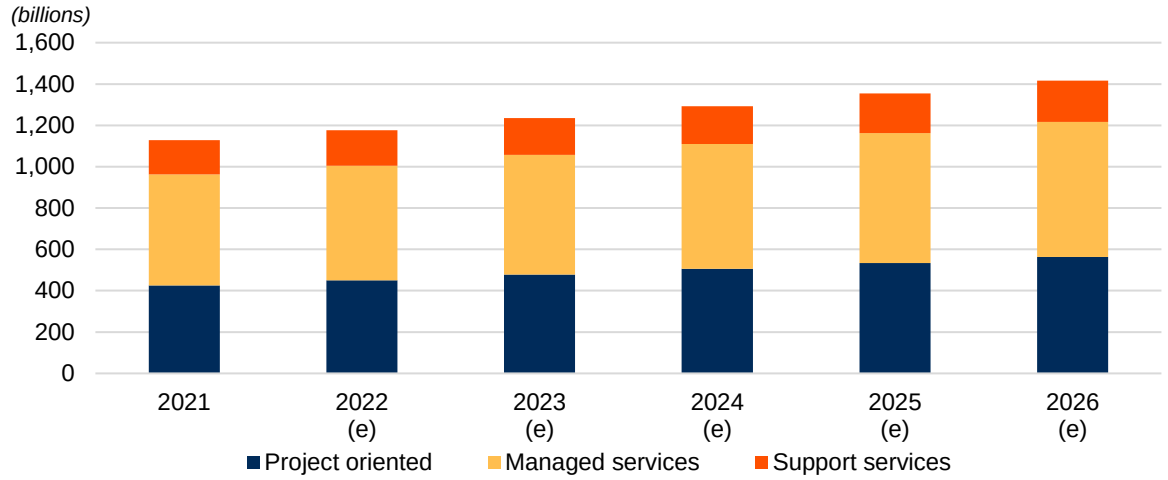
Meanwhile, weak outsourcing trends have hurt vendors like IBM and DXC Technology, who are facing demand and pricing pressure in their legacy product portfolios, while vendors with high exposure to cloud and analytics have been doing better.

The Covid-19 pandemic and effects of the global economic recession forced clients to prioritize spending on technology and services deemed essential over initiatives aimed at technology transformation. However, Covid-19 has spurred the demand for emerging technologies that help to reduce back-end business processes. With the global economy witnessing a “swoosh” recovery, IDC thinks IT Services spending will experience growth of 5% to $1.16 trillion in 2022, from $1.11 trillion in 2021.

IT Services can further be broken down into three different foundation markets; 1) Project Oriented – which includes Business consulting, IT consulting, System integration, Network consulting, and integration; 2) Managed Services – which comprises Key horizontal BPO, Application management, Hosted application management IT outsourcing, Network and endpoint outsourcing services, and Hosting infrastructure services; and 3) Support services – which made up of Hardware deploy and support, Software deploy and support, and IT education and training.

According to IDC, Managed Services make up almost 90% of spending among the three foundation markets, of which Key horizontal BPO is where the major spending occurs. Project Oriented foundation is expected to have a higher spending growth rate of almost 6.1% annually through 2026, compared to the other two foundations as Business consulting and Systems integration is expected to have a CAGR of 6.1% and 5.4% from 2021 to 2026.

WORLDWIDE IT SERVICES SPENDING BY FOUNDATION MARKET FROM 2021 TO 2026



e-Estimate
Source: IDC.

IT Consulting & Other Services – Traditional vs. Digital

The lines continue to blur between traditional consultancy and newer practices that specialize in the development, deployment, and testing of technology. The main culprit, in our view, is more complex client problems that require multiple lines of consultancy, but often funnel back to technological development to solve the task at hand.

So what is digital? We think an analogy using “call centers” helps aid in understanding the fundamental differences between the two types of IT services:

Traditional: Call centers were labor intensive and manual processes in the past. When customers experience a problem with their products, they would call the center and have a conversation with an actual person.

Digital: Nowadays, when we dial to call centers, we often receive prepackaged sets of responses and functions (rules-based exceptions), more commonly known as robotic process automation (RPA). These applications are governed by business logic. While some calls still require some human intervention, RPA is largely aimed at automating most business processes.

Many IT consulting companies group digital initiatives under one comprehensive step, referred to as social, mobile, analytics, and cloud (or SMAC) for existing/prospective clients. Through these technologies, enterprises were better prepared to serve customers with differentiated tools and services, easily deployed at minimal cost. IT consulting companies that have successfully built or acquired the necessary expertise in the field enjoy not only higher demand but also pricing premiums.

The failure to fill voids at a company level with SMAC workloads will likely leave businesses unable to serve even the most basic tasks for customers, leaving them exposed to end markets in terminal decline, ripe for disruption. A perfect example of a legacy company struggling with the transition would be IBM, which is pivoting away from traditional product declines and moving up the digital value chain.

Below, we further disaggregate cycles from the past to form an understanding of how firms have created value through different cycles (both traditional and digital) and what traits widely distinguish winners from losers. We would note the Mainframe, Disaggregation, and Outsourcing cycles are largely constituted as

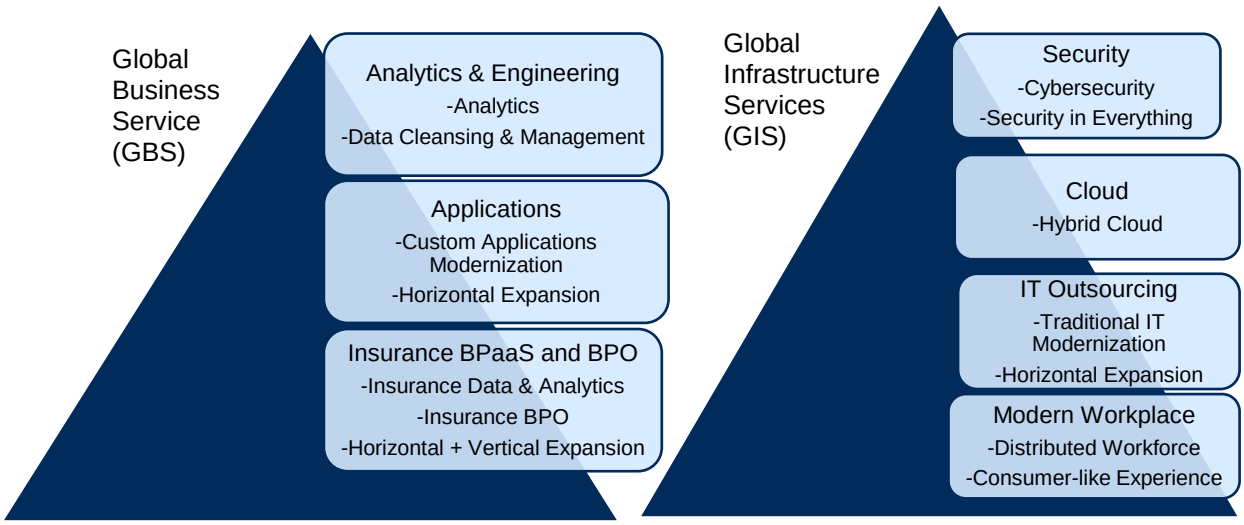
"traditional" workflows that have already occurred. Currently, CFRA believes we are in the fourth cycle, Digital Disruption, as detailed in the table below.

IT SERVICES SECULAR TRENDS	CYCLE I *Mainframe*	CYCLE II *IT Stock Disaggregation*	CYCLE III *Outsourcing & Globalization*	CYCLE IV *Digital Disruption*
Period	**Period 90s**	**90s to 2000s**	**Mid-90s & ongoing**	**Emerging/ongoing**
Value Created	IT enablement Productivity Business capability	Proliferation of tech solutions Innovation at each layer Bespoke solutions	Carving out costs Efficiency Better control	Outside-in innovation Digital platforms At-scale digitalization or workflows
Success Factors	Capital Scale	Innovation Skilled developers	Capital Contracts expertise Labor arbitrage Standardization	Access to partnerships Access to technology Cost efficiency Customer intimacy and agility Scale Skills
Key Players	CSC EDS IBM	Intel Microsoft Oracle SAP	Accenture Cognizant Infosys Tata Consultancy Computer Sciences Corp	Accenture EPAM Globant Cognizant Endava Global Logic
Addressable Market	Less than $100B	Less than $300B	More than $650B	More than $950B
Business Issues	Capital intensive Monolithic Unresponsive	Complex IT environments High cost Skills gap	Extreme cost focus Inflexible contracts Lack of innovation	Business model disruption Increased cyber threat Transformation pressure Widening skills gap

Source: CFRA and DXC.

As the past few decades unfolded, key players have come and gone in the IT Consulting & Other Services sub-industry, as some companies have better conformed to emerging trends to address business issues at hand. Ironically, we would also note the overuse of outsourcing and heavily leaning on offshore talent to maximize cost containment measures largely prompted the digital cycle (*e.g.,* RPA), as companies found new ways to meet customer needs to fuel growth without the incremental headcount that was inherently associated with the tradeoff in the past.

EVOLUTION OF SHARED SERVICE AND BUSINESS PROCESS OUTSOURCING



Source: DXC Technology, CFRA.

Global Business Services (GBS) is the next evolution of traditional shared services and business process outsourcing. As CFRA identifies in the previous table, IT Services are currently in the fourth cycle – also known as Digital Disruption. According to PricewaterhouseCoopers, GBS describes the different types of organization models a business can use to deliver enabling services, including shared services (business-owned and operated), outsourcing (third party owned and operated), Centers of Excellence, HR, IT, procurement, legal, tax) and front office, customer facing functions (customer service, call center, engineering, R&D).

Outsourcing Global Infrastructure Services (GIS) No Longer a Cost Cutting Strategy
GIS has evolved from just being bottom of the stack, working its way up to higher-value areas, like cloud deployments and security. While some of the bigger players like Endava and Globant can evolve this segment from IT outsourcing to cloud and security, legacy players like DXC and Cognizant would struggle since any bigger mix of GIS work usually means more fixed contracts (versus cost plus), which is harder to turn a profit in the current competitive environment.

Russia Invasion of Ukraine: Update; Cyber Attacks on the Rise
On February 24, 2022, Russia launched a large-scale invasion of Ukraine after diplomatic talks failed. There have been multiple economic sanctions announced by the U.S. and its allies; however, Kremlin did not budge from its current stance. Cyberattacks are expected to escalate even further, impacting the finance, insurance, manufacturing, and tech industries.

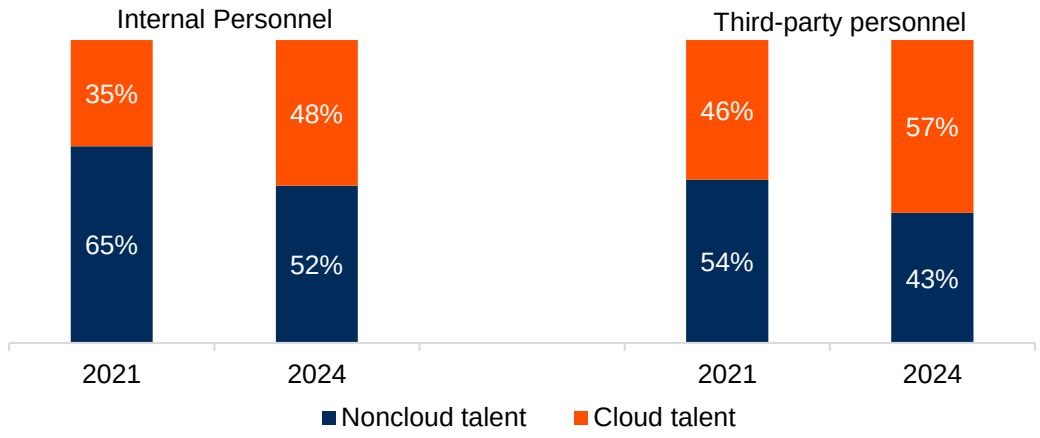
In our previous iteration, we studied the impact of a few companies in the IT Consulting industry that directly or indirectly suffered from the conflict. CFRA has found that EPAM and Accenture have done pretty well with no large setbacks to cite other than lost revenues from pulling out of impacted areas. CFRA believes that DXC Technology and IBM might struggle more even as they try to turn the corner and grow revenues. Meanwhile, EPAM is found to be doing an exceptional job relocating staff out of Ukraine. Total exposure is expected to reach 40% vs. (60% prior) by year-end.

According to an IBM Security X-Force research, Russian ransomware-as-a-service group REvil appears to have permanently shut down operations, probably due to law enforcement activity. The group became notoriously infamous after its hit on Apple's supplier Quanta with a $50 million ransomware attack that made at least $123 million in profits in 2020 and stole around 21.6 terabytes of data.

Cloud Migration Costs

Cloud capabilities are one of the most sought-after skills by companies in this industry. McKinsey estimates the average company staffs around 35% of its cloud needs in-house. To match companies' cloud targets, however, most wish to increase that figure up to around 50% by 2024. This entails companies globally looking to hire or reskill at least 1 million new cloud developers over the next three years. This demand is expected to exacerbate the existing labor shortage. External labor is a way to fill the gap, but some companies engage SIs without thinking through the best way to structure those partnerships. Lacking in-house enterprise-architecture expertise could translate to costs overruns.

ESTIMATED SPEND ALLOCATED ACROSS IT PERSONNEL TYPE



Source: McKinsey ITaaS Survey, 2020-21.

According to McKinsey, since SIs' fees were based on time spent rather than on performance outcomes, they had little incentive to speed the migration, with the result that some projects took far longer than planned and cost more than budgeted. CFRA believes that the outcome-based approach hasn't been widely deployed, but it'll grow over time.

From the same study, McKinsey finds that those outperforming companies are 32% more likely than others to have active CEO sponsors. There is a reason why Globant and EPAM (sans Russian invasion into Ukraine) grow 10x the market. From CFRA's observation, CEOs of both companies are founders as well, and have an active hand in delighting clients.

Employees with advance skill sets (such as DevOps and FinOps) are 57% more likely to be hired by these companies, according to McKinsey. The study finds that they are also more decisive in pulling the plug on data-center funding to galvanize the cloud migration, even if it means paying early termination fees. CFRA finds that clients are willing to pay premiums to have top-tier engineering talent, which in turn helps protect margins given the escalators in the contracts to combat inflation.

Overview of IT Consulting & Other Services Companies

The global IT market is on pace to reach $5.3 trillion in 2022, encompassing revenue generated from hardware, software, IT services, telecommunications, and various emerging technologies, according to

the “IT Industry Outlook 2022” report from the Computing Technology Industry Association (CompTIA), citing data from IDC. The U.S. is the largest tech market in the world, representing 33% of the total, or approximately $1.8 trillion, for 2022. IT services (which include IT consulting & other services) account for roughly 28% of total IT market revenues in the U.S.

