



CFA Institute

CFA Institute Research Challenge

Hosted in

Local Challenge New York

Team Q

Valuation Date: 01/18/2019	Recommendation: Buy	Stock Exchange: NYSE
Current Price: \$67.82	Target Price: \$84.64	Sector: Information Technology
Ticker: CTSH	Upside: 25.05%	Industry: IT Consulting

Investment Summary

We issue a buy rating on CTSH with a target price of \$84.64, which represents a 25.05% upside as of the market close of January 18th, 2019. Our valuation is based on a 60%/40% of a Trading Comps Model (Using EV/EBITDA) and a Discounted Cash Flow to Firm model (15% Perpetuity Approach; 25% Exit Multiple Approach). Our recommendation is based on the following pillars: high margin/digital focused growth, increasing its addressable market, optimal capital allocation, and entrance into new markets/verticals through M&A activity.

CTSH's digital business will grow at a rate between 20 - 25% in the next five years, as the digital transformation industry grows to a \$2.2T industry by 2019. CTSH digital business practice contributes to roughly 30% of historical total revenue growth. We expect this to improve based on **(a)** rising demand for artificial intelligence across all sectors (12% CAGR through 2022, according to IDC), **(b)** high demand cloud-based applications (with 25% of all company workload moving to cloud), **(c)** embedding Artificial Intelligence (AI) chatbots and digital assistants (IDC estimates the industry will be a \$5 billion industry within the next 3 years), and **(d)** the rise in demand for digital marketing.

CTSH will improve its profitability by expanding its addressable market by pursuing new clients in non-traditional verticals and expanding its geographical exposure. CTSH's largest segment is BFSI (Banking, Financial Services and Insurance); however, a decline in spending among its large financial services clients has placed downward pressure on its overall revenue. CTSH is adopting a more diversified approach and acquiring new strategic partners; specifically in the health care segment. **80% of all clients acquired in 2018 were in health care related industries. Also, CTSH is also seeking to expand its presence outside of North America, which contributes over 75% to CTSH's revenue (vs. ~50% for industry peers).**

CTSH will increase the return of cash generated to shareholders. The company now seeks to allocate 50% of global Free Cash Flow (FCF) towards the deployment of dividends (~20%) and stock repurchases (~30%). The company recently started paying dividends in 2017. **We estimate \$2.5-\$3B in annual unlevered FCF over the next five years, which should represent \$1.25B - \$3B in capital returned to shareholders.** The company also intends to allocate ~25% of FCF in M&A, which would imply \$591M+ in cash allocated to M&A activity. The remaining 25% of FCF, which is generated in India, will remain in India due to restrictions in movement.

CTSH is acquiring firms in high growth industry, such as digital and security. CTSH's Digital Engineering business helps consumer grade applications for its enterprise customers, which includes developing new applications (cloud or on-premise) as well as modernization of existing applications. This segment benefited from the recent acquisition of Softvision, LLC (valued at \$550M), and is growing at a CAGR of ~25%. CTSH plans to pursue targeted deals that will contribute 1-2% towards annual growth (or \$150-\$300M a year). **We expect these deals to be bolt-on acquisitions intended to provide 1) digital capabilities, 2) local industry knowledge, and 3) technical capabilities towards CTSH's bottom line.**

Business Description

Cognizant (CTSH) provides information technology consulting, technological, and outsourcing services. The company primarily concentrates on providing technology strategy consulting, complex system development, software package implementation and maintenance, data warehousing, and business intelligence. CTSH has more than 170 delivery centers in more than 30 countries along with business development offices in more than 80 cities and about 40 countries. The majority of CTSH's revenue is generated in the North American market, which consists of 75% of its sales. The company employs more than 270,000 people; of which more than 180,000 are located in India. In 1994, CTSH began as an in-house technology center for Dun & Bradstreet and was eventually spun off from D&B in 1996. Two years after the company's reorganization, in order to focus primarily on IT services, the company spun off its market research operations into two public companies: IMS Health and Nielsen Media Research.

Figure 1: 52-Week Price Chart



Source: Bloomberg

Cognizant Technology Solutions (NYSE: CTSH US)

FYE DEC	2014 A	2015 A	2016 A	2017 A	2018 P	2019 P
Revenue	10,263	12,416	13,487	14,810	16,144	17,480
EBITDA	2,228	2,664	2,912	3,253	3,626	3,932
Net Income	1,439	1,624	1,553	1,504	2,126	2,241

Source: S&P Capital IQ

Geographic and Business Segments

CTSH organizes its business structure around four main segments (Fig. 2): 1) BFSI, (38%), 2) Healthcare (28.7%), 3) Products and Resources (20.5%), and 4) Communications, Media, and Technology (12.6%). As mentioned previously, 77.3%% of all revenue originates from North America (Fig. 3), while 16.2% originates from Europe and 6.5% originates from the rest of the world.

Cognizant’s Services

CTSH focuses on three broad areas: Digital Business, Digital Operations, Digital Systems, and Tech. These three segments generate 30% of all revenue for CTSH. Within these three digital practice areas, the company offers primarily two services: Consulting and Technological, and Outsourcing Services (Fig. 4). IT consulting focuses on advising organizations on how best to use information technology in achieving their business objectives. CTSH consulting segment also deals with application development and testing, enterprise information management, and systems integration. IT Outsourcing is the use of external service providers to effectively deliver IT-enabled process, application services and infrastructure solutions for business outcomes. CTSH’s outsourcing segment deals primarily with application maintenance, IT infrastructure services, and business process services. CTSH’s consulting segment generated \$8,604.6M (59%) in revenue, while the outsourcing segment generated \$6205.4M (41%) in revenue.

Cognizant’s Network

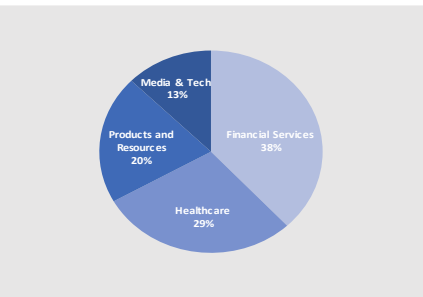
CTSH has suppliers in a number of different industries, including application software, equipment and instruments, IT consulting, and healthcare technology and services. Among the list of CTSH suppliers are ACI worldwide, Inc., Honeywell Automation India Limited, InterXion Holding N.V., and Veeva Systems, Inc. As mentioned previously, CTSH serves customers in the BFSI, Healthcare, Product and Resources, and Communications, Media and Technology industry (Appendix 11). Revenue from strategic clients are generated from industry leaders, such as J.P Morgan Chase & Co., Wells Fargo & Co., UnitedHealth Group Inc., Johnson & Johnson, 3M Co, and many more. CTSH defines a strategic customer as one offering the potential to generate at least \$5M to \$50M or more in annual revenues at maturity. As of September 30th, 2018, 8.7% of revenue originated from the CTSH’s top five customers, while 15.5% of revenue originated from CTSH’s top ten customers (Fig. 5).

Market Strategy

During their latest Investor Day presentation (November 16th), CTSH has outlined a number of market strategies. The company hopes to shift its resources towards the growing digital space, which will likely drive both consulting and outsourcing revenue as consumers shift from legacy IT services. The company reported that digital-related revenue rose 30% in 2017 and accounts for about 27% of total revenue. New revenue gains will predominantly originate from CTSH’s healthcare segment and Europe, as clients are starting to embrace more offshore IT.