In the table below, we list the companies in the IT Consulting & Other Services sub-industry. In terms of index performance, the sub-industry’s recovery from the pandemic was slower than that of the S&P 1500 Information Technology in 2022, as a handful of companies dragged down the sub-industry’s performance. This underperformance was mostly driven by large legacy companies, such as IBM and DXC, which continue to struggle in their transition from legacy to digital. That said, companies with high exposure to cloud and security have been doing better than those geared towards IT outsourcing.

IT CONSULTING AND OTHER SERVICES COMPANIES

(ranked by market capitalization as of September 13, 2022)

					2022		
Ticker	**Company Name**	**Revenues % CHG 2021-2022**	**EPS %CHG 2021-2022**	**P/E**	**EBIT Margin**	**EV/EBITDA**	**Debt/EBITDA**
ACN	Accenture plc	16.9	17.4	24.1	15.2	14.4	0.3
IBM	International Business Machines	4.4	17.7	13.0	11.0	9.7	3.9
CTSH	Cognizant Technology Solutions	7.1	10.3	13.1	15.3	8.2	0.4
EPAM	EPAM Systems, Inc	29.7	10.3	38.8	14.8	25.6	0.3
IT	Gartner, Inc	13.8	-0.6	34.8	20.0	22.0	2.5
DOX	Amdocs Limited	8.4	14.0	14.5	14.4	9.6	0.9
GLOB	Globant S.A.	37.2	35.0	39.8	12.7	22.4	0.5
DAVA	Endava plc	32.7	24.7	34.5	15.1	22.0	0.5
DXC	DXC Technology Company	-9.9	-3.4	7.2	9.3	4.4	1.7
TWKS	Thoughtworks Holding, Inc	24.6	4.9	24.5	-9.1	16.5	NM
PRFT	Perficient, Inc	20.4	22.7	14.8	15.7	0.0	2.4
KD	Kyndryl Holdings, Inc	-9.1	2.9	NM	-3.0	2.2	4.0
CINT	CI&T Inc	35.7	14.5	27.8	14.2	13.5	2.2
GDYN	Grid Dynamics Holdings, Inc	46.1	18.3	41.6	-1.2	24.2	0.7
UIS	Unisys Corporation	-0.8	-49.0	4.8	-4.4	2.1	91.8
HCKT	The Hackett Group, Inc	6.6	10.4	12.7	17.5	7.8	0.0
			Average:	**24.7**	**9.9**	**14.2**	**7.5**

*Pro-forma estimates.

Source: CFRA, S&P Global Market Intelligence.

Growth, profitability, and valuations largely reflect the different tiers of companies. For example, solid high-double-digit revenue and earnings profiles can be found at Accenture, while compressed P/E multiples can be found at companies undergoing business transformation (such as IBM and DXC). On the other hand, EPAM is one of the companies that we believe to be most exposed to a sharp improvement, on top of its high-quality name, distinctive business model, and expertise in software engineering that distinguishes it from other consulting peers.

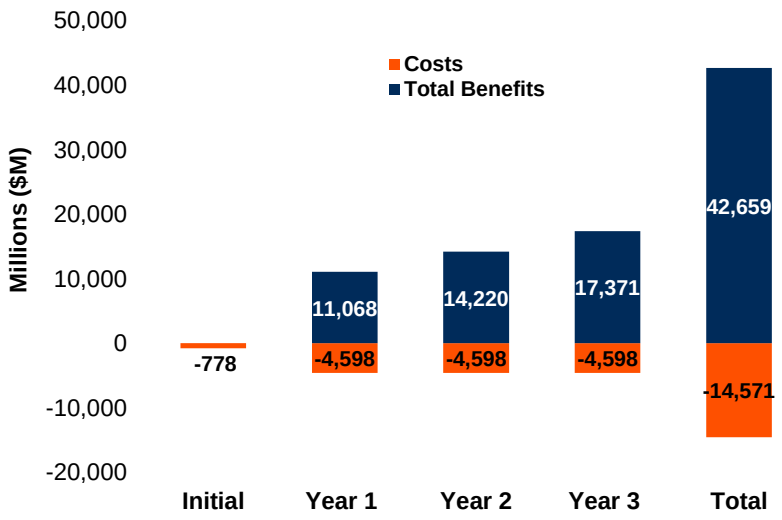
Low-Code, Automation, and Security Spur IT Spending

Covid-19 has exposed many organizations' true colors, especially those that rely on legacy IT that remains clunky and makes any changes to existing processes a tall task and extremely capital intensive. Other than cloud, some of the new workflows like low-code application platforms (LCAPs), RPA, security, and DevOps are quickly emerging as imminently useful technologies to address a fully virtual working environment.

Take, for example, LCAPs, which allow anyone to build apps and programs without the technical expertise in specific coding languages (*e.g.,* Java, Python, or SQL) typically needed. New applications are built in a similar fashion to PowerPoint presentations, with drag-and-drop functionality, as users of all skill levels can 1) build/add new applications to an existing technology stack, 2) port into existing applications to expand functionality (*i.e.,* automate very specific business process tasks), or 3) consolidate multiple tasks/data into a single environment for ease of use. RPA and Cognition (a form of artificial intelligence) are casually referred to as low-code as well because they follow simple principles. By incorporating these emerging technologies into businesses, many business processes (e.g., orders, invoices, and payables) can be optimized or automated to generate higher ROI.

The value creation associated with LCAPs lies within the ability to fast-track the delivery of enterprise-grade applications without sacrificing quality. Appian estimates that around a quarter (and often much more) of IT budgets are currently allocated towards the maintenance stage of existing infrastructure. Impact analyses have shown benefits from using LCAPs remain well-rounded, from a 20-point reduction in total IT spending to a triple-digit ROI, coupled with a manageable payback period of fewer than six months in many cases.

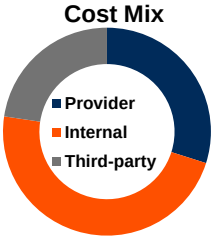
ANALYZING THE BUSINESS IMPACT



Source: Forrester Research.

Benefit Mix

Cost Mix



NPV = $22.7M

ROI = 186%

Payback = <12 Months

The above chart is based on a subset of mid-sized (<$15 billion in market capitalization) financial services organizations that implemented LCAP automation capabilities. Although savings tend to drift upward when moving from the front- to middle-office processes, what stood out to us was the sheer magnitude of savings in client-facing positions. When arming front-office users with workloads, such as RPA, time spent on activities (*i.e.,* approving/denying insurance claims) was reduced on average by two hours per day or 495 hours per year. From there and attaching an average hourly wage of $22 across a headcount of about 2,500 individuals, savings returned were material at about $27 million for front-office users alone. On average, the total ROI came in at 186% for this study across a three-year timeframe.

Also, most LCAPs also rely on strategic partnerships with IT consulting companies (also referred to as channel accelerators). Appian and Pega, for example, leverage IT consultancy firms, like Accenture and Cognizant, which help augment sales efforts for low-code providers by influencing buying decisions by offering to fully implement and plan the entire project for clients from start to finish. Although the "pause" of larger-scale IT projects was visible earlier in the year from channel accelerators, we were surprised with how quickly most have bounced back with respectable ACV growth by the end of 2020.

The pressure to streamline operations by eliminating inefficiencies and optimizing business processes continues to fuel the market for reliable and innovative business process management (BPM) and business process automation (BPA) tools. Both BPM and BPA tools often use both low-code and no-code concepts in their products. BPM standardizes and digitizes tasks within a workflow process, assigning responsibilities to functions and tasks. BPM can also capture both human and technology elements, then digitize the design, allowing organizations to monitor the performance of the process over time for leaders/managers to identify ways to further improve and optimize the process. On the other hand, BPA software can be deployed tactically to automate repetitive tasks within a longer business process. As these repetitive tasks are automated, the process is faster and reduces human error.

Digital Components in a Nutshell

IT Consulting & Other Services sub-industry constituents and other businesses recognize that big data and analytics continue to play crucial roles in new opportunities, in CFRA's opinion. Past bottlenecks, where customers and sub-industry providers did not have the infrastructure in place to properly capture data upfront to track trends, have contributed to more pronounced demand, with companies seeking a more thorough end-to-end comprehensive data approach.

◆ **Big Data and Analytics.** Capturing data, bridging channels of communication, and having the ability to project the likelihood of future events (*i.e.,* predictive analytics): these capabilities remain immensely valuable to more advanced stages of big data.

As of now, big data has rapidly shifted toward lower-cost, scalable software options (hybrid cloud and multi-cloud infrastructure). As this trend continues to unfold, it sets the stage for deeper-rooted intelligence solutions, which could further surface in the not-so-distant future, in CFRA's view. Based on the data provided by IDC, the shift to multicloud strategies could further accelerate spending on cloud, which could be about 32% of overall IT outlays through 2023 (latest available).

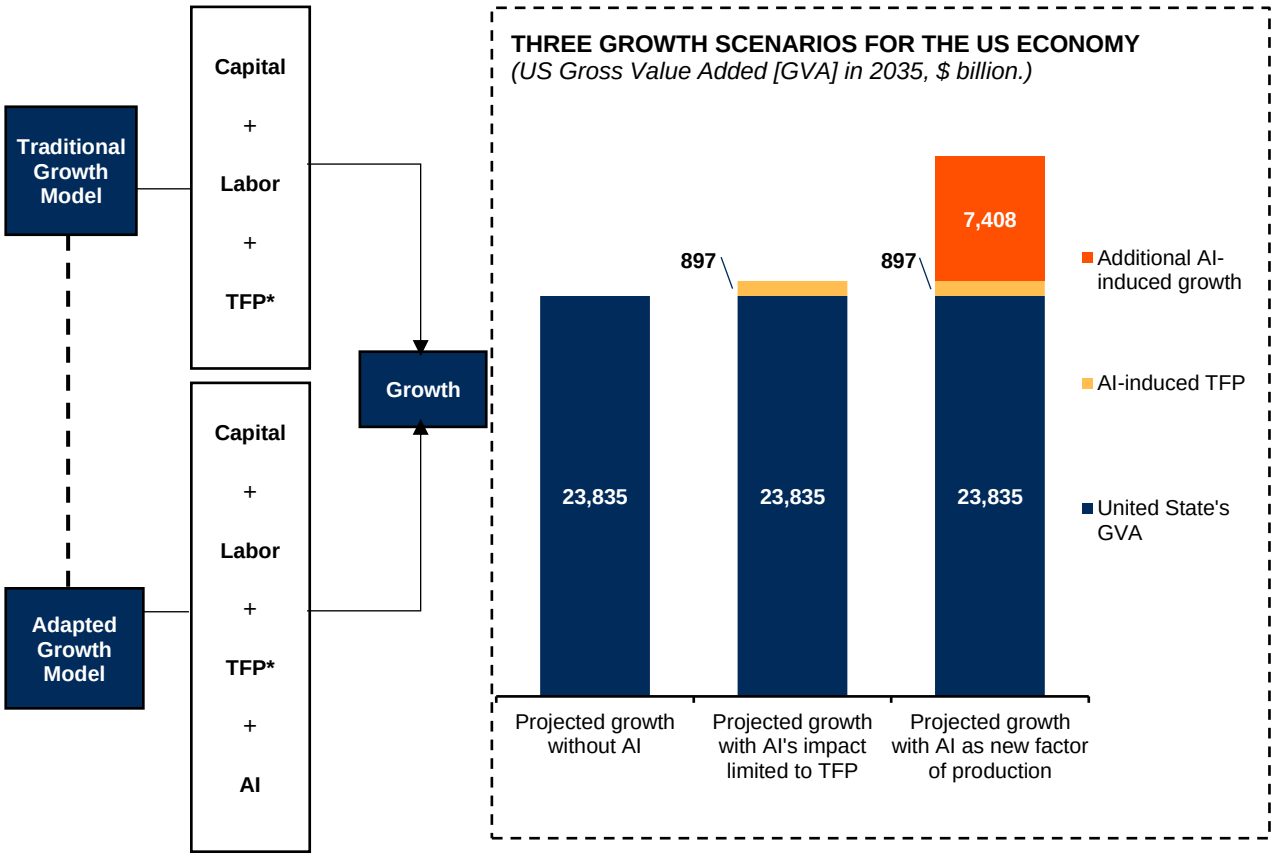
Simply put, there is a high demand for all facets of big data technology, including infrastructure, software, and services. Worldwide revenue for big data and analytics software is expected to grow at an 8.7% CAGR to $101.8 billion by 2024, according to IDC. Data is becoming the new gold, and IBM estimates that as much as 80% of the world's data is locked behind firewalls. Consulting companies that can implement proper infrastructures to unlock this data are likely to gain a competitive edge over peers.

◆ **Artificial Intelligence and Cognition.** Artificial intelligence (AI) is a combination of multiple technologies to achieve three core tasks: 1) sense, 2) comprehend, and 3) act, with the ability to learn from experience and adapt over time.

Prior to the Covid-19 crisis, with heightened awareness around next-generation technologies such as big data and AI, enterprises were already identifying ways to derive value from the data they possess. With the lockdowns related to Covid-19, AI and low-code platforms have taken on even more importance. This emerging technology is essential for an organization to survive the challenging environment. It also can help to contain costs by simplifying business processes and, thus, generating higher ROI.

Accenture and Frontier Economics forecast that AI could lead to significant growth opportunities for the U.S. economy. By 2035, it is estimated that the gross value added (GVA) for the U.S. could increase by $7.4 trillion with AI as a new factor of production. Adding on to that, IBM has also projected that AI will generate opportunities in many industry verticals, with at least $200 million to $300 billion each in health care, financial services, and industrials. CFRA thinks that this wave of digital technologies will inevitably transform the way businesses operate. While this could result in the elimination of some jobs, we think this push will also result in a more efficient existing workforce.

ARTIFICIAL INTELLIGENCE (AI) GROWTH MODEL



*TFP: Total Factor Productivity.

Source: Accenture and Frontier Economics.

◆ **Robotic Process Automation (RPA).** RPA has been largely successful, exceeding initial expectations of recognized revenues. A large catalyst to the outsized demand, in our view, has been the steep slowdown in business process outsourcing and services contract flow. Firms have turned to new digitized processes (RPA being one of them) to drive efficiencies throughout their respective organizations. Further, given the uptake has been so immense, this likely leads to more advanced and comprehensive workloads (*i.e.,* robotic desktop automation or RDA).

So, what is RPA? Not to be confused with the simple term automation, RPA can be deployed as a software application and be intelligently taught to synthesize large amounts of data. The application mimics workflows that are largely executed by humans (like a call center), helping to implement cost controls by eliminating labor-intensive tasks.