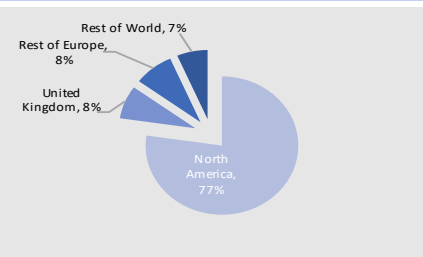
CTSH has also identified six areas for growth during their latest Investor Day meeting: Cognizant Interactive, AI and Analytics, Platforms, Intelligent Process Automation, Core Modernization, and Digital Engineering. CTSH is increasingly to investing improve its experienced marketing practice. Through Cognizant Interactive, CTSH provides insights, strategy, and sign to create experiences and content for end customers. The company has 17k employees in this practice. Through its AI and Analytics practice, CTSH helps its clients in areas such as customer intelligence; helping sales leaders understand its customer base, and detect risk and fraud. CTSH has automated more than 1.1k processes for its clients, and the company has 22k data and analytics associates, and 6.3k AI focused employees. CTSH’s Platform business offers vertical platforms for business processes that it understands, and enable it to provide output/outcome based services that deal with declining marginal cost. Through its Intelligent Process Automation business, CTSH helps automate repetitive tasks that require a relatively low level of judgment for its clients. The company has 1.5k RPA consultants and has 6k employees in this practice. The Core Modernization business helps simplify and modernize legacy applications for business efficiency. CTSH is expecting high demand for migration of legacy applications to cloud (20-25% of workload is moving to cloud), and believes other on-premise applications still need to be maintained and modernized. Due to this, CTSH has built a team of approx. 20k cloud professionals to service its clients’ needs. Through its Digital Engineering practice, CTSH helps build consumer grade applications for its enterprise customers, which includes developing new applications (cloud or on-site) as well as modernizing existing applications. This is one of the fastest growing businesses within the company.

Figure 2: Revenue by Vertical Segment



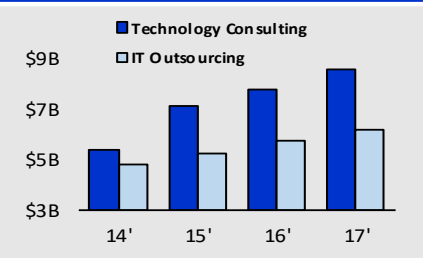
Source: Company Filings

Figure 3: Revenue by Vertical Segment



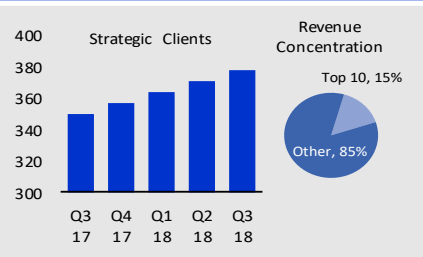
Source: Company Filings

Figure 4: Revenue by Service Line



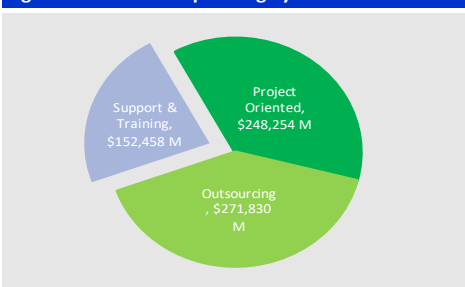
Source: Company Filings

Figure 5: Strategic Client Statistics



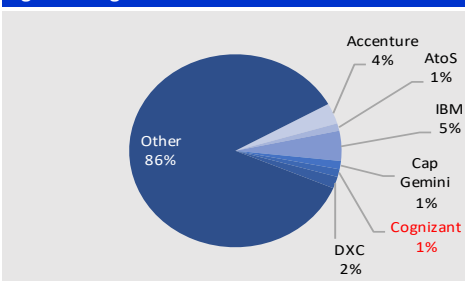
Source: Company Filings

Figure 6: IT Services Spending by Service Line



Source: Bloomberg

Figure 7: Cognizant's Marketshare



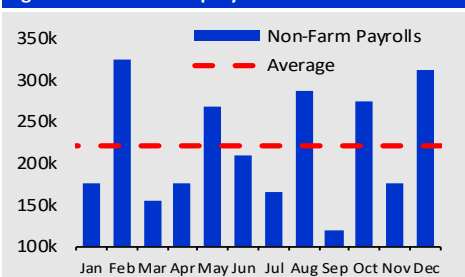
Source: Bloomberg

Figure 8: Quarterly GDP Growth



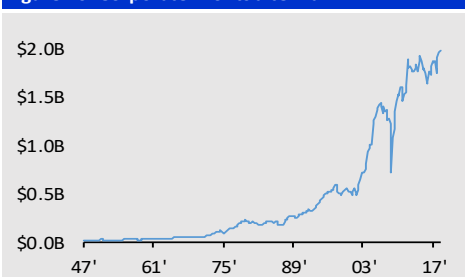
Source: Bureau of Economic Analysis

Figure 9: 2018 Net Employment



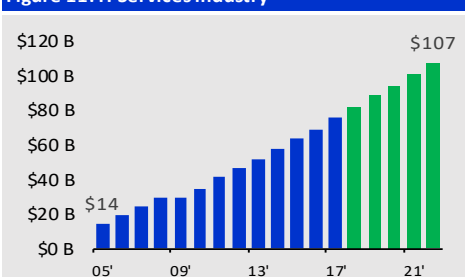
Source: Bureau of Labor Statistics

Figure 10: Corporate Profits after Tax



Source: Bureau of Economic Analysis

Figure 11: IT Services industry



Source: IDC; Bloomberg

Recent Events

Mustache Media Acquisition

With the focus on expanding Cognizant Interactive, the acquisition of Mustache Media will expand their services by adding a human-centered approach to their digitization services (specifically to CTSH's Content as a Service (CaaS) business line). Cognizant Interactive CaaS acts as an all-in-one service consisting of strategy development, implementation, and measurement. In addition to its efficient operations, Mustache Media also has experience working with clients in various industries (A&E Network, Brand USA, Google, Grammarly, L'Oreal, Netflix, and Viceland).

Softvision Acquisition

One of CTSH's largest acquisitions this year is Softvision, LLC. Softvision is a digital engineering company that excels at **implementing** digital products and solutions between brands and consumers. **Working in similar industries (i.e. financial services, retail, healthcare, etc.), the 2,850 engineers employed by Softvision was added to CTSH's knowledge capital, which excels at their fast delivery and execution strategy for clients.** The combination of Softvision and CTSH will be able to provide more innovative solutions. That will be achieved through the combination of CTSH's scale and their aptitude in artificial intelligence, IoT, and digitization with Softvision's approach to design and development ([Appendix 9](#)).

Industry Overview

The IT Services industry (specifically the Project Oriented and Outsourcing segments) stands at nearly \$700B. According to IDC, the total amount of revenue generated in the Global IT Services in 2017 was nearly \$1T ([Fig. 6](#)); however, the market share also includes companies in the management consulting and business consulting industry. Using this broadly defined addressable market, we can say that the IT services industry is very fragmented. CTSH has roughly 1.4% of the market share ([Fig. 7](#)). CTSH states that the underlying drivers are **(a) sustained growth in the North American market and the overall global economy; (b) Industrial Drives (IT Spending); and (c) pursuing new verticals.**

Geographical Drivers (a): The U.S. and Global Economy

Considering that 75% of CTSH's revenue originates from North America, growth in the U.S. economy is one of the largest factors that weigh in our analysis. The U.S. economy grew at an annualized rate of 3.4% for Q3 2018 ([Fig. 8](#)). The Federal Open Market Committee (FOMC) projects that the change in real Gross Domestic Product (GDP) will be higher than 3% for the first time in more than a decade ([Appendix 16](#)). The U.S. economy has added 220k on average, with personal incomes growing at a rate of 2.23% YoY ([Fig. 9](#)). **Corporate Profits after Tax (without IVA and CCAdj.) for U.S. based firms reached its highest level in Q2 2018, growing at a rate of 6.38% YoY ([Fig. 10](#)).**

Overall, the U.S. economy appears to be picking up steam; however, trade wars are casting a shadow on the global economy. Also, there is growing concern regarding earnings growth, which is considered to have reached its peak in the last decade's bull market (especially in the overpriced technology industry). Although these are significant concerns that can affect the U.S. economy, we feel that U.S. firms will continue to spend more on IT services, whether it's to replace outdated technological infrastructure or to prevent losing market share from a potential industry disruptor. Also, Brexit-related concerns increased tech spending in 2018, as enterprises advanced several IT projects ahead of U.K.'s planned exit from the European Union. Brexit and the need to modernize IT systems will likely act as an added catalyst for this shift in 2019, which benefits CTSH's offshore business.

Industry Drivers (b): IT Spending

Economic uncertainty and the drive to save cost provide major incentives for market players to modernize and integrate existing operating segments, which drive IT & Offshore spending for the industry. Most companies (89%) still expect their IT budgets to either grow or stay the same over the next 12 months, according to a survey from Spiceworks of 500+ organizations in North America and Europe. The survey also mentions a need to upgrade outdated IT infrastructure as the biggest driver of IT budget increases in 2019. **The outsourcing industry is roughly more than \$460B; however, for the IT services subsector, the industry is approximately \$75B ([Fig. 11](#)).** By 2022, the subsector is expected to reach \$107B, increasing 7.5% annually, according to IDC. There is also a rising demand for artificial intelligence, which is considered another growth driver for the IT service industry. The need to embed AI-based chatbots and digital assistants is one growth area, which helps firms improve customer service and increase sales. **IDC also projects that AI-Based spending by enterprises will grow 12% annually by 2022.**

We also are considering the rapid transition into cloud-based services, which will create headwinds for existing vendors. CTSH has industry partners at the highest level of the industry, such as Microsoft Azure, SAP Oracle, Salesforce, and Google, which are acquiring a majority of the market share. We expect this to accelerate over the next few years as legacy firms start to embrace newer forms of technology, such as the Internet of Things (IoT) and AI. **The managed-cloud service industry is expected to become a \$75B market by the end of 2022, growing at a CAGR of 17%, according to IDC estimates (Fig. 12).**

Pursuing New Verticals (c): Non-Financial and Health Care Technology

CTSH’s growth depends on its ability to acquire new strategic clients in many different vertical segments. Traditionally, financial clients were the largest source of growth for CTSH. However, a decline in spending among its large financial services clients will continue to place downward pressure on CTSH’s overall sales growth (Fig 13). To mitigate this issue, we expect Healthcare to not only remain one of CTSH’s bright spots but the largest source of growth for the company.

CTSH also appears to be pursuing newer clients in the Health Care industry related to digital innovation. The company averages new act clients a quarter. Recently, majority of new active clients conduct their business in the health care industry (Fig. 15). Digital Health Care will lead to an upgraded health system which emphasizes encouraging wellness rather than treating illness. Increasing cost burdens and an aging population will be the primary drivers for digital health solutions. **We expect to have increasing demand for Artificial intelligence (AI), robotics, and cognitive technologies in the health care sector which could automate daily duties for physicians and clinicians. Health care innovation in the emerging market is mainly focused on reducing cost, upgrading infrastructure to guarantee mass access to medical resources, while digital healthcare solutions in the developed market are the application of healthcare analytics and digital therapeutics.**

Indian rupee depreciating, wages forecasted to face upward pressure

The Indian Rupee depreciated by more than 57% in the last 10 years, this makes offshore IT business in India more attractive, especially with many companies (i.e. Tata Consulting, Infosys, CTSH) maintaining a large presence in the Indian labor Market (Fig. 16). With a cheap and inexpensive labor market due to depreciation in Indian Rupee, wage competition is expected to grow as more companies enter India’s cheaper labor market.

At the same time, there is a shortage of skilled labor and growing immigration concerns in the U.S., preventing companies from entering labor markets in Europe and the United States (Fig. 17). Much of the skilled IT labor exists in India creating wage pressure that CTSH seems to benefit from. Around 69% of their employees exist in India, allowing CTSH to reduce overhead expenses related to employee wages. This shift is also beneficial for customers as firms in Europe and the U.S. seek more cost-saving opportunities from offshore IT and expansion into Cloud and Digital Technology. We expect this trend to continue, as the offshore IT market reaches \$107 billion in annual sales (Fig. 14).

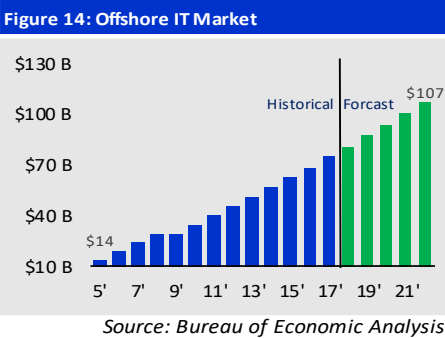
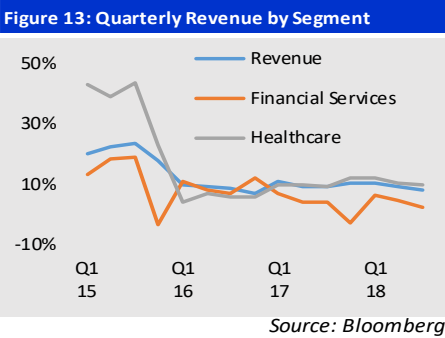
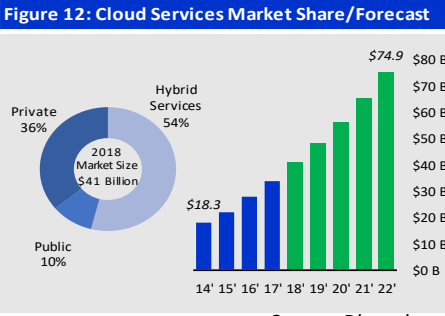
Competitive Positioning

CTSH operates in a very competitive industry. Profitability and operating margins are stretched relatively thin, which incentivizes market players in the space to keep cost low. Firms in the IT services industry typically acquire short-term contracts with customers, which makes it easier for customers to move to other service providers. The industry is fragmented. Although there are a handful of market leaders such as Accenture, IBM, and DXC Technologies, there isn’t any single company that can exert enough influence to move the industry in a particular direction (Appendix 15).

Peer Group

There are a large number of companies that are similar to CTSH in terms of scope and operating practices; however, we have decided to focus on the firms CTSH has directly identified as a competitor. CTSH’s core IT Services peer group consist of firms such as **Accenture PLC (ACN), HCL Technologies Ltd (HCLT), Infosys Ltd (INFY), Tata Consulting Services (TCS), and Wipro Ltd (WIT)**. Extended competitors in our peer group include companies such as **Atos SE (ATO), CDW Corp (CDW), DXC Technology Co., (DXC) EPAM System Inc. (EPAM), Genpact Ltd (G), International Business Machines (IBM), Virtusa Corp (VRTU), and WNS Holdings Ltd (WNS)**. We have other methods of identifying CTSH’s peer group, such as offering similar products and services, similar verticals, and coverage by the same sell-side analyst (Appendix 17).

When looking at our preferred operating metrics (EBITDA, EBIT, FCF and Profit Margins), CTSH outperforms our selected peer group (Appendix 18).



CTSH’s Geographical and Sector Exposure vs. Peers’

Currently, the North American region contributes 77% to CTSH’s revenue with 38% and 28.1% of revenue originating from the BFSI and Healthcare industry respectively. **Among its peer group, the average NA revenue concentration is ~50%. When analyzing BFSI and Healthcare verticals, the average revenue concentration are 18% and 15% respectively (Table 1).** With its largest geographical exposure being NA, we believe CTSH has a large competitive advantage as Business Processing and IT Outsourcing is projected to grow at a CAGR of 3% through 2020.