RDA is similar, but instead of executing one-off tasks, RDA is integrated into entire layers of an organization (front-end facing client and back-end infrastructure). Important to note, both RPA and RDA still require human guidance to make tweaks to existing (or new) tasks.

With global economies battling the Covid-19 crisis, many organizations have laid off and will lay off employees. Certain companies (specifically in the financial services sector and retail industry) that face economic downturn pressure to cut operations costs may do so by adopting and implementing RPA. RPA has streamlined the back-office functions and effective utilization of remote-working workforce to maintain business continuity during the Covid-19 pandemic.

In effect, IT consulting & other services companies that provide a large scale of RPA services to these sectors are likely to benefit in the long term. Given the high demand for this technology, we think that the RPA market will continue to grow at an exponential rate in such a challenging market environment.

Upskilling Workforce to Avoid Talent Crisis

The success of implementing digital offerings will hinge on the ability of IT consulting & other services companies to acquire talent. At present, one of the greatest threats facing IT organizations is the talent shortage for some of the digital roles, including solution architects, project managers, and DevOps engineers.

The speed and constantly changing nature of human and career journeys make it harder for IT companies to add specific skills to their workforce through traditional hiring approaches. There is significant competition for highly skilled and efficient personnel, and thus, most of the IT consulting companies such as Accenture, Cognizant, DXC Technology, and IBM are experiencing upticks in attrition rates, while smaller companies like Wipro and Infosys have reported otherwise (lower attrition and higher retention rates). As the global demand for talents in cloud analytics and AI technologies increase, it is expected that companies that are slower to implement reskilling and education programs may find themselves forced to pay premiums for those skills.

Hiring alone through crowdsourced platforms with a large pool of independent “recruiters” to source the most suitable candidates is no longer sustainable. In an era of high employee velocity and constantly shifting skills needs, CFRA thinks reskilling the existing workforce is the key to preparing IT companies to be competitive.

Hybrid Cloud Infrastructure: Open-Sourced Platforms Remain Fair Game

Building off the acquisition of Red Hat by IBM, we further dive into another important aspect of software as companies seek out IT consulting firms for proper hybrid cloud environments (a combination of on-premise, private, and public cloud).

Interestingly, the hybrid cloud is not fully locked down by the big three hyperscale cloud providers: AWS, Microsoft's Azure, and Google Cloud Platform. Up until now, all cloud growth has been across top-layer applications and bottom-layer platforms, with no real need to push boundaries, given the wild success from the past. Companies are now tackling middle-layer opportunities for client-specific data, analytics, and security. Unfortunately, being able to create a cloud platform that serves clients of all sizes, from a single server room to thousands of servers, remains a daunting task.

With open-sourced platforms, like Red Hat's Kubernetes-based hybrid cloud offering, companies can package specific applications (also known as containers) together to solve problems for clients of all sizes through both private and public clouds, which is crucial, given some sensitive data that may lie within the middle-layer segment. We think this becomes an invaluable proponent, given it does not require clients to undergo massive infrastructure all at once.

IBM successfully spun off its Management Infrastructure Services business from its Global Technology Services (GTS) on November 4, 2021 and is now known as Kyndryl (NYSE: KD). The shift essentially divides IBM into two, splitting its legacy IT-management services from its new hybrid-cloud computing and artificial intelligence units. CFRA thinks the decision to spin off its low-growth infrastructure services unit is a smart move because it helps unleash the fast-growing Red Hat business, which in turn could bridge the widening valuation gap IBM has compared with its big tech rivals.

DARQ: The Next Step After Digital

Sooner or later, digital trends reach end-life and the next cycle takes hold. Importantly, CFRA thinks that companies with established digital foundations will be better off for that next stage in technologies, which has been coined as DARQ, or Distributed Ledger Technology (which includes blockchain), Artificial Intelligence (previously discussed), Extended Reality (or XR), and Quantum Computing (discussed below).

Whether it is trying to find new ways to engage with other people or locations around the world (XR) or solving complex mathematical problems (Quantum Computing), many IT consulting and other services companies have already pushed off, trying to leverage existing digital capabilities for enterprises. Below, we dive into a few emerging trends.

◆ **Blockchain.** Price performance of cryptocurrencies has been hard to ignore, given recent volatility and constant rhetoric around the future. CFRA thinks that the underlying distributed ledger technology (DLT) related to digital currencies and associated networks, such as Blockchain and Ethereum, are disruptive and have the potential to alter many aspects of how multiple industries conduct business. As the lines between networks and cryptocurrencies continue to blur, we think dispelling the premise that both are synonymous (or have similar runways of potential) is vital.

In our view, the easiest way to define cryptocurrency is to think of it as a digital proxy for cash. While cash currently remains king, we note digital currencies hold some very similar traits. Both can facilitate transactions in a non-traceable peer-to-peer (P2P) fashion, with no sole party serving as a central authority. However, one key difference from cash is digital currencies (specifically bitcoin) have no central issuer or network operator. Interestingly, the ability to skirt the need for any kind of government or central bank intervention was an overarching catalyst for the initial creation of bitcoin.

HOW SMART CONTRACTS ARE EXECUTED

Source: CFRA

The goal of blockchain technology is decentralization, through a shared ledger of transactions. The three main components are comprised of a P2P network with randomized groups known as nodes, a database such as a digital ledger, and third parties. When a third party submits an entry (*e.g.,* a payment) to the ledger, the nodes in the network then work together to either approve or reject transactions. Blockchain, which has no central authority, eliminates the need to trust one party (*e.g.,* a payment processor). In addition, every transaction is time-stamped and protected by cryptographic signatures or complex algorithms that provide data integrity. As such, if anyone attempted to retroactively adjust transactions, the attempt would be visible to every node in the network, essentially making transactions fully immutable once submitted.

Many companies in the IT Consultancy arena (Accenture, EPAM, and Globant, to name a few) continue to advance distributed ledger technology by working with retailers, banks, and shippers to explore use cases outside strictly transactions. Looking ahead, CFRA thinks technology has the potential to alter many procedures conducted today with financial and non-financial technology. For example, this technology could reduce cybersecurity risk by eliminating human intermediaries, which would potentially change the way we authenticate votes or alter methods of tracking the shipping of goods and services through the use of smart contracts, which is foundational to how key networks today, like Ethereum.

◆ **Metaverse or Extended Reality (XR) – A Trillion Dollar Opportunity or Is It Just a Dream?**
Immersive experiences are changing the way people connect with information, experiences, and each other. Through virtual reality (VR) and augmented reality (AR), XR solves a tactical pain point that customers and businesses share, distance. Real estate company Redfin has adopted VR powered by technology from immersive experience provider Matterport to sell homes. Prospective homebuyers can tour listings through a 3D walkthrough without setting foot on the property.

Following years of relative stagnation, the enterprise VR training market will generate $24.5 billion of revenue by 2024, according to ABI Research. Meanwhile, McKinsey estimates the metaverse's potential economic value to be $5 billion by 2030. Growth is expected to be driven by the need to train or reskill increasingly distributed and remote workers for a decidedly digital future, making employee training ripe for transformation with XR. Companies can bring trainers "offsite" from anywhere or have students virtually attend sessions; training scenarios can be set up anywhere, then run, re-run, and adjusted to give a firsthand experience of different situations.

Additionally, as trainers can create whatever setting they can imagine, XR delivers a firsthand experience with challenging or potentially dangerous situations without real-world risk. Walmart used VR to prepare employees for the chaos of Black Friday. And Komatsu, a heavy machine manufacturer, has offered virtual training for heavy equipment operators in any location and regardless of weather conditions. With

VR, Komatsu's customers can ensure that its operators are properly trained for the job without putting them – or multi-million-dollar excavating equipment – at risk.

CFRA believes that XR technologies are ultimately solving the fundamental problem of closing the distance by increasing access to people, information, and experiences. However, we think XR is still in its infancy, and barriers to its full maturity include challenges around processing lag and content creation.

◆ **Quantum Computing to Address Data Complexity.** As the pursuit of incrementally increased computing power remains an arms race, CFRA thinks quantum computing is quietly migrating from theory to real-world applications. We conclude that enterprise services markets are looking to be direct beneficiaries. In our view, attractive avenues of risk to reward exposure to quantum computing are companies with cloud-based business delivery models (e.g., IT services). Despite immensely advanced architecture in today's high-performance computing (HPC), many data-intensive tasks are still unable to be addressed with traditional systems.

Given a continued uptick in the complexity of overall business processes, MarketsandMarkets (MnM), a market research firm, estimates that the HPC market will rise to $49.4 billion by 2025, from $37.8 billion in 2020 (CAGR of 5.5%). Examining quantum computing exclusively, Homeland Security Research, a research provider, thinks the market will reach $10.7 billion by 2024 (latest available). Interestingly, $8.45 billion of it is expected to be derived from sales and services, and the remaining $2.25 billion from government-funded and affiliated programs. Similarly, funding for quantum continues to escalate, as the European Commission estimates that while spending currently weighs in at around $1.7 billion, it will reach as much as $5.7 billion longer term.

In 2019 and early 2020, IBM, Intel, and Google each reportedly measured quantum processors containing 65, 49, and 72 qubits, respectively. This represents a significant breakthrough, as many believed that a 50-qubit quantum computing system was unlikely to be attainable in our lifetime. In early 2019, IBM unveiled a quantum computing system for scientific and commercial use dubbed Q System One. With the advancement of this technology, CFRA thinks this could eventually see progress in tackling data complexity (*e.g.,* full security encryption/decryption and drug/disease discovery).

Regulatory Updates

Biden Administration Reverses Trump's Policies on H-1B Visa Program

On May 18, 2021, the Department of Homeland Security (DHS) formally vacated the regulation that would have redefined H-1B "specialty occupation," restricted off-site placement of H-1B employees, and otherwise increased employer compliance obligations. The DHS has frozen some of the Trump administration's rules and policies on the H-1B visa program. The affected policies include: 1) the rule requiring the selection of H-1B workers based on the highest salary will be frozen from May 14, 2021, to November 14, 2022, by the Department of Labor; and 2) the Department of Labor policy requiring end clients to be involved in and take responsibility for the H-1B process is withdrawn. President Joe Biden also indicated that he would support expanding the number of high-skilled visas and eliminating the limits on employment-based visas by country, which create what his campaign termed "unacceptably long backlogs." The Biden administration also proposed legislation to provide permanent work permits to spouses of H-1B visa holders. CFRA expects removing any (or all) provisions would be accretive to margins and earnings for most industry participants.

M&A Environment

Pricing Mismatch Between Private Companies and Acquirers

Given all the volatility currently in the private markets, there is still a mismatch between what they (private companies) think they are worth and what acquirers are willing to pay. These likely crimps some of the consolidation for the time being until valuations fully revert to historical levels and reach parity across both parties. We would also cite some companies (CGI, for example) that have expressed lower competition from other potential acquirers, given the cost of capital is on the rise from the more contractionary stance of the Federal Reserve.

IBM's Spin-Off Buys More Time but Does Not Solve Structural Issues

Even since IBM's blockbuster $34 billion acquisition of Red Hat in 2019, the company has struggled to change its image from a legacy-market focused technology firm to one focused on cloud computing and software. On October 8, 2020, IBM announced plans to spin off its Managed Infrastructure Services unit of its Global Technology Services division into a new public company. This strategic move also aligns with IBM's focus on higher-value growth opportunities and accelerates its hybrid cloud growth strategy to drive digital transformation for its clients. On April 12, 2021, IBM announced the name of this new spinoff, Kyndryl (NYSE: KD). Kyndryl expects its addressable market to grow from $240 billion pre-spin-off to $510 billion post-spin-off by 2024. Factors involved in Kyndryl's addressable market, which benefits from multiple interrelated tailwinds, are greater demand for digital transformation services, ongoing migration to cloud, rapid data growth, increased need for secure systems, and accelerating pace of technological advancement. The separation is a tax-free spin-off to IBM shareholders and was completed in November 2021.

Although IBM's recent moves are a step in the right direction, they are not enough, in CFRA's view, after years of operational mishaps that have caused the stock to lag badly compared to market averages and peers over the last decade. With the Kyndryl spin-off complete, IBM's Software and Consulting business lines will be central to its growth strategy. For now, we suspect improvement in Software will be the key catalyst to unlock further upside in shares.

HOW THE INDUSTRY OPERATES

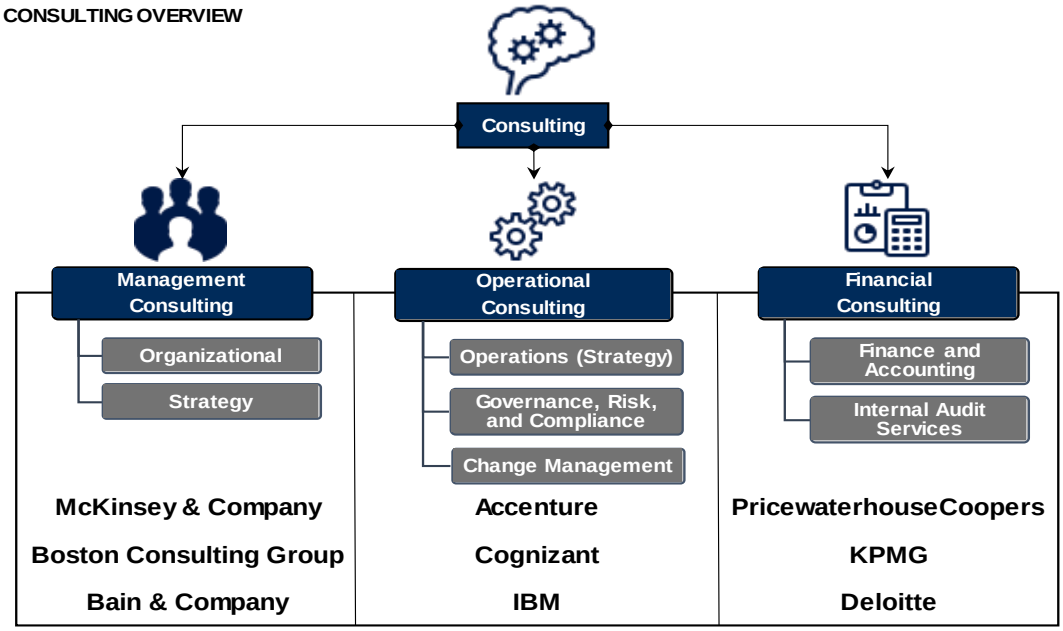
Below, we dive into the broader segments of both business and information technology consulting. We also establish how the sub-industry operates and the demand drivers across the broader segments. From a higher-level view, the consultancy industry refers to a slew of different companies that specialize in different markets, which range from certain business strategies (new product assessment or merger integration) to the actual design, implementation, and deployment of technology into company operations. In short, consultants help clients solve complex problems, by coming up with customized solutions that are tailored to company needs.