We have outlined how a reduction in IT services spending by financial institutions is placing downward pressure on CTSH’s BFSI revenue; however, we still believe the gains from strategic clients in other areas will more than make up for it. A majority of the strategic clients that CTSH acquired were in the healthcare services industry. CTSH has a strong, sustainable competitive advantage having ~29% of revenue originating in the healthcare industry, compared to 18.3% on average (Fig. 18). **CTSH has 400 players and 350k care providers on its healthcare platforms business practice, and we expect plenty of growth opportunities in the Medicaid/Medicare space through its TMG health platform.**

Advances in Digital Market

CTSH is noticing a rise in digital-marketing demand; specifically the need for enterprises to have more personalized products across almost all industries. Whether its retail or financial products, legacy enterprises have to figure out a way to better understand their customer’s behavior and needs, then create custom products or pricing. CTSH is in a position to best serve its client base through its Cognizant Interactive practice, as it’s recognized as the third largest Digital agency in the world (Appendix 12). Tuck-in acquisitions such as the more recent Mustache acquisition will help set CTSH apart in its ability to provide a complete range of digital content services, particularly long format video, which is increasingly driving consumer engagement and purchase decisions. As we have noticed M&A healthy activity in IT related services, we expect CTSH to make more growth related acquisitions (Fig. 19).

Corporate Governance

Executive Committee and Board of Directors:

Francisco D’Souza is the current acting Vice Chairman/CEO/Co-Founder of CTSH; he has been chairman since June 2018. As of 2019, D’Souza will formally become new Vice Chairman, leaving the position of CEO open to another. There is some speculation that the next CEO will be an Accenture Executive. Few possible choices from ACN can be Michael R. Sutcliffe (Accenture Digital), Mark A. Knickrehm (Accenture Strategy) or Bhaskar Ghosh (Accenture Technology Services). These three executives hold important positions regarding the digital transformation occurring within ACN. With the current shifts to digital within CTSH and the overall market, they make perfect possibilities as to who the next CEO will be. Rajeev Mehta is the current President and has held that position since September of 2016. Karen McLoughlin has operated as CFO of CTSH for six years; her previously held positions within CTSH included Senior VP of Finance and Enterprise.

CTSH has 10 members on its Board of Directors (Appendix 33); majority of whom are independent and have sat on the board for a minimum of 6 years. In 2017, CTSH entered into a cooperation agreement with hedge fund Elliott Management to appoint three new independent directors in an initiative to bring new perspectives to the firm (Table 2).

Executive Compensation

The Cognizant’s Compensation committee is tasked with overseeing the CTSH’s compensation policies and practices. Part of their job is to review incentives created by the company incentives compensation programs to ensure that such incentives are appropriate and do not put the company at risk. The executive compensation program is based on performance with high percentages of performance based and on long-term equity compensation. This is established by using an appropriate peer group analysis and market data and by retaining an independent external compensation consultant. The compensation committee also sets strict stock ownership guidelines for executives, maintains a claw back policy, and uses a “double trigger” change in control provision. Primary Compensation Elements consist of Base Salary, Annual Cash Incentives (ACI), Performance Stock Units (PSUs) and Restricted Stock Units (RSUs). RSUs are rewards for continued service and long-term service. In 2017, D’Souza’s compensation package consist of 31% RSUs, 59% PSUs (split in half by revenues and non-GAAP EPS), a 5% Base Salary, and a 5% ACI.

Table 1: Cognizant’s BFSI/Healthcare/NA Exposure vs Peers’

	CTSH	ACN	ATO	CAP	EPAM	G	HCLT	INFY	TCS	WIT	Avg.
BFSI Mix	38.1%	19.9%	17.9%	27.0%	23.4%	40.0%	24.9%	33.2%	32.3%	27.1%	28.4%
Healthcare Mix	28.8%	16.1%	N/A	21.0%	8.3%	23.0%	11.6%	6.6%	7.2%	13.6%	15.1%
NA Mix	77.3%	45.1%	17.6%	30.7%	58.0%	16.6%*	58.3%	60.4%	53.7%	50.1%	46.8%

*Includes South America
Source: Company Filings

Figure 18: Digital Revenue as % of Sales

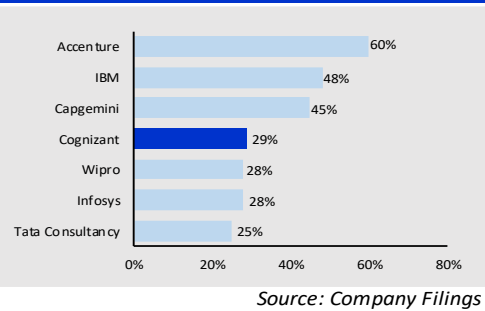


Figure 19: IT Services M&A Activity

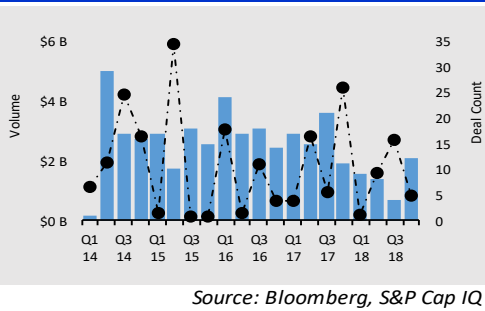
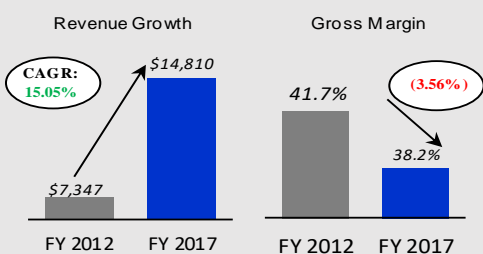


Table 2: Cognizant’s Board of Directors

Michael Patslos-Fox (Chairman)	<ul style="list-style-type: none">MBA; B. Sc in Computer Science & Pure MathematicsOn the board of CloudPlay SolutionsCompensation Committee Member
Francisco D’Souza (Vice Chairman & CEO)	<ul style="list-style-type: none">MBA; M. Sc in Industrial EngineeringSoftware Development expertiseOn the Board of General Electric and Banco Santander
John M. Dineen (New Member)	<ul style="list-style-type: none">B. Sc in Biology and Computer Science22 year General Electric VeteranOn the board of Syneos Health Inc., and Merrimack
Joseph Mark Velli (New Member)	<ul style="list-style-type: none">B.A. and Masters in AccountingFinancial expertiseOn the board of Cowen Execution Services, Paychex, E*Trade and Computershare
Jonathan C. Chadwick (New Member)	<ul style="list-style-type: none">B. Sc in Electronic EngineeringCPA and Chartered Accountant in EnglandOn the board of FS Networks, MOVE Guides, ServiceNow, and Zome Video Comms

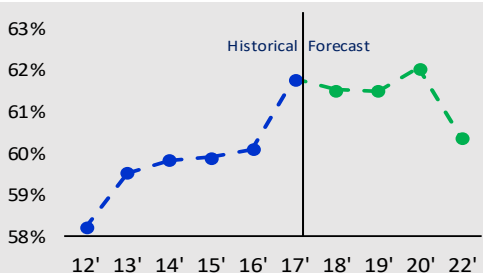
Source: Cognizant

Figure 20: 5-Year Revenue Performance



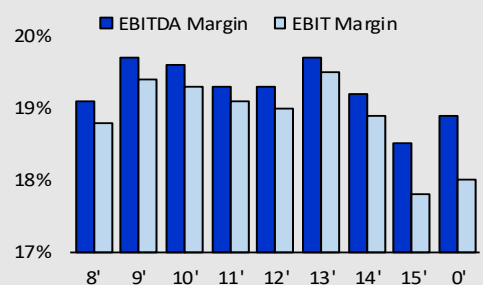
Source: Company Filings; Team Analysis

Figure 21: CTSH Projected Gross Margins



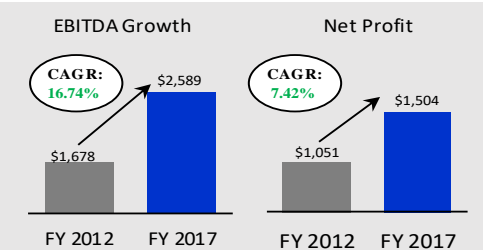
Source: Company Filings; Team Analysis

Figure 22: CTSH Earnings Margin



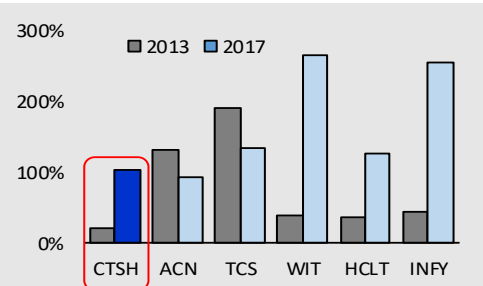
Source: Company Filings; Team Analysis

Figure 23: 5-Year Earnings Performance



Source: Company Filings; Team Analysis

Figure 24: Capital Returned as a Percentage of FCF



Source: Company Filings; Team Analysis

Shareholder Base:

The company has 579 million shares outstanding (including estimated dilutive securities). On May 5th, 2017, CTSH has declared its first dividend, totaling \$89 million (or \$0.15 per share). There are no preferred shares or shares with differed voting rights. Almost all shares of CTSH are floating stock (99.6%), which has positive effects on market liquidity and reduces the impact of a large market transaction. Currently, the largest shareholders of CTSH is Investment Management Firm **BlackRock (BLK)**, which now has a **7.73% stake in CTSH**. Other significant investors include **The Vanguard Group (7.52%), Inc., Sun Life Financial Inc. (4.19%), State Street Corp (4.02%), BNY Mellon (3.28%), and Edgewood Management LLC (3.18%)**.

Financial Analysis

Revenue Growth Stabilizing

There is some evidence of CTSH reaching the maturity stage of its business cycle. In the past five years, annual revenue growth has dropped from 20.4% in 2013 to 9.8% in 2017, which was near last year's previous low of 8.6%. Financial theory suggests that maintaining high levels of growth is uncommon; as firms transition from their infancy/development phase, it will be unable to achieve the same high levels of growth as it did in the past. CTSH managed to achieve a 5-year CAGR of 15.05% (Fig. 20), which is still impressive. We believe overall revenue growth will decline slowly as the company continues to mature. Due to a reduction in IT services spending from the financial services sector, there is also reduction in overall revenue growth. CTSH decided to transition from its traditional verticals towards acquiring non-financial clients, specifically in the Healthcare industry. Due to the broad nature of each vertical segment, we have decided to project revenue based on CTSH's respective business practices (IT Consulting & Outsourcing). Revenue guidance for CTSH is projected at \$16.11B, a 9% YOY increase. For 2018, we expect revenue growth to once again slow to 9.3% YoY, as the company continues to mature (Appendix 8).

Profitability

There are various profitability metrics that investors consider; however, the profitability metrics that we have decided to provide most weigh the is Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA), Earnings Before Interest and Taxes (EBIT), and Return on Invested Capital (ROIC). IT companies tend to suffer from having non-cash, non-recurring items, as well as frequent changes in accounting recognition assumptions. As such, we have decided to place less weight on Net Income. EBIT and EBITDA both consider earnings without adjusting for interest expense and taxes; however, EBITDA also accounts for noncash items such as Depreciation and Amortization. Considering EBITDA as greater measure of true cash earnings, we have decided to place a greater weight for our analysis.

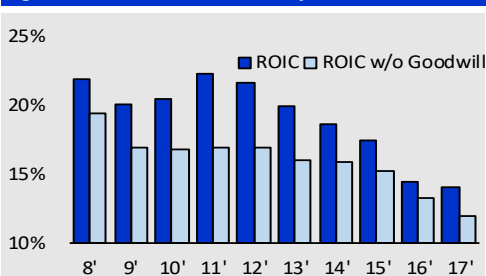
Over a 5 year horizon, earnings have grown substantially (Fig. 23). We are aware of the fact that CTSH's gross margins are becoming squeezed (rising from 58.24% in FY 2013 to 61.80% in FY 2017, and that management is aware of this issue (Fig. 21). During their latest Investor Day presentation, the company has committed itself towards a gross profit margin of 38% minimum. We have considered this target as guidance and incorporated it into our projections. We expect gross margins to stabilize at roughly ~40%. EBITDA and EBIT margins have also suffered within the last five years (Fig. 22). As these margins begin to deteriorate, so do the profit margins. CTSH's profit margin for FY 2017 reached 10.16%, the lowest ever in recorded history. We believe that these margins will improve as CTSH pursues its new Horizon 2 plan. When compared with its peer group, we find that CTSH's gross, EBITDA/EBIT, pre-tax, and profit margins are better than the peer group (68.71%, 13.74%, 10.52%, 11.58%, and 8.18% respectively).

Capital Allocation

Relative to both core peers and optimal business practices, CTSH historically had a lack of an appropriate capital return policy, which makes it a distant outlier (Appendix 20). In FY 2013, CTSH had \$8.8B in revenue and \$1.03B in levered cash flow, a meaningful margin for a growing business and a strong brand. The only form of capital allocation the company engaged in was share repurchases to prevent stock dilution (representing 20% of FCF). Despite this attribute, CTSH was the only large-cap IT service provider that failed to maintain a dividend and maintained a flawed position that margin growth and capital allocation are somehow at odds.

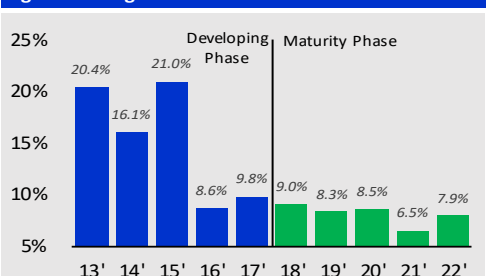
This view changed in 2016 when Hedge Fund Elliot Management acquired a \$1.4B Stake in the company. The activist investor convinced CTSH to return \$2.5 billion in stock by mid-2017. During its Nov. 2018 Investor Day, the company has committed 50% of FCF to be returned to its shareholders: 30% in the form of stock repurchases and 20% in the form of dividends. Currently, capital allocation for CTSH represents 102% of FCF (Fig. 24). The core peer average is currently 160% of unlevered FCF, so there is clearly more room for improvement. As CTSH continues to evolve into a scale industry leader, its capital allocation choices will also reflect this reality.

Figure 25: ROIC and Goodwill Adjustment



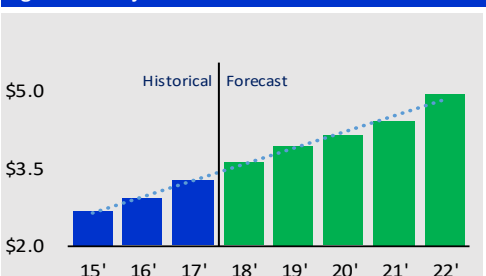
Source: Team Analysis

Figure 26: Cognizant's Revenue Growth



Source: Team Analysis

Figure 27: Projected EBITDA



Source: Team Analysis

Table 3: Weighted Average Cost of Capital

10 Year US Treasury Bond	2.79%
Market Risk Premium	5.69%
Beta	0.9243
Beta Adjusted For Cash	1.0521
Cost of Equity	8.77%
Pre-Tax Cost of Debt	3.08%
Tax Rate	43.39%
Cost of Debt	1.74%
Net Debt	(4,132)
Market Capitalization (mm)	39,270
Enterprise Value (mm)	35,138
Weight of Equity	98.19%
Weight of Debt	1.81%
Weighted Average Cost of Capital	8.64%

Source: Team Analysis

Table 4: Terminal Growth Rate

Country	Weight	LT Estimates	Growth Rate
U.S.	75%	2.8%	2.06%
U.K.	10%	1.8%	0.18%
E.U.	10%	1.6%	0.16%
India	5%	7.0%	0.35%
Long-Term Growth Rate			2.75%

Source: World Bank, Team Analysis

Organic Performance

CTSH has made 1 acquisitions in FY 2017, up from 7 in FY 2016 ([Appendix 10](#)). We expect the amount of transactions (or the volume) to increase, considering CTSH is dedicating 25% of FCF towards M&A activity. CTSH relies on this activity for growth, so we decided to use Return on Invested Capital (ROIC) to measure its performance. Over the past 5 years, ROIC has dropped from ~22% in FY 2012 to ~14% in FY2017. Increasing effective tax rates and shrinking gross margins has put downward pressure on operating profit, reducing overall ROIC growth. However, we expect this trend to reverse as tax rates and gross margin improves. ROIC without Goodwill, a good way of measuring company performance attributed to organic growth, was 12% for FY 2017. Historically, we see that ~19% of company performance can be attributed to inorganic growth ([Fig. 25](#)).