Consulting

The first management consulting firm ever formed was named Arthur D. Little, after the late MIT professor, in the late 1800s. The firm was formed to supply technical research for businesses, but later morphed into something more when Booz Allen Hamilton was founded as a management consultancy in 1914 and was the first corporation to serve both private and public sector clients. Shortly after, the first pure-play management consulting company was formed and named McKinsey & Company, in 1926.

Today, advisory and implementation services related to management issues are classified as business consulting services, which are separated into three broad categories: 1) management consulting, 2) operational consulting, and 3) financial consulting. These could be further broken down into various fields: operations; organizational; strategy; finance and accounting; change management; internal audit services; and governance, risk, and compliance. Worldwide revenues from business consulting services are expected to grow at a CAGR of 6.1% to $186 billion in 2026 from $138 billion in 2021, industry research firm IDC said in April 2022.

CONSULTING OVERVIEW



Source: CFRA, IDC.

Management Consulting

This segment generally works hand in hand with organizations' leaders to improve the company's performance through corrections in their organizational structure, strategy, and marketing. Management consulting is dominated by three main players, also known as the MBB: McKinsey & Company, The Boston Consulting Group (BCG), and Bain & Company. According to IDC, organizational consulting and strategy consulting are the two service lines that fall within the scope of management consulting.

- *Organizational consulting* addresses the dimensions of business transformation involving the organizational design for a specific company with an emphasis on talent management, selection, sourcing, and overall enterprise strategy. Growth in this field of business consulting, which is estimated to generate $36.8 billion in revenues in 2021, is projected to rise at a 7.6% CAGR from 2021 to 2026, making it the fastest grower in the business consulting market despite the Covid-19 disruption.

- *Strategy consulting* assists executives in acquiring and aligning resources, as well as defining business objectives, visions, and goals through services such as strategic planning, competitive analysis, and market analysis. Some key areas that alter demand in this specific segment include addressing enterprise operational strategies, internal realignment (usually post M&A), and overall positioning for maximum exposure to emerging trends and opportunities. This category, which is estimated to generate $27.7 billion in revenues in 2021, is also poised for healthy growth at a projected 7.0% CAGR from 2021 to 2026.

WORLDWIDE BUSINESS CONSULTING SERVICES SPENDING BY SERVICE LINE
(in $, billions)

	2019	2020	2021	2022	2023	2024	2025	2026	2021-2026 CAGR (%)
Operations consulting	34.8	33.1	39.1	41.7	44.1	46.3	48.6	6.0	6.8
Organizational consulting	31.8	30.6	36.8	39.6	42.0	44.4	46.7	6.6	7.6
Strategy consulting	24.4	23.4	27.7	29.7	31.3	33.0	34.7	6.2	7.0
Governance, risk, and compliance	15.3	14.6	17.4	18.6	19.8	20.8	21.9	6.3	7.1
Finance and accounting	12.4	11.6	13.3	14.1	14.8	15.4	16.1	5.2	5.8
Change management	9.4	8.9	10.6	11.3	11.9	12.6	13.2	6.1	6.8
Internal audit services	4.6	4.2	4.7	4.9	5.1	5.3	5.6	4.5	4.3
Total	132.7	126.4	149.6	159.9	169.0	177.8	186.8	6.1	6.9

Source: IDC, May 2022.

Operational Consulting

Operational consulting revolves around tangible fixes that need to be made in an organization's operations and/or information technology for productivity improvement and operational efficiency. Commonly, an operational consultant's fee will depend on the amount of operational efficiencies that they are able to achieve. Some areas that can influence client engagement include relationship management of global supply chains and the correct balance of both retained internal operations and outsourced service providers to optimize results.

Some key players in this field are IBM, Accenture, and Cognizant, while most of the constituents in the IT consulting and other services sub-industry fall within this category as well. According to IDC, operational consulting comprises three main service lines: 1) operations consulting, 2) governance, risk, and compliance consulting, and 3) change management consulting.

- *Operations consulting* focuses on the improvement of clients' processes by addressing the functional content dimensions of business transformation. As of late, this has had a large emphasis on digital-related strategies, as company survival has shifted from cost efficiency to innovation being a central focus to remain competitive. This field of business consulting has the largest worldwide revenue share, with $36.3 billion projected for 2021 and is expected to grow at a 6% CAGR from 2021 to 2026.

- *Governance, risk, and compliance consulting* assesses organizational governance, risk, and compliance from both an operational and a strategic perspective. Longer term, improving in this specific area likely helps organizations anticipate incoming risks to their business. The category, with anticipated revenues of $16.1 billion in 2021, is expected to grow at a 6.3% CAGR from 2021 to 2026.

- *Change management consulting* advocates for a structured approach to altering individuals, teams, and organizations to reflect a company's goals. Generally, all other forms of consulting, including strategy, performance, and organizational work, require the usage of change management. The segment's projected revenue for 2021 is $9.8 billion, while growth at a 6.1% CAGR is expected from 2021 to 2026.

Financial Consulting

Financial consulting largely deals with the way an organization manages its finances, such as cash and capital management. It oversees the efficient use of capital throughout the organization's value chain, as well as the financing of specific projects like M&A or organic expansion. The Big Four accounting firms (*i.e.,* Ernst and Young, PricewaterhouseCoopers, KPMG, and Deloitte) are the pioneers in this space given their reputation around both finance and accounting consulting, and internal audit services.

- *Finance and accounting consulting* includes strategy and organization design for finance and accounting processes. This segment is estimated to generate $12.5 billion in revenues in 2021 and to grow at a CAGR of 5.2% between 2021 and 2026.

- *Internal audit services consulting* provides assistance in organizations, assessment, construction, and transformation of internal audit departments. The category is the smallest vertical and is estimated to generate $4.5 billion in revenues in 2021 and to grow at a CAGR of 4.5% between 2021 and 2026.

Business Process Outsourcing

Business process outsourcing (BPO) involves the outsourcing of functions that are necessary for a business to operate, including a broad array of back-office functions such as human resources, procurement, finance and accounting, and customer care. As corporations continue to find ways to cut costs and focus on core operations, the push to outsource business processes has intensified.

BPO offers multiple client benefits, including savings depending on the extent of processes outsourced and the caliber of the service provider. CFRA thinks that most of the savings estimated to stem from the use of offshore labor. Other gains from the use of BPO include efficiencies gleaned from proprietary workflow and process reengineering, greater access to specialized skills, and better service delivery. For companies in the financial, insurance, and health care segments, with data and document management that is regulated by government record-keeping requirements, BPO provides additional benefits.

WORLDWIDE BUSINESS PROCESS OUTSOURCING SERVICES SPENDING BY BUSINESS KEY HORIZONTAL
(in $, millions)

	2021	2022	2023	2024	2025	2026	2021-2022 CAGR (%)	2021-2026 CAGR (%)
Key horizontal BPO	219,247.3	225,847.7	236,414.8	247,578.8	259,139.1	270,984.1	3.0	4.3
Application management	79,082.0	82,972.1	86,676.8	90,101.9	93,522.3	97,017.0	4.9	4.2
Hosted application management	18,286.1	19,710.1	21,183.0	22,556.7	23,867.9	25,218.5	7.8	6.6
IT outsourcing	97,193.7	96,891.2	97,703.9	98,357.4	98,861.6	99,248.2	(0.3)	0.4
Network and endpoint outsourcing services	58,623.8	60,595.7	62,974.8	62,231.3	67,400.6	69,551.0	3.4	3.5
Hosting infrastructure services	64,723.6	68,718.4	73,957.2	79,327.8	85,147.2	91,318.4	6.2	7.1
Total	**537,156.4**	**554,735.2**	**578.910.6**	**603,153.9**	**627,938.6**	**653,337.2**	**3.3**	**4.0**

Source: IDC, July 2022.

In the BPO segment, six important areas of growth are key horizontal BPO, application management BPO services, hosted application management service, IT outsourcing, network and endpoint outsourcing services, and hosting infrastructure services.

- *Key Horizontal BPO* is a BPO firm that provides call center services to a product supplier or a manufacturing concern. This practice will benefit corporations that seek to trim costs and boost efficiencies related to call center operations and improve relations between the contact center and the manufacturer or supplier of the product. Worldwide spending on Key Horizontal BPO services is expected to grow at a CAGR of 4.3% from 2021 through 2026, reaching $270.9 billion in 2026, IDC updated in July 2022.

- *Application management BPO services* are associated with the task of providing ongoing support for apps to an external provider that specializes in this type of maintenance and monitoring. Through this service, the customer can delegate the responsibility of monitoring and releasing patches, bug fixes, and minor enhancements to another company. IDC expects global spending on such services to increase at a CAGR of 4.2% from 2021 through 2026 to $97 billion.

- *Hosted Application Management (HAM) service* is where a service provider oversees and owns infrastructure, administrative, and software tasks and makes the system available to customers. An

example of this type of service would be the cloud hosting services for end-to-end solutions. HAM services provide ease of access, reduced physical clutter, cost savings, and reliability. BPO spending on HAM is expected to increase at a CAGR of 6.6% from 2021 through 2026 to $25.2 billion.

- *IT Outsourcing* services involve a long-term, contractual arrangement in which a service provider takes ownership of and responsibility for managing all or part of a client's IT infrastructure and operations based on a service-level agreement. The essence of an IT outsourcing contract is taking over management of day-to-day operations at a data center and its systems infrastructure, according to IDC. IDC forecasts global spending in this segment to grow at a CAGR of 0.4% from 2021 through 2026, to $99.2 billion.

- *Network and Endpoint Outsourcing Services* involve a set of activities associated with outsourcing the support and management of one or more elements of the client/server and network communications infrastructure of an organization. IDC thinks global spending on this service will increase 3.5% yearly from 2021 to 2026 to reach $69.6 billion.

- *Hosting Infrastructure Services (HIS)* include the management of servers, networking, and other infrastructure solutions in a third-party service provider data center. HIS encompass activities related to the provisioning, management, and maintenance of the infrastructure that supports businesses' applications, which include activities around application development and deployment. IDC expects a high growth rate of 7.1% annually from 2021 to 2026 to reach $91.3 billion.

Business Process Services

Some companies in the BPO field have started rebranding their outsourcing offerings to "business process services" (BPS). Although the trend has different meanings for each company, the common characteristic describing BPS is the use of advanced technology for value-added BPO solutions. This trend stems from the evolution of BPO services from call centers to mature market solutions that involve technology such as AI, analytics, automation, and digitization.

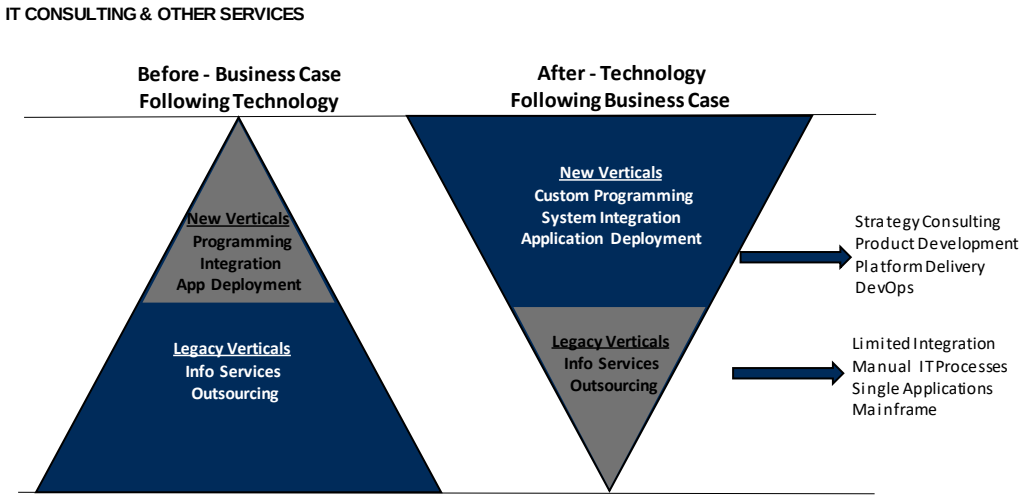
Often times when organizations think about BPO, the focus largely surrounds tactical process around cost controls to simply keep the business trim. From an outsourcer moving routine work offshore to leveraging economies of scale in procurement, arguably, these solutions are not able to offer much transformative edge to businesses. In this era where innovation and change have become a crucial factor for success, BPS is redefining outsourcing by mixing process and technology with the people who run them.

The move to BPS has been made possible through the development of different outsourcing models, such as takeover, managed captive, and build-operate-transfer schemes. The BPO players in the sub-industry, such as DXC Technology, Cognizant, and WNS Holdings, have started offering technology infused outsourcing services – BPS. For instance, DXC said that its BPS suite provides digital integration for companies' front and back offices and includes robotics and invoice automation technology, among others. Cognizant and WNS have BPS offering that includes automation and cognitive technologies, as well as a "Business Process as a Service" delivery model that includes cloud-based IT and data warehousing.

More on IT Consulting & Other Services Sub-Industry

Constituents in the IT Consulting & Other Services sub-industry largely comprise systems integration, custom software programming, information services, and outsourcing segments. Firms in these segments provide customized, rather than standardized, services. They assist companies in assembling, installing,

and utilizing technology based on customer needs. Among the largest providers of these kinds of services are IBM, Accenture, Cognizant, and EPAM Systems. While many of these companies are IT-centric, we note many of the larger companies in the sub-industry specialize in other traditional consulting services revolving around management, organizational, and strategy verticals.



Source: CFRA, EPAM Systems

IT Consulting

Computer-related or IT consulting firms work with organizations to create and implement strategies to address business problems. These consultants combine industry-specific experience with technology know-how to help clients improve overall performance and competitiveness.

Many of the same factors driving demand for other technology services are fueling consulting services. In the private sector, companies are struggling to deal with seemingly continuous changes in the regulatory environment, increased global competition, post-merger integration issues, and industry consolidation. At the same time, they are trying to develop strategies that maximize growth opportunities. In the public sector, pressures from taxpayers and fiscal-minded politicians require governments to do more with less.

To compete more effectively, companies continue to look for ways to increase revenues, cut costs, operate more efficiently, and manage risk more effectively, while at the same time improve their offerings and customer service. Consulting organizations help their clients understand and work through these major issues.

Systems Integration

Companies serving the systems integration market produce unique computer systems that meet clients' specific needs. The process is generally executed in various phases of a system's life cycle: planning, design, construction, implementation, and operation. Systems integration owes its popularity to advancing technology, a shortage of technical personnel, and the complexity of automating front-office processes. Its two major markets are government and commercial clients.

◆ **Government.** The largest user of systems integration services is the U.S. government. The federal agencies that require systems integration are few in numbers, but enormous in size. They include the U.S. Department of Defense (DoD), the National Aeronautics and Space Administration (NASA), the Environmental Protection Agency (EPA), the Federal Aviation Administration (FAA), and the National Oceanic and Atmospheric Administration (NOAA). U.S. government procurement has traditionally been an important element in the growth of the systems integration market. CFRA thinks that the growth in the

federal marketplace will continue to be significant. Further, given the recent U.S. presidential administration change and data breaches (e.g., SolarWinds), companies that specialize in federal IT modernization initiatives continue to benefit from elevated demand, in our view.

◆ **Commercial clients.** In an increasingly competitive marketplace, large global enterprises realize the importance of back- and front-office applications. Because no two companies handle their business processes the same way, the IT system development requires considerable custom work that often surpasses the expertise of an organization's in-house programming staff.

Many companies continue to look for ways to reduce costs in order to compete more effectively in today's business climate. By integrating various internal systems, clients can run their operations more efficiently, which can boost their bottom line. Hardware vendors and major accounting firms, as well as dedicated systems integrators, all hope to ride the wave of growth in commercial systems integration.

Custom Programming
Custom programming firms provide clients with programmers on a temporary or per diem basis. Fees typically correlate with the technical skill required.

Clients of these firms include organizations with personnel lacking the needed expertise, as well as firms undertaking projects that require additional staff but not permanent new hires. Demand has been bolstered by a long-standing shortage of technology professionals around the world, most notably software developers and system designers.

Information Services
Firms in the information services (IS) business develop and update proprietary databases and sometimes offer access to fee-based information sources. Clients that want to retrieve information are charged usage and communications fees. Fueling demand in this market is the global competition facing companies in many industries, creating a greater need for accurate and timely information. Advances in database technology, which have yielded improvements in data collection, manipulation, and dissemination, are also fueling the industry by improving the capability and efficiency of IS companies.

Firms may provide their clients with several types of material. These include marketing information (market research on specific industries, direct mail marketing, product movement, and audience assessment), financial information (consumer and corporate credit data, financial and economic information, and stock quotes), news retrieval, and medical journal abstract retrieval.

Some information quickly becomes obsolete and must be updated continuously, which keeps IS providers in constant demand. In general, one or two firms may dominate a particular vertical market by having extensive access to information sources. This makes the business difficult to enter without going the M&A route.

HOW TO ANALYZE A COMPANY IN THIS INDUSTRY

At CFRA, we recommend a top-down approach to valuation. An examination of the industry drivers outlined on page 9 – IT services spending, gross value added, and global services purchasing managers index – is a good starting point.

◆ **IT services spending.** Helps gauge which areas and specific business projects are generating the highest demand. Total worldwide services spending is largely comprised of three large tranches, which include projects, outsourcing, and support/training. This is likely led by specific business cases, for which technology is used to help increase sales, generate new avenues of business, and/or implement tighter cost controls.

◆ **Gross value added (GVA).** An output measure that accounts for the value of goods and services produced in comparison to the cost incurred in a certain sector. It can be thought of as the total contribution of different sectors to economic growth. The information technology sector usually sees higher annual GVA growth rates, given you can substitute technology for fixed assets to generate higher profit contribution to the economy.

AI, for example, is one of the emerging technologies that has the potential to boost rates of profitability by an average of 38% by 2035 and lead to an economic boost of $14 trillion across 16 industries in 12 economies by 2035, according to Accenture. Specifically, AI is expected to contribute the highest annual GVA growth rates to Information and Communication (4.8%), Manufacturing (4.4%), and Financial Services (4.3%) businesses by 2035.

◆ **Interest rates.** The level of interest rates influences managers' decisions regarding business acquisitions, capital expenditures, dividends, and stock repurchases.

Short-term rates are generally represented by the federal funds rate and the discount rate. The monetary policy of the Federal Reserve Board (the Fed), which considers current economic conditions, influences the federal funds rate and directly controls the discount rate. For example, strong economic growth and/or employment activity, which can generate shortages in labor and goods and therefore cause higher inflation, may cause the Fed to raise its target for the federal funds rate, which, in turn, affects other interest rates.

Market forces determine long-term rates, commonly represented by the yield on the 10-year Treasury note. However, long-term rates are subject to the same factors as short-term rates: strong economic and employment conditions, by fueling inflation, can make them rise. Because they are subject to market forces rather than to regulation, long-term interest rates react more swiftly than short-term rates to daily economic developments. Thus, they can be viewed as a leading indicator for future interest rate levels and economic activity.

Declining interest rates tend to stimulate economic activity and the demand for borrowing. High or rising interest rates increase the cost of borrowing, making companies less likely to make significant capital expenditures. At such times, companies may delay or cancel plans to implement new technology systems, which can hurt IT consulting & other services companies.

◆ **Unemployment and non-farm payrolls.** The Bureau of Labor Statistics compiles a monthly report on the U.S. unemployment rate – the percentage of individuals unemployed and still seeking work – and also provides other data on the labor force.

◆ **Consumer confidence index.** The consumer confidence index reflects U.S. consumers' views on current and future business and economic trends, and the ways they expect to be affected by those trends. The Conference Board, a private research organization that polls 5,000 representative U.S. households to gauge consumer sentiment, compiles the consumer confidence index monthly.

◆ **Department of Defense budgets.** Overall federal spending and IT-related spending has implications specifically focused on government-related spending. Newly approved and/or projected budgets and the pace of overall award procurement all have implications for these specific companies.

Knowledge of general economic and business trends is essential in determining the IT Consulting & Other Services sub-industry's overall strength. What are the current trends? Which key factors are affecting the industry's growth? The answers to such questions can help the investor gain insights into the underlying forces shaping the market for IT consulting & other services.

Company Analysis

After gaining an understanding of the industry's drivers, an investor should then focus on company-specific analysis. Company-specific analysis focuses on a range of factors – both qualitative and quantitative – and should be used to evaluate a firm's strengths and weaknesses, as well as assess its overall position within the overall retail landscape.

Qualitative Factors

An investor can obtain a sense of the fundamental position of a services vendor by identifying the markets in which it competes and understanding respective growth dynamics. Having a good sense of the overall needs and demands of the client remains very important as well. What are the overall growth expectations for those markets? For example, IDC expects worldwide spend on IT services to increase at a CAGR of 4.0% from 2021 through 2026.

Another key aspect that has become increasingly crucial is whether companies have the proper talent in place to address incoming enterprise demand. As new, more advanced workflows present themselves, we think companies that have business-led models around human capital stand the best chance for success, while others could experience trouble retaining and/or generating business.

It is important to note the vertical markets in which the company competes (public/government, financial, consumer, communications services) and the percentage of revenue that each market contributes. This information will help in assessing the likely impact that macroeconomic factors or market-specific risks may have on the company.

Management is another important qualitative factor. An investor can uncover clues about the management team by looking at its history. What is its track record? How long have the high-ranking managers been with the company? If they took control only recently, what was their previous experience? It is also preferable for managers to own company stock or options to help ensure that they have the incentive to do what is best for the shareholders – that is, create shareholder value.

The company's market segments should be evaluated with regard to the degree of competition in each. Are there many small competitors or a few large firms wielding significant resources? Who are the major competitors? How does the company stack up against them, and what are its particular advantages? One possible advantage is size, which is an important barrier to entry in the IT services industry. Large companies with vast resources dominate most segments of the IT services industry. Therefore, a company's size relative to its competitors should be considered.

Quantitative Factors

Once the qualitative questions have been answered, quantitative methods can be used to evaluate a company's prospects. These methods stem from analysis of the firm's financial statements – including the income statement and balance sheet – as well as its free cash flow.

Income Statement
The income statement yields information on the strength of a firm's current business, including its revenues, gross margins, and expenses.

◆ **Revenues.** A company's sales growth should be compared with both its historical rates and those of its competitors to gain insight into possible future growth and changes in market share. If any major changes have occurred, it is important to determine why they happened and whether they are likely to endure or reverse in future periods.

In addition to looking at growth, investors should also look at the quality of revenue. High-quality revenue has three main characteristics: predictability (*i.e.,* recurring revenue), profitability, and diversity, according to Harvard Business Review. For IT consulting vendors, revenues often come from contracts that are multiyear in duration or are renewed with predictability. Information related to contracts – specifically, their length and value – can help investors project future revenues. However, customers can often renegotiate the terms of an agreement, depending on the nature of the contract and end-market conditions, which makes predicting future revenue streams less reliable. Average contract lengths also have been decreasing, which makes forecasting long-term cash inflows more challenging.

Watch Out! *When companies accelerate revenue into the current period, they are essentially "stealing" revenue from future periods. As such, the reported revenue growth during a period in which revenue has been accelerated is likely unsustainable. There are many available tactics that management can use to accelerate revenue, some of which include allocating a higher proportion of transaction price to elements delivered upfront in contracts with multiple deliverables or performance obligations, faster recognition of deferred revenue, large shipments at period-end, a change in revenue recognition policy, and a change in the interpretation of the revenue recognition policy.*

Watch Out! *Revenue recognition for long-term construction or production contracts is typically based on the percentage-of-completion (POC) method historically. This method requires estimates that give management discretion in the timing of revenue recognition or that could simply be inaccurate. A company may overestimate current period revenues and earnings at the expense of future revenues and earnings by overestimating the percentage of the project that has been completed or by underestimating total project cost. In doing so, management hopes that future contracts will make up for the loss in revenues and profits that result from aggressive accounting policies in the current period.*

◆ **Gross margin.** High-quality revenue typically relates to higher margins. In the IT Consulting & Other Services sub-industry, gross margin (total revenues minus the cost of services provided, divided by total revenues) vary widely. The gross margin can range from slightly more than 20% for certain outsourcing services. For companies that offer full system integration services or in-house services, they could yield higher pricing with higher gross margin at around 40%.

Comparing a firm's gross margin with its historical rates – as well as with those of its peers – can yield information on changes in the mix of services revenue that the company has taken in. It might also

indicate the company's efficiency in providing those operations. A vendor can improve its efficiency by implementing cost-saving technology in its business or by getting past initial costs associated with setting up operations for a new contract. A drop in the gross margin may reveal that a vendor has changed its bidding policies to use price as a competitive weapon to win contracts. Although this will reduce each contract's profitability, it often increases the company's overall business volume.

◆ **Expenses.** When analyzing an IT consulting & other services firm, it is important to review sales and marketing outlays, as well as research and development (R&D) costs. Sales and marketing expenses can indicate the extent to which a vendor is building its sales force or is spending to market its services. Tracking year-to-year growth in the absolute dollars spent on sales and marketing – and comparing these expenses as a percentage of revenue over defined time periods – can be useful in determining the adequacy of selling and marketing expenses. Comparisons can be made with the company's own past record, as well as with those of its peers. If sales and marketing costs grow faster than revenues, operating margins are pinched. Alternatively, if revenues grow faster than selling and marketing expenses, operating margins expand.

Watch Out! *IT services firms typically capitalize certain costs related to contract acquisitions and the set-up of infrastructure for contracts. These firms can also capitalize certain costs for developing internal software and commercial software. However, some companies have been aggressive in their capitalization of costs by including normal operating expenses along with appropriate development costs. As a result, capitalized operating costs will be recorded on the balance sheet versus flowing through the current period income statement, providing a boost to current period income. Earnings will be hurt in subsequent periods as these capitalized operating costs are amortized into the income statement.*

A company's quality of earnings is revealed by dismissing any anomalies, accounting tricks, or one-time events that may skew the real bottom-line numbers on performance. Once these are removed, we can clearly see the earnings that are derived from higher sales or lower costs. Investors should be cautious when an increase in net income does not correspond to an increase in operating cash flows. A good way to gauge the quality of earnings is by tracking activity from the three financial statements.

Balance Sheet

Comparing the balance sheet of an IT consulting & other services firm with its past results – or with the balance sheets of other industry vendors – yields information about a firm's financial strength and the degree of financial leverage that it employs.

Consulting firms generally enjoy stable earnings. This results in a highly predictable cash flow and makes the repayment of debt relatively easy. Nonetheless, keeping some debt on the balance sheet may be beneficial, as it lowers a firm's cost of capital. However, too much debt can limit a vendor's ability to make strategic acquisitions. It also heightens the risk that an unexpected drop in business retention rates or new contract awards would severely constrain cash flow.

Free Cash Flow

When valuing an IT consulting & other services firm, an important measure is free cash flow – the amount of excess cash the company has available after paying off obligations. The investor should determine how the company expects to use its free cash flow. The three possible strategies are to repurchase shares of the company's common stock, pay dividends to shareholders, or reinvest the cash in the business, which includes the possibility of an acquisition. Generally, a company in a growth stage will pump its cash back into the business to fuel further growth. Mature companies that do not earn a high enough return on their invested capital may choose to direct the cash to their shareholders, either through dividends or share repurchases. It is important to monitor free cash flow over multiple periods and

compare the figures to companies within the same industry. If free cash flow is positive, it should indicate the company is able to meet its obligations including funding its operating activities and paying dividends.

A useful ratio to determine the quality of a company's revenue is free cash flow-to-revenue, and a rough benchmark would be 5%. Investors should track this indicator's performance historically to detect significant variances from the company's average free cash flow/revenue along with how the company's ratio compares to its peers. Over time, free cash flow should increase at a similar rate as revenue, and investors should beware otherwise.

Watch Out! *Some companies engage in supplier financing arrangements (aka reverse factoring). There are several variations of these programs, but basically, a company arranges for a financial institution to pay its suppliers and the company repays the financial institution later. This effectively lengthens the supplier payment terms and thus improves working capital. However, operating cash flows can be overstated if the cash payment to the financial institution is presented as financing outflows rather than operating cash flows, which would be the case if the company pays the supplier directly. Furthermore, companies may not reclassify accounts payable under reverse factoring programs into financial liabilities, which may understate leverage ratios.*

Other Factors to Consider

Additional factors that can affect an IT consulting & other services company's overall health include technological change, international business, acquisition strategies, contract backlogs and retention rate, headcount utilization, and attrition rates.

Technological Change
Although a firm in the IT Consulting & Other Services sub-industry can adapt to technological changes, such changes always entail risk. This firm may lose a competitive advantage should other firms gain a reputation in new technology areas, or vice versa. Investors should be alerted to changes in the IT Consulting & Other Services sub-industry, the causes of those changes, and new areas that firms are targeting. Discussions with vendors in the sub-industry can yield information on the size, growth rates, and attractiveness of new and emerging IT services markets, as well as on each firm's related technologies, philosophies regarding those markets, and competitiveness.

The increasing growth in the digital services market is an example of harnessing the opportunities offered by technological change. Accenture and Cognizant are two firms that are taking advantage of growth opportunities and converting clients to newer digital-related standards and protocol, which include interactivity, mobility, analytics, cloud services, and security.