The transaction valuation for CTSH targets are typically less than \$500M; however, the acquisition of TZ Holdings (TriZetto) in 2014 became its largest ever, reaching a transaction value of \$2.7B. In the IT industry, sometimes larger transactions are necessary to achieve that competitive advantage. For this reasons, we have decided to conduct a goodwill adjusted ROIC comparison for CTSH and its peer group. Goodwill adjusted ROIC typically falls dramatically after a large transaction; however, we find that CTSH has better performance using this metric. Although CTSH acquires its fair share of companies, it only purchases small companies that would be valuable to its overall market strategy.

Valuation

Assumptions

FY 2019, CTSH has achieved a revenue growth rate of 9.8%. While we expect revenue to outperform consensus estimates, we believe revenue growth will decline as the company grows and becomes a more mature company. For FY 18 - 19, we expect sales to grow 9.0% and 8.3% respectively ([Fig. 26](#)). As CTSH transitions into its maturity phase, we expect the company to mitigate slowing growth by increasing its addressable market and maintaining the level of tuck-in acquisitions that will help it accelerate product/service growth. Considering these action, we expect a 5-year CAGR of 8.03% ([Appendix 10](#)). We base this forecast on the following assumptions:

EBITDA/FCF Estimates

FY 2016-17 EBITDA grew 9.3% and 11.7% respectively YoY (EBIT grew at roughly the same rate within the same time frame). We expect EBITDA to continue to grow at a CAGR of 8.73% for the next 5 years. CTSH paid an effective tax rate of 43.4%; however, based on pre-tax earnings guidance, we expect that rate to decline to 28% for FY 2018 and then 30% for the foreseeable future. Capital expenditures as a percentage of revenue leveled off at ~2.0% for FY 2017 (\$284M); we expect CTSH to maintain that level for the next 5 years ([Fig. 27](#)). Without any significant changes in net working capital, we expect an unlevered FCF to grow at a CAGR of 10.3% within the next 5 years.

The Appropriate Discount Rate

For our discount rate, we will be using the Weighted Average Cost of Capital (WACC). To obtain the appropriate discount rate, we needed to find a way to measure the cost of debt and equity. CTSH's capital structure roughly comprises of 98% equity and 2% debt. Currently, CTSH is paying ~3.1% on its debt (based on its interest expense of \$23M and the average debt of \$747M). Adjusting for FY 2017 tax rate of 43.39%, we measure the cost of debt for CTSH to be ~1.74%.

To measure the cost of equity we use the Capital Asset Pricing Model (CAPM). For the beta, instead of conducting a 5-year monthly regression analysis for CTSH stock price and S&P 500, we have decided to measure the beta by deleveraging the capital structure of CTSH's industry peers, averaging them, and then re-leveraging the beta based on CTSH's capital structure. Using this approach, we find that CTSH's beta is roughly 0.917. The risk-free rate is based on the 10-year treasury, which is currently yielding 2.70% and we measure the market risk premium at 5.69%. Using CAPM, we measure CTSH's cost of equity to be 8.06%. Based on all the parameters, the WACC is measured to be 8.68% ([Table 3](#)).

Terminal Growth Rate

The Terminal Growth Rate is based on global GDP growth rates ([Table 4](#)). CTSH operates in many different countries; however, we have decided to place the greatest weight on the U.S., considering the region generates +75% revenue for the firm. Long-run GDP growth is expected to grow at ~2.8%, according to FOMC projections ([Appendix 16](#)), while the World Bank projects ~1.6% for the Euro Area (~1.8% for the U.K.), and ~7% for India. Based on our weighting, we estimate that the terminal growth rate of CTSH should be 2.75%.

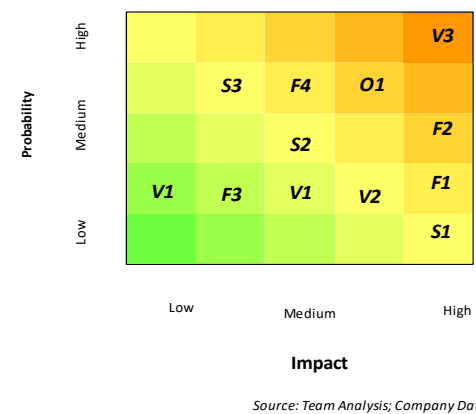
Table 5: Perpetuity Growth Method	
Long-term growth rate (<i>g</i>)	2.75%
Discount Rate (WACC)	8.79%
Free Cash Flows _{t+1} (mm)	2,954
Terminal Value (mm)	48,930
PV of Terminal Value (mm)	35,067
PV of Free Cash Flows (mm)	10,354
Enterprise Value (mm)	45,420
Less: Net Debt (mm)	(4,132)
Equity Value (mm)	49,552
Shares Outstanding (mm)	579
CTSH Implied Price Per Share	\$85.51
Premium / (discount) to fair value	(20.69%)
Source: Team Estimates	

Table 6: Exit EBITDA Multiple Method	
Terminal Year EBITDA	4,944
Discount Rate (WACC)	8.79%
Terminal Value EBITDA Multiple	12.22x
Terminal Value (mm)	60,420
PV of Terminal Value (mm)	43,302
PV of Free Cash Flows (mm)	10,354
Enterprise Value (mm)	53,655
Less: Net Debt (mm)	(4,132)
Equity Value (mm)	57,787
Shares Outstanding (mm)	579
CTSH Implied Price Per Share	\$99.72
Premium / (discount) to fair value	(31.99%)
Source: Team Estimates	

Target Price Methodology Weights			
Valuation Methods	Weight	Price	Comments
Relative Valuation	60%	\$78.03	Trading Comps valuation are based on how they are trading on the market. Not manipulated by assumptions or synergies.
Perpetuity Growth Rate	15%	\$85.51	Overall, intrinsic valuation methods tend to lead to higher valuations due to sensitivity in modeling assumptions.
Exit Multiple	25%	\$99.99	While still sensitive to modeling assumptions, this method removes the ambiguity with long-term growth forecasting.
Cognizant's Target Price		\$84.64	

Source: Team Analysis

Figure 28: Cognizant's Risk Profile



Relative Valuation Analysis

Our relative valuation analysis primarily focuses on the EV/EBITDA multiple, Price /Free Cash Flow Ratio, and the PEG Ratio

1. The nature of non-cash and non-recurring items such as D&A.
2. The differences in business cycle growth

We have also decided to look at P/E in this analysis ([Appendix 25](#)). Based on our analysis, CTSH is trading at 10.12x EV/EBITDA, which is trading below the peer group median of 12.22x. Looking at the PEG Ratio, CTSH is trading at 1.12x while the peer group is trading at 1.47x. When examining the P/FCF ratio, CTSH is trading at 17.90x while the market is currently trading at 18.49x. Even when considering P/E, CTSH looks cheap relative to the market (17.05x versus 18.26x for the overall market).