International Business
The size and growth of opportunities available in international markets continue to attract companies in the IT Consulting & Other Services sub-industry. Thus, overseas developments can affect a company's business. For example, an economic slowdown could hurt new business, especially large contracts that may be deferred until better economic times. The foreign markets served and the strength of operations in those markets varies by vendor.

Some of the larger domestic IT consulting & other services companies derive a significant portion (around 30% or more) of their revenues abroad, while firms based abroad often derive most of their revenues (sometimes over 60%) from the U.S. Thus, many companies in the sub-industry are subject to foreign currency risk. For U.S.-based firms, overseas sales are translated from local currencies into dollars; a

strong dollar hurts reported earnings, while a weak dollar helps. The inverse is true for companies based overseas. Therefore, the investor should be aware of where a company is based, the countries in which it does business, and the value of the dollar against those countries' currencies.

U.S.-based outsourcing firms are sourcing work overseas. Tapping into the less expensive labor resources of other countries has helped companies offer reduced prices to their customers. India has been a big beneficiary of this trend. However, this shift involves additional costs, such as infrastructure and travel, which can dilute the initial value of the shift overseas. Nonetheless, in the longer run, if a company is using these resources effectively, there should be a gradual widening of operating margins. An investor should determine whether the company is using an offshoring strategy, and, if so, whether it is adding incremental value.

Acquisitions
The IT Consulting & Other Services sub-industry continues to consolidate. Companies seek to gain new areas of expertise, enter new geographic and vertical markets, and leverage their established sales organizations. Small companies have an added reason to go the acquisition route – they may see being acquired or acquiring others as a means of reaching critical mass. The investor should assess a firm's acquisition strategy to determine its future competitiveness.

Contracts and Retention Rate
Contract backlogs (i.e., contracts that have been signed but not implemented) should be examined, as should the duration of those contracts. Given that revenues from contract backlogs are locked in, it could be a strong leading indicator for future revenue growth once the work is complete. Also, the analysis – of recent contracts awarded to an IT consulting & other services vendor, of the firms competing for those contracts, and of the percentage of contract bids that the company has won – can indicate a vendor's competitiveness.

An offshoot of contract backlogs, which applies primarily to companies that service the public sector (i.e., the federal government, or state and local governments), is the funded backlog. The unfunded portion of the backlog refers to contracts that have been approved by the government agency but for which funds have not yet been appropriated. For public sector companies, this can yield further visibility into future revenue and earnings growth and serves as a leading indicator for potential changes that could be occurring in the given industry. On the competition forefront in the public sector, recompete risk is another important factor. A high rate (>10%) could present significant execution risk if other peers are able to steal portions and/or entire contracts.

IT consulting & other services firms involved with annual contracts, or with other contracts that are expiring but have been put up for renewal, have certain advantages. Being an incumbent vendor with first-hand knowledge of a customer's business operations improves a company's chances that its services will be retained. Because startup costs associated with a contract already have been largely absorbed, an incumbent provider's bid will usually be very competitive, if not the lowest among all bidders. Users of offerings from IT consulting & other services companies are also loath to displace incumbent vendors because of the disruption that any transition would have on their operations. This is particularly the case now that computer and processing operations are so crucial to organizational viability.

For incumbent vendors, all these factors influence the predictability of their future revenue streams. The amount of business renewed when contracts expire, known as the "retention rate," is a gauge to be watched. If a company's retention rate falls or rises materially, there could be a fundamental change in the way the firm is performing its services, which could have an impact on future results.

If a company loses a major customer or contract, the investor should find out the cause to determine if there is an underlying problem with the company's business. When considering contract wins, it is important to keep in mind that sometimes companies underbid in order to win the business – possibly to gain a reputation from the status of dealing with a certain organization.

In such cases, the IT consulting & other services vendor may not make much money – it may even take a loss – but it may hope to derive new business opportunities from the prestige of that particular win. However, too many such bids tend to weaken a vendor's financial health (and operating margin) – a condition referred to as the "winner's curse." Such underbidding may manifest itself in unfavorable pricing, which could pressure gross margin.

Headcount Utilization
Headcount utilization rate is a commonly used metric among IT consulting & other services companies. It is critical to measure the profitability of IT services companies, given there is no final product placed in the hands of a client. It also measures the proportion of billable hours to working hours. Of note, billable hours are not always available to calculate and make it hard to back into actual profit or losses per contract, but if they are, the easiest way to calculate is – billable hours/total available working hours. Within CFRA's qualitative coverage universe, the sweet spot of headcount utilization rate usually is around 75%-80%.

Attrition Rates
Not all companies in the IT Consulting & Other Services sub-industry quote their attrition rates, but this number can provide insight into a company's labor costs. In areas (such as India) where IT workers are in high demand, turnover tends to be high, as new employers entice workers away from their current positions with higher wages. This has two effects. First, after losing an employee, a company must replace that worker with someone who will likely be less productive as he or she climbs the learning curve. Second, it tends to put upward pressure on labor costs, as employers bid up wages in an attempt to hire the most qualified candidates. Investors should watch for companies with attrition rates that tend to be above 15% on a regular basis.

Equity Valuation

When trying to determine the appropriate valuation for equities of companies in the IT Consulting & Other Services sub-industry, CFRA uses a few different methods. The most common method used is the price-to-earnings (P/E) ratio. When we use the P/E ratio, we will most often compare the stock's current level to its competitors within the field. Since there are numerous different segments within the overall IT Consulting & Other Services sub-industry, it is important to know what specific area the company operates in for a more apples-to-apples comparison. A comparison to the stock's historical range can also be beneficial.

Over the past few years, IT consulting & other services companies headquartered overseas have enjoyed higher P/Es than their U.S.-based counterparts. CFRA thinks this premium reflects the faster revenue and earnings growth rates at these companies. To capture this additional data point, we turn to the P/E-to-projected earnings per share (EPS) growth rate (PEG), which is the P/E ratio divided by the earnings growth rate. This allows for a more direct comparison between older, slower-growing firms and their faster-growing peers.

Another metric CFRA uses is free cash flow, which we apply in two ways. First, we can discount the future expected free cash flows (which are essentially operating cash flow less capital expenditures and dividends) to come up with a present value. Second, by determining the size of the expected free cash flows, we have a better idea of how much capital the company will have at its disposal for other uses. This requires a bit more analysis to determine what the priorities of management are. Companies can use

their free cash to pay dividends, buy back stock, pay off outstanding debt, or to reinvest back into this business. If a company's priorities line up with the individual investor (e.g., a conservative investor looking for current income and a company that has a high dividend payout ratio), the stock may be a worthwhile investment.

Discounted Cash Flow

Because of the limitations of the P/E ratio, other methods for valuing IT consulting & other services companies are often used. One such method is the discounted cash flow (DCF) model. Compared with the P/E ratio, this metric is much more complicated, as it involves making estimates for a variety of factors well into the future. However, many investors think that the DCF model gives a true long-term intrinsic value of the stock, since it is based on the fundamental expectations of the business rather than on public market factors or historical precedents. In DCF analysis, the net present value of projected cash flows for a company, minus the investment needed to generate future cash flows, is calculated.

The three major components of DCF analysis are free cash flow, terminal value, and discount rate. Free cash flow is the cash generated by the business that is available to all providers of capital. Higher free cash flow is preferred for capital allocation such as buybacks and dividends for shareholders as well as funding for capital expenditures, including capacity buildouts or expansion and maintenance of machines. The terminal value is the value of the cash flows at the end of the horizon period.

The discount rate is the rate used to discount free cash flows and the terminal value back to their present values. The discount rate is an important factor in the analysis because variations in it can significantly affect the present value of the cash flows. CFRA thinks the best discount rate to use is the company's weighted average cost of capital, which takes into consideration all forms of capitalization (such as debt and equity) that the company employs.

While DCF analysis provides an inherent value of the company based on its ability to generate future cash flows, it is highly dependent on the accuracy of the many assumptions regarding free cash flows, terminal value, and the discount rate.

Sum-of-the-Parts Valuation

Another method used by investors in the IT consulting and other services sub-industry in evaluating their companies is the sum-of-the-parts (SOTP) model, sometimes known as "breakup" analysis. Given all the recent corporate transactions in this industry, this method can come in handy to help arrive at an overall intrinsic value of sub-industry participants.

SOTP involves adding up the value of a company's individual businesses to arrive at a total enterprise value (TEV). Equity value is then determined by subtracting net debt and other non-operating adjustments. The first step in SOTP analysis is to determine a value for each segment. For those operations that are generating income, a forecast of earnings before interest, taxes, depreciation, and amortization (EBITDA) or net income is prepared. This value is then compared with a peer group of similar companies to determine a value for that business unit.

For segments that are not generating significant income, other valuation methods need to be used, such as book value or price-to-sales ratio. After the value of each segment is determined, they are totaled; then, the amount of debt and other non-operating adjustments are subtracted. This figure is divided by the number of shares outstanding to determine a current value for the stock. If that value is significantly more than the current market value of the stock, an investment opportunity may exist.

Return on Invested Capital

A key valuation method for IT consulting and other services companies is by using return on invested capital (ROIC). The ROIC in a company attempts to measure the return earned on capital that is deployed. There are four key methods to arrive at this value. The first is to subtract dividends from the net income for the numerator, which is then divided by the denominator, total capital, which is adding a company's total debt and equity.

The second method is to apply tax adjustment to the operating income (net operating profit after tax) in the numerator. The third method is to use book values for invested capital (sum of book value of debt and book value of equity subtracting non-operating assets, such as cash and cash equivalents, marketable securities, and assets of discontinued operations).

The fourth method is to determine the working capital figure by subtracting current liabilities from current assets. Then one is to obtain non-cash working capital value by subtracting cash from the working capital value as determined previously. After which, a company's fixed assets are added to the non-cash working capital.

When the ROIC is greater than the company's weighted average cost of capital (WACC), value is being created. Companies in the IT consulting & other services space are generally expected to reinvest capital in a manner that will bring about positive ROIC to cope with the rising demand for digital platforms in the post-pandemic era.

GLOSSARY

Analytics—The discovery, interpretation, and communication of meaningful patterns in data.

Attrition rate—The process in which the workforce dwindles at a company, following a period in which a number of employees leave and are not replaced.

Artificial Intelligence (AI)—Also known as machine intelligence, an area of computer science that emphasizes the creation of intelligent machines that work and react like humans for speech recognition, learning, planning, and problem solving.

Backlog—The accumulation of uncompleted work from a contract.

Big data and analytics—Involves the use of tools and applications for data extraction, integration, governance, movement, curation, analysis, and visualization deployed to support or automate a broad range of strategic, operational, and tactical decision making**.**

Blockchain—A decentralized shared ledger of transactions, which requires no central authority and accurately approves or rejects entries that cannot be retroactively adjusted.

Business process outsourcing (BPO)—When a corporation contracts out the operations and responsibilities of specific (usually noncore) business function (or process) to a third-party service provider, typically to cut costs and shift its focus to core business functions. Frequently outsourced functions include human resources (*e.g.,* payroll, training, welfare and benefits, and hiring), procurement, customer relationship management (CRM), supply chain logistics, finance and accounting, and manufacturing, among other operations.

Business process services (BPS)—Modified BPO services that use market solutions involving technology such as AI, analytics, automation, and digitization.

Cloud computing—Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand.

Cognitive—The process of acquiring knowledge and understanding through thought, experiences, and senses.

Consulting—The business of providing expert advice to other professionals in an industry.

Crowdsourced—Refers to the process of getting work, funding, goods, or services from large, relatively open, and often rapidly-evolving group of internet users.

Cryptocurrency—A digital or virtual currency that uses cryptography for security. One of its most attractive characteristics is that is not issued by any central authority, rendering it theoretically immune to government interference or manipulation.

Customer relationship management (CRM)—A strategy whereby a business focuses on improving service to its customers through automated processes, personal information gathering and processing, and by offering self-service to customers.

Cybersecurity—The protection of computer systems from theft or damage to hardware, software, or data, as well as from disruption or misdirection of the services they provide. Also known as computer security or IT security.

Database—A computer-based collection of information or data files, organized and presented to serve a specific purpose.

Data Center—A building, dedicated space within a building, or a group of buildings used to house servers and associated components, such as telecommunications and storage systems.

Digital—Electronic technology that generates, stores, and processes data as a series of numbers. In IT services, “digital” refers to new technologies that help change business models (cloud infrastructure, social, and big data).

Gross value added (GVA)—The measure of the value of goods and services produced in an area, industry, or sector of an economy.

Hardware—The physical components of a computer system (*e.g.,* monitors, CPUs, servers), as opposed to the software that makes the system or its applications run.

Information services (IS)—A segment of the IT services industry. It includes vendors that develop and allow access to proprietary databases or engage in the collection, manipulation, and dissemination of data.

Intellectual property (IP)—The intangible creations of the mind, such as patents for inventions, trademarks, industrial designs, and geographical indications.

Internet—The world's largest computer network, supported by a U.S. backbone and various regional networks around the world. With the global connection of millions of computers spanning more than 150 countries, the Internet includes millions of databases, information sources, topic-specific bulletin boards, web pages, and news groups.

Low-code development—Software that provides a development environment used to create application software through graphical user interfaces and configurations instead of traditional hand-coded computer programming.

Network—A collection of hardware, communications facilities, and software that gives computers access to shared resources (e.g., databases) and peripheral devices (*e.g.,* printers and modems).

Offshoring—The practice of outsourcing a business process to a company located in a foreign nation where costs are lower than in the home country. In the U.S., the trend is for companies to contract with firms in countries such as India, China, Russia, and the Eastern European nations.

On/Off premise—In IT services, on-premises software, or on-prem, refers to software installed and run on computers within the premises of its user. Conversely, off-premises software--more commonly known as "cloud computing" software--are stored in a remote facility.

Outsourcing—Hiring an IT services company to perform some of an organization's data processing and data management tasks.

Program—A sequence of instructions that directs a computer to accomplish specific tasks (*e.g.*, an application).

Public sector—In IT services, refers to the segment of customers connected to the government (U.S. federal government, or state and local governments)**.**

Quantum Computing—Machines that use the properties of quantum physics to store data and perform computations.

Robotic Desktop Automation (RDA)—An automation process scaled down for a single user. It helps to optimize the way users work by simplifying, automating, and integrating the technologies and processes on their desktops.

Robotic Process Automation (RPA)—A technology that allows businesses to automate highly repetitive and routine tasks normally performed by workers. By implementing this technology, multiple users with different permissions can work together in the same process.

Software—Computer programs that either direct the operation of a computer (system software) or accomplish user tasks (application software).

Spinoff—The creation of an independent company through the sale or distribution of new shares of an existing business or division of a parent company.

Systems integration—The process whereby an IT services provider designs and implements a fully functional, connected system that meets a client's specific needs.