When looking at how much the stock “should” be trading at, we look at implied price per share. When valued at an EV/EBITDA basis, we find that the company should actually be trading at \$81.44 per share (\$72.62 and \$73.54 per share respectively when valued on a PE and P/FCF basis). When analyzing the fair value using forward looking multiples, the company should be trading around \$77.31 per share (1 Year Forward PE: \$67.82; 1 Year Forward P/FCF: \$81.29). When evaluating using the PEG ratio, the company should actually be worth \$89.51. Based on this analysis, CTSH’s fair value (depending on our preferred multiples) should be around the \$78 - \$92 range ([Appendix 31](#)).

Intrinsic Valuation Analysis

For our intrinsic valuation analysis, we decided to use a Free Cash Flow to Firm model (or a Discounted Cash Flow), which only uses two phases. The reason why we are only using two stages is because we believe that CTSH is reaching the maturity phase of its business cycle. The first phase of our forecast includes a decline in organic growth from 2018 - 2022. The second phase of the forecast consist of a constant growth rate of roughly 2.75%. Using the perpetuity growth method, we estimate that CTSH’s fair value is \$85.51 ([Table 5](#)).

We have also decided to utilize an Exit EBITDA multiple approach for our analysis. Instead of making assumptions regarding the future growth rate, this approach assumes where the company is currently trading at will sustain itself. From there, we derive a terminal value that we can imply, based on the EBITDA of the final explicit forecast period. The multiple that we have decided to use for this analysis was derived from our comparable comps analysis, which involves a LTM EV/EBITDA multiple of 12.22x. Using this approach, we estimate that CTSH’s fair value is \$99.99 ([Table 6](#)).

Target Price

Considering the varying ranges of our fair value calculations, coming up with a target price may be difficult. We have formulated a method of establishing our target price; by weighing each valuation methodology in accordance with its inherent biases/flaws. Comparable comps values companies based on how the market values similar companies of similar quality (comps will naturally provide the lowest valuation out of any

company; as such, we’ve decided to place the greatest weight on our comparable comps method (60%). With our Exit EBITDA Multiple method, we are still making assumptions regarding future growth; however, one does not need to estimate (or guess) the long-term growth rate of a company. Considering these factors, we’ve decided to place a 25% weight on the Exit EBITDA Multiple method. The Perpetuity Growth Method will naturally provide the highest valuation, due to the sensitivity involved in choosing a long-term growth rate; we’ve decided to give this method a 15% weighing. Considering these parameters, our target price for CTSH is \$84.64 (putting current price at a 17% discount).

Investment Risk

Risk to Fair Value

We are duly aware of the fact that valuing an entire company is just as much of an art as it is a science. Considering the flaws in our chosen valuation metrics, we have outlined specific risk that may prevent us from reaching our specified price targets ([Appendix 29](#)).

Faulty Assumptions (Likelihood: Medium; Impact: Medium | V1)

Some of the inherent flaws when conducting an intrinsic valuation is the fact that a DCF analysis is heavily sensitive to assumptions. DCF models are only as good as the information utilized. As such, failure to understand the industry, along with the inability to spot trends in growth rates, financial margins and ratios, discount rates, and capital structure changes may prevent us from accurately capturing the true value of the organization.

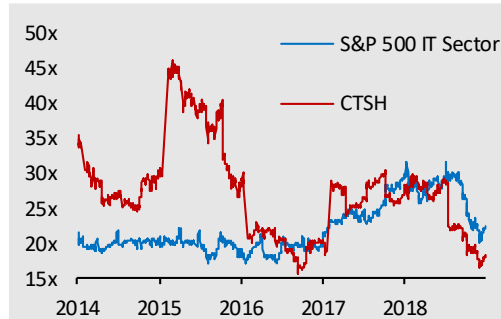
Industry May Be Mispriced (Likelihood: Low; Impact: High | V2)

A relative valuation analysis does not suffer from the same issues as an intrinsic valuation analysis, in that there are no assumptions involved. However, valuation based on prevailing market conditions or expectations may have significant disconnect from the valuation implied by CTSH's projected cash flow generations (DCF). Considering this issue, the market may be mispricing the IT services industry. In addition to market mispricing, valuation of CTSH is based on the valuation of other companies, which may fail to capture CTSH's strengths, weaknesses, opportunities, and risks (Fig. 29).

Market Volatility (Likelihood: High; Impact: High | V3)

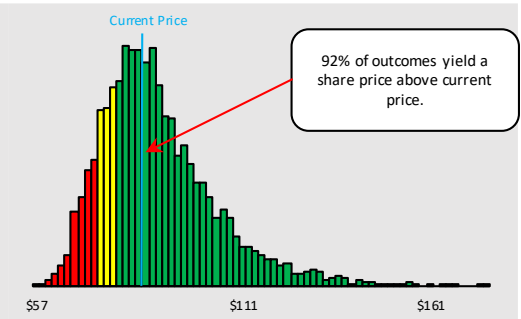
Although we have estimated that the fair value of the stock is ~25% higher than the current market price, sometimes it may take longer for the market to realize the true value of the stock. Recently, the stock market as a whole has experienced extreme price fluctuations. Adverse changes in CTSH's share price would make it difficult for the company to reach our target price (Fig. 30).

Figure 29: P /FCF Historical Comparison



Source: S&P Capital IQ

Figure 30: Monte Carlo Simulation



Source: Team Analysis

Growth May Be Difficult To Sustain (Likelihood: Medium; Impact: Low | V4)

The IT services industry is among the fastest growing sectors, maintaining its high industry growth rate for four straight decades. Unfortunately, IT Services is one of those sectors that is constantly evolving. Considering the product life cycles are constantly changing, the only way to achieve lasting higher growth is to continue introducing new services at an increasing rate -- which is nearly impossible. Failure for CTSH to innovate and develop new services would hinder CTSH's growth, reducing our fair value targets.

Strategic Risk

Increased Customer Concentration (Likelihood: Low; Impact: High | S1)

Customer Concentration occurs when a group of customers account for a large percentage of a firm's overall sales. Although the firms and the exact distribution of sales may be debatable, the inherent risk to the firm is not. If CTSH's top five or top ten clients decide to go with a different digital supplier, the company may find it difficult for it to maintain its current profitability and operating margins, as well as its capital allocation plans.

Lack of Growth from M&A (Likelihood: Medium; Impact: Medium | S2)

CTSH has made strategic acquisitions through bolt-on acquisitions (although management explained that it's not entirely against pursuing larger acquisition targets), which have allowed the company to expand its technological capabilities, extend existing service offerings, and fill gaps in distribution systems. Bolt-on acquisitions may create value for the company; however, if CTSH pays too high a premium for its target companies, the equity value of CTSH may become dilutive. In addition to becoming dilutive, future acquisitions may fail to create the growth necessary to achieve its target growth margins.

Competition from Other Suppliers (Likelihood: High; Impact: Medium | S3)

The competitive nature of the IT services industry leads to a very fragmented market. As such, it's very difficult to influence the market through competitive forms of pricing or service differentiation. This requires CTSH to establish closer relationships with its customers and achieve a thorough understanding of its business operations. Failure to understand its customers or failure to deliver IT solutions to customers may lead to a termination of customer contracts, leading to former customers seeking services from CTSH's many competitors.