Traditional/legacy solution—An older method, technology, system, or program used by an organization. Many organizations refer to legacy solutions as all IT solutions that are non-cloud based.

Utilization Rate—A common metric for evaluating the economic contribution made by staff. It measures the proportion of billable hours to total working hours.

INDUSTRY REFERENCES

PERIODICALS

Harvard Business Review
hbr.org
General management magazine created by Harvard University subsidiary Harvard Business Publishing. The magazine published Michael E. Porter's five forces framework for industry analysis.

MARKET RESEARCH FIRMS

ABI Research
abiresearch.com
Provides research and strategic guidance on 5G, blockchain, digital security, AI, robotics, and other transformational technologies.

Forrester
forrester.com
Provides research and consulting to companies by creating technology research reports and in-depth analysis areas including computing, software, networking, Internet, and telecommunications.

Frontier Economics
frontier-economics.com
One of the largest economic consultancies in Europe. Frontier Economics help companies with their biggest challenges – market strategies, regulatory reviews, competition inquiries and also help governments design innovative policies and regulatory systems.

HFS Research
hfsresearch.com
Provides research on major innovations such as automation, AI, blockchain, and smart analytics.

Homeland Security Research
homelandsecurityresearch.com
An international market and technology research firm specializing in homeland security and public safety.

IDC Research, Inc.
idc.com
Provides information technology data, analysis, and consulting.

MarketsandMarkets
Marketsandmarkets.com
Provides business-to-business (B2B) research, data, and analysis on all different industries.

McKinsey & Company
mckinsey.com
Provides strategy and management consulting services to the world's leading businesses, government, and institutions. McKinsey work with leading organizations across the private, public and social sectors.

S&P Global Market Intelligence
spglobal.com
Provider of independent ratings, benchmarks, analytics, and data to the capital and commodity markets worldwide.

The Conference Board
conference-board.org
Private research organization that polls 5,000 representative U.S. households to gauge consumer sentiment. The poll results are then compiled to generate the monthly consumer confidence index.

TRADE ASSOCIATIONS

Computing Technology Industry Association (CompTIA)
comptia.org
Non-profit trade association. Issues vendor-neutral IT professional certification in more than 120 countries.

GOVERNMENT AGENCIES

Federal Reserve Economic Data
fred.stlouisfed.org
A database maintained by the Research division of the Federal Reserve Bank of St. Louis.

U.S. Bureau of Labor Statistics (BLS)
bls.gov
Agency within the U.S. Department of Labor (DOL) with the mandate to collect labor statistics.

U.S. Citizenship and Immigration Services (USCIS)
uscis.gov
Agency of the United States Department of Homeland Security that administers the country's naturalization and immigration system.

U.S. Department of Defense (DoD)
defense.gov
Cabinet-level department responsible with coordinating and supervising all agencies and functions of the government concerned directly with national security and the armed forces.

COMPARATIVE COMPANY ANALYSIS

Operating Revenues

Ticker		Company		Yr. End	Million $ 2021	2020	2019	2018	2017	2016	2015	CAGR (%) 10-Yr.	5-Yr.	1-Yr.	Index Basis (2013=100) 2021	2020	2019	2018	2017	2016
IT CONSULTING AND OTHER SERVICES																				
ACN	[]	ACCENTURE PLC		AUG	50,533.4	44,327.0	43,215.0	40,992.5	36,176.8	32,882.7	31,047.9	7.1	9.0	14.0	163	143	139	132	117	106
IBM	[]	INTERNATIONAL BUSINESS MACHINES CORPORATION		DEC	57,351.0	55,179.0	57,714.0	79,591.0	79,139.0	79,919.0	81,741.0	(6.0)	(6.4)	3.9	70	68	71	97	97	98
CTSH	[]	COGNIZANT TECHNOLOGY SOLUTIONS CORPORATION		DEC	18,507.0	16,652.0	16,783.0	16,125.0	14,810.0	13,487.0	12,416.0	11.7	6.5	11.1	149	134	135	130	119	109
EPAM		EPAM SYSTEMS, INC.		DEC	3,758.1	2,659.5	2,293.8	1,842.9	1,450.4	1,160.1	914.1	27.4	26.5	41.3	411	291	251	202	159	127
IT	[]	GARTNER, INC.		DEC	4,734.0	4,099.4	4,245.3	3,975.5	3,311.5	2,444.5	2,163.1	12.4	14.1	15.5	219	190	196	184	153	113
DOX	[]	AMDOCS LIMITED		SEP	4,288.6	4,169.0	4,086.7	3,974.8	3,867.2	3,718.2	3,643.5	3.0	2.9	2.9	118	114	112	109	106	102
GLOB	[]	GLOBANT S.A.		DEC	1,297.1	814.1	659.3	522.3	413.4	322.9	253.8	30.6	32.1	59.3	511	321	260	206	163	127
DXC		DXC TECHNOLOGY COMPANY	#	MAR	16,265.0	17,729.0	19,577.0	20,753.0	21,733.0	7,607.0	7,106.0	1.3	20.1	(9.4)	229	249	275	292	306	107
DAVA		ENDAVA PLC		JUN	446.3	351.0	287.9	217.6	159.4	115.4	84.1	31.3	31.1	27.2	531	417	342	259	189	137
TWKS	†	THOUGHTWORKS HOLDING, INC.		DEC	1,069.9	803.4	772.2	772.2	0.0	0.0	0.0	NA	NA	33.2	NA	NA	NA	NA	NA	NA
KD	†	KYNDRYL HOLDINGS, INC.		DEC	18,657.0	19,352.0	20,279.0	21,796.0	21,796.0	0.0	0.0	NA	NA	(3.6)	NA	NA	NA	NA	NA	NA
PRFT	†	PERFICIENT, INC.		DEC	761.0	612.1	565.5	498.4	485.3	487.0	458.1	11.8	9.3	24.3	166	134	123	109	106	106
GDYN	§	GRID DYNAMICS HOLDINGS, INC.		DEC	211.3	111.3	118.3	91.9	70.7	70.7	0.0	NA	NA	89.9	NA	NA	NA	NA	NA	NA
CINT	§	CI&T INC		DEC	1,444.4	956.5	677.1	588.3	452.4	378.2	329.6	NA	30.7	51.0	438	290	205	178	137	115
RAMP	†	LIVERAMP HOLDINGS, INC.	#	MAR	528.7	443.0	380.6	285.6	220.1	174.8	850.1	(8.8)	(12.2)	16.4	62	52	45	34	26	21
UIS	§	UNISYS CORPORATION		DEC	2,054.4	2,026.3	2,222.8	2,251.2	2,741.8	2,820.7	3,015.1	(6.1)	(6.1)	1.4	68	67	74	75	91	94
HCKT	§	THE HACKETT GROUP, INC.		DEC	277.6	277.6	260.8	264.5	255.1	252.1	252.1	4.0	1.9	18.2	110	110	103	105	101	100

Note: Data as originally reported. CAGR-Compound annual growth rate.

[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.

Souce: S&P Capital IQ.

Net Income

Ticker		Company		Yr. End	Million $ 2021	2020	2019	2018	2017	2016	2015	CAGR (%) 10-Yr.	5-Yr.	1-Yr.	Index Basis (2013=100) 2021	2020	2019	2018	2017	2016
IT CONSULTING AND OTHER SERVICES																				
ACN	[]	ACCENTURE PLC		AUG	5,906.8	5,107.8	4,779.1	4,059.9	3,445.1	4,111.9	3,053.6	10.0	7.5	15.6	193	167	157	133	113	135
IBM	[]	INTERNATIONAL BUSINESS MACHINES CORPORATION		DEC	5,743.0	5,590.0	9,431.0	8,728.0	5,753.0	11,872.0	13,190.0	(9.7)	(13.5)	2.7	44	42	72	66	44	90
CTSH	[]	COGNIZANT TECHNOLOGY SOLUTIONS CORPORATION		DEC	2,137.0	1,392.0	1,842.0	2,101.0	1,504.0	1,553.0	1,624.0	9.2	6.6	53.5	132	86	113	129	93	96
EPAM		EPAM SYSTEMS, INC.		DEC	481.7	327.2	261.1	240.3	72.8	99.3	84.5	26.9	37.1	47.2	570	387	309	284	86	118
IT	[]	GARTNER, INC.		DEC	793.6	266.7	233.3	122.5	3.3	193.6	175.6	19.2	32.6	197.5	452	152	133	70	2	110
DOX	[]	AMDOCS LIMITED		SEP	688.4	497.8	479.4	354.4	436.8	409.3	446.2	7.1	11.0	38.3	154	112	107	79	98	92
GLOB	[]	GLOBANT S.A.		DEC	96.1	54.2	54.0	51.7	30.5	35.9	31.7	29.8	21.8	77.2	303	171	171	163	96	113
DXC		DXC TECHNOLOGY COMPANY	#	MAR	718.0	-149.0	-5,369.0	1,257.0	1,751.0	-123.0	251.0	NA	NM	(97.2)	286	-59	NM	501	698	-49
DAVA		ENDAVA PLC		JUN	43.4	21.4	24.0	19.0	16.8	16.7	13.5	41.0	21.1	102.9	321	158	177	140	124	123
TWKS	†	THOUGHTWORKS HOLDING, INC.		DEC	-23.6	79.3	28.4	28.4	0.0	0.0	0.0	NA	NA	NM	NA	NA	NA	NA	NA	NA
KD	†	KYNDRYL HOLDINGS, INC.		DEC	-2,319.0	-2,011.0	-943.0	-980.0	-980.0	0.0	0.0	NA	NA	15.3	NA	NA	NA	NA	NA	NA
PRFT	†	PERFICIENT, INC.		DEC	52.1	30.2	37.1	24.6	18.6	20.5	23.0	17.1	20.6	72.6	226	131	161	107	81	89
GDYN	§	GRID DYNAMICS HOLDINGS, INC.		DEC	-7.7	-12.6	10.8	9.2	13.2	13.2	0.0	NA	NA	(38.9)	NA	NA	NA	NA	NA	NA
CINT	§	CI&T INC		DEC	126.0	127.7	56.5	59.4	28.9	17.1	28.1	NA	49.2	(1.3)	449	455	201	212	103	61
RAMP	†	LIVERAMP HOLDINGS, INC.	#	MAR	-33.8	-90.3	-124.5	1,028.5	23.5	4.1	6.7	14.6	NM	(27.5)	-505	NM	NM	15,345	350	61
UIS	§	UNISYS CORPORATION		DEC	-448.5	750.7	-17.2	75.5	-65.3	-47.7	-109.9	NA	56.5	NM	408	-683	16	-69	59	43
HCKT	§	THE HACKETT GROUP, INC.		DEC	41.5	41.5	23.3	23.9	27.4	21.5	21.5	6.7	14.0	659.1	193	193	108	111	127	100

Note: Data as originally reported. CAGR-Compound annual growth rate.

[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.

Souce: S&P Capital IQ.

Ticker		Company		Yr. End	Return on Revenues (%)						Return on Assets (%)						Return on Equity (%)					
					2021	2020	2019	2018	2017	2016	2021	2020	2019	2018	2017	2016	2021	2020	2019	2018	2017	2016
IT CONSULTING AND OTHER SERVICES																						
ACN	[]	ACCENTURE PLC		AUG	11.7	11.5	11.1	9.9	9.5	12.5	13.7	13.8	16.0	16.6	15.2	20.0	31.9	32.1	37.9	41.2	40.6	58.6
IBM	[]	INTERNATIONAL BUSINESS MACHINES CORPORATION		DEC	10.0	10.1	16.3	11.0	7.3	14.9	4.4	3.6	6.2	7.1	4.6	10.1	23.7	18.9	37.7	50.3	31.9	72.4
CTSH	[]	COGNIZANT TECHNOLOGY SOLUTIONS CORPORATION		DEC	11.5	8.4	11.0	13.0	10.2	11.5	12.0	8.2	11.4	13.3	9.9	10.9	18.7	12.7	16.4	19.0	14.1	15.5
EPAM		EPAM SYSTEMS, INC.		DEC	12.8	12.3	11.4	13.0	5.0	8.6	13.7	12.0	11.6	14.9	5.8	10.7	21.5	18.3	18.3	21.5	8.3	14.2
IT	[]	GARTNER, INC.		DEC	16.8	6.5	5.5	3.1	0.1	7.9	10.7	3.6	3.3	2.0	0.0	8.2	108.6	26.3	26.1	13.4	0.6	NM
DOX	[]	AMDOCS LIMITED		SEP	16.1	11.9	11.7	8.9	11.3	11.0	10.6	7.9	9.1	6.6	8.3	7.7	18.9	13.8	13.6	10.0	12.4	11.9
GLOB	[]	GLOBANT S.A.		DEC	7.4	6.7	8.2	9.9	7.4	11.1	5.1	4.2	7.9	11.8	8.6	12.6	8.8	8.2	NM	17.2	12.9	19.5
DXC		DXC TECHNOLOGY COMPANY	#	MAR	4.4	NM	NM	6.1	8.1	NM	3.6	NM	NM	4.3	5.2	NM	13.8	NM	NM	9.6	19.3	NM
DAVA		ENDAVA PLC		JUN	9.7	6.1	8.3	8.7	10.6	14.5	9.2	5.9	10.8	12.6	15.8	22.9	16.2	10.6	20.4	32.1	42.9	59.9
TWKS	†	THOUGHTWORKS HOLDING, INC.		DEC	NM	9.9	3.7	0.0	0.0	0.0	NM	5.4	2.8	NA	NA	NA	NM	13.2	0.0	0.0	0.0	0.0
KD	†	KYNDRYL HOLDINGS, INC.		DEC	NM	NM	NM	NM	0.0	0.0	NM	NM	NM	NA	NA	NA	NM	NM	0.0	0.0	0.0	0.0
PRFT	†	PERFICIENT, INC.		DEC	6.8	4.9	6.6	4.9	3.8	4.2	5.9	3.8	5.8	4.3	3.7	4.5	13.7	7.8	10.1	6.8	5.1	5.8
GDYN	§	GRID DYNAMICS HOLDINGS, INC.		DEC	NM	NM	9.1	10.0	18.7	0.0	NM	NM	15.1	22.1	42.3	NA	NM	NM	22.4	31.9	0.0	0.0
CINT	§	CI&T INC		DEC	8.7	13.3	8.3	10.1	6.4	4.5	5.3	21.8	13.9	20.1	13.0	9.5	19.6	82.8	48.7	59.5	39.6	28.0
RAMP	†	LIVERAMP HOLDINGS, INC.	#	MAR	NM	NM	NM	360.1	10.7	2.4	NM	NM	NM	69.8	1.9	0.3	NM	NM	NM	NM	NM	NM
UIS	§	UNISYS CORPORATION		DEC	NM	37.0	NM	3.4	NM	NM	NM	27.7	NM	3.1	NM	NM	NM	NM	NM	NM	NM	NM
HCKT	§	THE HACKETT GROUP, INC.		DEC	15.0	2.3	8.9	9.0	10.7	8.5	20.0	2.8	12.0	13.2	14.8	13.5	29.2	4.1	17.8	23.7	26.4	21.9

Note: Data as originally reported. CAGR-Compound annual growth rate.

[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.

Souce: S&P Capital IQ.

Ticker		Company		Yr. End	Current Ratio						Debt/Capital Ratio (%)						Debt as a % of Net Working Capital					
					2021	2020	2019	2018	2017	2016	2021	2020	2019	2018	2017	2016	2021	2020	2019	2018	2017	2016
IT CONSULTING AND OTHER SERVICES																						
ACN	[]	ACCENTURE PLC		AUG	1.3	1.4	1.4	1.3	1.2	1.3	0.3	0.3	0.1	0.2	0.2	0.3	1.4	1.1	0.4	0.6	1.0	0.8
IBM	[]	INTERNATIONAL BUSINESS MACHINES CORPORATION		DEC	0.9	1.0	1.0	1.3	1.3	1.2	70.3	72.5	73.7	73.8	72.3	67.7	NM	NM	7680.9	354.6	336.6	472.0
CTSH	[]	COGNIZANT TECHNOLOGY SOLUTIONS CORPORATION		DEC	2.1	1.9	2.6	3.2	3.2	3.6	5.0	5.8	6.0	6.1	6.8	6.9	16.4	20.0	15.1	12.5	12.3	12.9
EPAM		EPAM SYSTEMS, INC.		DEC	3.0	4.1	3.8	4.6	5.3	5.6	1.8	1.2	1.5	1.9	2.5	3.1	3.1	1.7	2.3	2.7	3.2	4.7
IT	[]	GARTNER, INC.		DEC	0.8	0.8	0.7	0.7	0.9	0.9	87.0	65.1	69.2	71.4	74.7	91.6	NM	NM	NM	NM	NM	NM
DOX	[]	AMDOCS LIMITED		SEP	1.6	1.7	1.4	1.3	1.7	1.5	15.1	17.3	0.0	0.0	0.0	5.8	84.4	86.7	0.0	0.0	0.0	27.2
GLOB	[]	GLOBANT S.A.		DEC	2.1	2.6	1.9	2.3	2.1	2.4	0.1	2.8	10.3	0.0	2.3	0.0	0.4	7.8	38.5	0.0	7.3	0.0
DXC		DXC TECHNOLOGY COMPANY	#	MAR	1.1	1.0	1.1	1.0	1.0	1.1	44.8	44.4	65.2	33.2	32.7	64.9	686.8	7003.4	787.6	NM	NM	944.4
DAVA		ENDAVA PLC		JUN	1.8	2.5	2.5	1.0	1.2	1.1	0.0	0.0	0.0	28.3	60.1	50.4	0.0	0.0	0.0	NM	265.6	472.9
TWKS	†	THOUGHTWORKS HOLDING, INC.		DEC	3.8	6.0	3.0	0.0	0.0	0.0	41.2	35.0	52.6	NA	NA	NA	99.8	73.3	251.4	NA	NA	NA
KD	†	KYNDRYL HOLDINGS, INC.		DEC	1.3	0.7	0.9	0.0	0.0	0.0	53.0	0.0	0.0	NA	NA	NA	244.1	0.0	0.0	NA	NA	NA
PRFT	†	PERFICIENT, INC.		DEC	1.8	1.8	2.5	2.4	2.1	2.7	47.2	31.8	24.7	25.3	13.1	8.2	344.2	188.1	97.9	116.6	81.0	41.9
GDYN	§	GRID DYNAMICS HOLDINGS, INC.		DEC	7.6	10.1	8.0	4.5	4.3	0.0	0.0	0.0	0.0	0.0	0.0	NA	0.0	0.0	0.0	0.0	0.0	NA
CINT	§	CI&T INC		DEC	2.6	1.4	1.1	1.6	1.6	1.6	42.0	16.3	4.1	17.7	30.2	33.5	79.9	28.0	16.8	29.5	58.4	66.3
RAMP	†	LIVERAMP HOLDINGS, INC.	#	MAR	4.4	5.0	5.6	12.5	2.0	1.6	0.0	0.0	0.0	0.0	23.3	20.4	0.0	0.0	0.0	0.0	125.2	136.8
UIS	§	UNISYS CORPORATION		DEC	1.5	1.6	1.3	1.4	1.4	1.0	114.4	247.3	(84.5)	(96.6)	(91.5)	(13.3)	134.1	91.8	191.3	168.9	151.7	424.5
HCKT	§	THE HACKETT GROUP, INC.		DEC	1.9	2.0	1.8	1.7	1.5	1.2	0.0	0.0	0.0	5.0	15.0	7.5	0.0	0.0	0.0	22.5	79.7	53.9

Note: Data as originally reported. CAGR-Compound annual growth rate.

[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.

Souce: S&P Capital IQ.

Ticker	Company		Yr. End	Price/Earnings Ratio (High-Low) 2021	2020	2019	2018	2017	2016	Dividend Payout Ratio (%) 2021	2020	2019	2018	2017	2016	Dividend Yield (High-Low, %) 2021	2020	2019	2018	2017	2016
IT CONSULTING AND OTHER SERVICES																					
ACN	[] ACCENTURE PLC		AUG	36 - 23	30 - 18	26 - 18	26 - 20	23 - 20	18 - 14	37.8	39.8	39.0	41.2	43.5	33.4	1.4 - 0.9	1.6 - 1.1	2.2 - 1.4	2.2 - 1.5	2.0 - 1.6	2.1 - 1.9
IBM	[] INTERNATIONAL BUSINESS MACHINES CORPORATION		DEC	24 - 18	25 - 15	14 - 11	18 - 11	30 - 23	14 - 9	102.2	103.7	60.5	64.9	95.7	44.3	5.6 - 4.6	5.7 - 4.3	6.8 - 4.1	5.8 - 4.3	5.4 - 3.5	4.3 - 3.1
CTSH	[] COGNIZANT TECHNOLOGY SOLUTIONS CORPORATION		DEC	22 - 16	32 - 16	23 - 17	23 - 17	30 - 20	25 - 19	23.8	34.5	24.6	22.3	17.6	0.0	1.7 - 1.1	1.4 - 1.1	2.1 - 1.1	1.4 - 1.1	1.2 - 0.8	0.9 - 0.8
EPAM	EPAM SYSTEMS, INC.		DEC	84 - 39	61 - 27	45 - 24	32 - 23	78 - 46	41 - 29	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
IT	[] GARTNER, INC.		DEC	NM - NM	55 - 28	66 - 47	119 - 84	3494 - 2443	45 - 34	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
DOX	[] AMDOCS LIMITED		SEP	NM - NM	20 - 12	19 - 15	28 - 25	23 - 19	22 - 19	25.8	33.0	30.8	37.9	27.8	26.7	2.1 - 1.7	2.4 - 1.8	2.8 - 1.7	2.1 - 1.5	1.6 - 1.3	1.6 - 1.3
GLOB	[] GLOBANT S.A.		DEC	151 - 82	158 - 52	75 - 35	45 - 30	54 - 35	45 - 22	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
DXC	DXC TECHNOLOGY COMPANY	#	MAR	NM - NM	NM - NM	23 - 11	17 - 11	NM - NM	39 - 15	0.0	NM	NM	16.7	9.9	NM	0.0 - 0.0	9.0 - 0.0	3.5 - 1.1	1.5 - 0.7	1.0 - 0.7	1.9 - 0.8
DAVA	ENDAVA PLC		JUN	148 - 60	138 - 74	83 - 44	NA - NA	NA - NA	NA - NA	0.0	0.0	0.0	0.0	0.0	108.8	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
TWKS	† THOUGHTWORKS HOLDING, INC.		DEC	NM - NM	NA - NA	NA - NA	NA - NA	NA - NA	NA - NA	NM	0.0	665.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
KD	† KYNDRYL HOLDINGS, INC.		DEC	NM - NM	NA - NA	NA - NA	NA - NA	NA - NA	NA - NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
PRFT	† PERFICIENT, INC.		DEC	92 - 29	56 - 23	39 - 19	41 - 24	36 - 29	37 - 24	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
GDYN	§ GRID DYNAMICS HOLDINGS, INC.		DEC	NM - NM	NM - NM	NA - NA	NA - NA	NA - NA	NA - NA	0.0	0.0	18.5	0.0	23.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
CINT	§ CI&T INC		DEC	19 - 11	NA - NA	NA - NA	NA - NA	NA - NA	NA - NA	100.1	24.3	70.9	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
RAMP	† LIVERAMP HOLDINGS, INC.	#	MAR	NM - NM	NM - NM	5 - 2	109 - 73	560 - 362	265 - 186	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
UIS	§ UNISYS CORPORATION		DEC	NM - NM	2 - 1	NM - NM	14 - 5	NM - NM	NM - NM	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
HCKT	§ THE HACKETT GROUP, INC.		DEC	16 - 10	98 - 53	25 - 19	28 - 19	22 - 14	25 - 17	31.0	272.9	48.1	42.0	31.7	33.3	2.4 - 1.8	2.8 - 1.8	3.7 - 2.0	2.4 - 1.8	2.2 - 1.5	2.3 - 1.4

Note: Data as originally reported. CAGR-Compound annual growth rate.

[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.

Souce: S&P Capital IQ.

				Earnings per Share ($)						Tangible Book Value per Share ($)						Share Price (High-Low, $)											
Ticker	Company		Yr. End	2021	2020	2019	2018	2017	2016	2021	2020	2019	2018	2017	2016	2021		2020		2019		2018		2017		2016	
IT CONSULTING AND OTHER SERVICES																											
ACN	[] ACCENTURE PLC		AUG	9.2	7.9	7.4	6.3	5.4	6.5	13.3	14.7	12.9	7.8	6.4	6.4	417.4	241.7	271.2	137.2	213.3	135.6	175.6	132.6	158.4	112.3	125.7	91.4
IBM	[] INTERNATIONAL BUSINESS MACHINES CORPORATION		DEC	6.3	6.2	10.6	9.5	6.1	12.4	(54.8)	(52.5)	(59.3)	(25.3)	(24.9)	(23.9)	152.8	114.6	158.8	90.6	153.0	111.7	171.1	105.9	182.8	139.1	170.0	116.9
CTSH	[] COGNIZANT TECHNOLOGY SOLUTIONS CORPORATION		DEC	4.1	2.6	3.3	3.6	2.5	2.6	9.8	9.0	11.0	11.8	11.9	11.9	90.1	66.2	82.7	40.0	74.8	56.7	85.1	59.5	76.5	51.5	63.4	45.4
EPAM	EPAM SYSTEMS, INC.		DEC	8.2	5.6	4.5	4.2	1.3	1.9	32.6	30.6	24.4	19.2	15.3	12.2	725.4	328.9	360.9	152.0	217.0	111.4	144.2	102.0	109.1	63.3	78.4	54.5
IT	[] GARTNER, INC.		DEC	9.2	3.0	2.6	1.3	0.0	2.3	(40.0)	(30.0)	(32.8)	(34.7)	(36.3)	(9.1)	369.0	149.7	165.3	76.9	171.8	122.5	161.2	111.6	130.0	90.4	105.5	77.8
DOX	[] AMDOCS LIMITED		SEP	5.3	3.7	3.5	2.5	3.0	2.7	4.4	4.3	4.9	4.2	7.3	6.5	82.4	67.4	77.3	44.1	72.9	52.6	71.7	55.9	68.0	56.1	61.3	50.1
GLOB	[] GLOBANT S.A.		DEC	2.3	1.4	1.4	1.4	0.8	1.0	15.1	10.0	6.0	6.2	4.3	3.7	354.6	188.7	223.3	70.8	112.3	50.9	66.4	42.1	47.5	30.9	47.2	22.5
DXC	DXC TECHNOLOGY COMPANY	#	MAR	2.8	(0.6)	(20.8)	4.5	6.0	(0.9)	4.4	1.1	(11.7)	(8.0)	(1.8)	(10.2)	44.2	24.2	38.4	7.9	69.5	26.0	107.9	49.2	99.4	57.1	63.3	24.3
DAVA	ENDAVA PLC		JUN	0.8	0.4	0.4	0.4	0.3	0.3	1.9	2.6	1.9	(0.1)	0.4	0.2	172.4	72.2	78.0	27.2	49.8	21.4	31.5	21.1	0.0	0.0	0.0	0.0
TWKS	† THOUGHTWORKS HOLDING, INC.		DEC	(0.3)	0.3	0.1	0.0	0.0	0.0	(0.1)	(0.8)	(1.2)	0.0	0.0	0.0	34.4	24.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KD	† KYNDRYL HOLDINGS, INC.		DEC	(10.4)	(9.0)	(4.2)	0.0	0.0	0.0	8.6	16.0	0.0	0.0	0.0	0.0	52.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRFT	† PERFICIENT, INC.		DEC	1.5	0.9	1.2	0.7	0.6	0.6	(6.8)	(3.0)	0.2	(0.7)	0.3	1.2	153.3	46.0	53.8	18.9	46.5	21.4	31.1	18.2	20.2	16.2	22.7	14.1
GDYN	§ GRID DYNAMICS HOLDINGS, INC.		DEC	(0.1)	(0.3)	0.5	0.5	0.8	0.0	2.6	2.5	4.1	2.7	2.6	0.0	42.8	12.0	12.9	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CINT	§ CI&T INC		DEC	1.0	1.0	0.5	0.0	0.2	0.1	2.7	1.5	0.7	0.0	0.4	0.4	22.5	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMP	† LIVERAMP HOLDINGS, INC.	#	MAR	(0.5)	(1.4)	(1.8)	13.7	0.3	0.1	9.8	10.0	11.3	15.9	6.4	0.6	87.4	38.5	80.1	23.4	63.2	37.3	51.5	18.6	30.4	21.8	27.7	17.3
UIS	§ UNISYS CORPORATION		DEC	(6.8)	11.9	(0.3)	1.5	(1.3)	(1.0)	(9.5)	(10.5)	(25.0)	(32.9)	(33.1)	(38.9)	28.6	17.8	19.8	8.3	15.2	6.4	21.0	8.0	15.3	6.9	16.7	6.7
HCKT	§ THE HACKETT GROUP, INC.		DEC	1.3	0.2	0.7	0.7	0.8	0.7	1.9	1.8	1.7	1.2	0.6	0.4	23.3	13.1	18.9	9.5	19.6	14.5	22.8	15.0	20.7	13.2	18.4	12.4

Note: Data as originally reported. CAGR-Compound annual growth rate.

[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.

Souce: S&P Capital IQ.

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