Financial Risks

Figure 31: US Dollar/Indian Rupee Exchange Rate

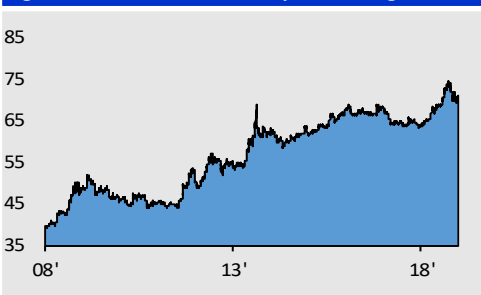


Figure 32: 10-Year US Treasury Yield

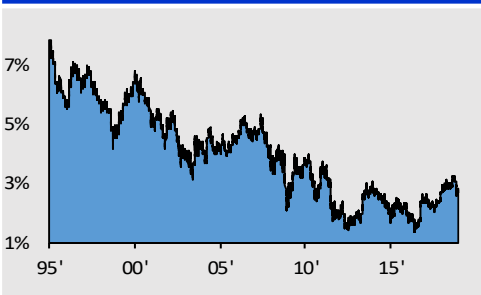


Figure 33: FCF Allocation

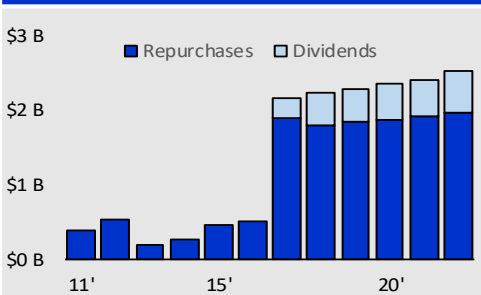


Table 7: IT Operating Cost Per Employee

Year	2015	2016	2017
USA	114,938	116,246	117,539
NA (Ex. US)	47,761	45,804	44,316
U.K.	89,559	79,940	80,678
India	17,465	17,083	18,463
China	39,752	38,114	39,738
Average:	61,895	59,437	60,147

Source: Everest Group

USD/INR Exchange Rate Increases (Likelihood: Low; Impact: High | F1)

The USD/INR has declined about 57% since 2010 ([Fig. 31](#)). As a large percentage of CTSH's operations and workforce is based in India, the company has benefited from a structural decline in the rupee over the past decade, due to cheaper software exports. The currency depreciation has made India a more ideal place for enterprises located in more expensive regions. In addition to this, a substantial portion of the company's assets and operations are located in India and it is subject to regulatory, economic, political and other uncertainties in India. A 5% increase in USD/INR (similar to what occurred in 2009) may impact the company's margins as well as financial reporting figures, making it difficult to reach financial targets.

Interest Rates Increase (Likelihood: Medium; Impact: High | F2)

Historically, interest rates have been on a downward trend ([Fig. 32](#)). CTSH has roughly \$725M in financial obligations, including short-term securities. CTSH recently repaid its \$750M revolving credit facility, a portion of which was used to pay for the acquisition of TriZetto. The remaining \$690M in financial obligations is scheduled to be repaid in November 2019. A sensitivity analysis performed internally by CTSH estimates that a 10bp change in interest rates would result in a 4.7% change in its interest rate expense.

Free Cash Flow Growth Slows (Likelihood: Low; Impact: Medium | F3)

CTSH started paying dividends for the first time in FY 2016 ([Fig. 33](#)). The company committed 50% of FCF to be returned to shareholders in the form of dividends and share repurchases. CTSH has also decided to work towards a dividend payout ratio of 20%. The IT services industry is highly competitive and financial ratios could be squeezed. Slower than expected growth in terms of revenue, operating profits, net income, or any metrics related to profitability compromises the company's ability to maintain its capital allocation return program.

Higher Taxes (Likelihood: Low; Impact: High | F4)

Adverse statutory changes in tax law (such as a reversal of the U.S. Tax Reform Act of 2017 or a phasing out of the certain tax exemptions and deductions of India's Special Economic Zones (or SEZ) could increase CTSH's effective tax rate, reducing net income and affecting our price targets. The changes could also affect the value of our deferred tax assets/liabilities, which would affect our financial position projections. There is also a significant amount of cash flow generated in India that the company has decided not to repatriate. Although the Tax Reform Act allows for a one-time transition tax for the U.S. If CTSH started repatriating its overseas cash, the company would be subjected to an additional tax expense at a rate of approximately 21%.

Operation Risk (Likelihood: Low; Impact: High | O1)

CTSH's operating margins, as well as its profitability, may decline if the company fails to obtain favorable pricing for its services. The company can also run into problems if it fails to maintain appropriate internal controls. It may not be able to report accurate financial results, which may adversely affect its stock price and its business.

Scenario Analysis for Target Price

We derive our target price from our base case scenario, which assumes that majority of our assumptions regarding CTSH are correct. Our risk factors acknowledge that not all of our assumptions may occur; however, we also acknowledge that CTSH may perform better than expected. The following scenario analysis regarding CTSH involves the following ([Appendix 32](#)).

Base Case (Target Price: \$86.62)

Regarding our analysis, our base case assumes a revenue CAGR of 8.03%, target gross profit margin of ~38%, SG&A expenses of ~21% and an effective tax rate of ~30%.

Worst Case (Target Price: \$77.70)

Assumes downward pressure on revenue growth (whether it's due to cyclical factors or strategic), which will generate a revenue CAGR of 7%. It also assumes a ~22% SG&A margin due to its operation risk and a ~36.5% gross margin due to issues in strategic price. Effective tax rates increase to ~35%.

Best Case (Target Price: \$94.43)

Our best case scenario assumes better-than-expected performance in revenue, which would generate a CAGR of ~12%. CTSH may continue to achieve favorable pricing, which would achieve a gross margin of ~40%; improvement in operating performance would reduce SG&A margins to ~19%; reduction in tax obligations would reduce effective tax rates to ~26%.

5-Year Comparative Performance



5-Year Comparative Return

Company / Index	Price Change	Total Return	Relative	Annual Equivalent Return
Cognizant Technology Solutions	33.22%	35.48%	(7.75%)	6.26%
S&P 500	43.46%	43.23%		9.67%
S&P Information Technology Sector	92.57%	92.44%	(56.96%)	15.72%

Source: Bloomberg; Team Analysis

Relative Total Shareholder Return

Cognizant's TSR Relative to:	Period Ending December 31, 2018				
	1 Year	2 Years	3 Years	4 Years	5 Years
1. S&P 500 Index	(6.95%)	0.23%	(27.92%)	(13.27%)	(16.43%)
2. S&P 500 IT Index	(10.38%)	(24.47%)	(53.28%)	(46.47%)	(71.44%)
3. 10-K Peers ⁽¹⁾	(9.93%)	(12.36%)	(20.70%)	(27.54%)	(42.06%)
4. Core Peers ⁽²⁾	(28.43%)	(14.79%)	(27.20%)	(11.52%)	(32.43%)

Source: Bloomberg as of December 31, 2018. Assume dividends are reinvested

(1) Reflects average of ACN, ATO, CDW, CAP, DXC, EPAM, G, HCLT, IBM, INFY, TCS, VRTU, WIT, WNS

(2) Reflects average of ACN, INFY, TCS, WIT, WNS

In Million USD	2014 A	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Revenue	\$10,263	\$12,416	\$13,487	\$14,810	\$16,144	\$17,480	\$18,967	\$20,192	\$21,788
Cost of sales	(6,141)	(7,440)	(8,108)	(9,152)	(9,936)	(10,752)	(11,769)	(12,519)	(13,160)
Gross Profit	\$4,122	\$4,976	\$5,379	\$5,658	\$6,209	\$6,727	\$7,198	\$7,673	\$8,628
Selling, general and administrative	(2,237)	(2,834)	(3,063)	(3,069)	(3,332)	(3,606)	(3,947)	(4,198)	(4,678)
Operating profit (EBIT)	\$1,885	\$2,142	\$2,316	\$2,589	\$2,877	\$3,122	\$3,251	\$3,475	\$3,950
Interest Income	\$62	\$84	\$115	\$133	\$134	\$133	\$134	\$138	\$145
Interest expense	(3)	(18)	(19)	(23)	(16)	(11)	(12)	(9)	(8)
Other expense / income	(21)	(44)	(54)	(42)	(42)	(42)	(42)	(42)	(42)
Pretax profit	\$1,924	\$2,164	\$2,358	\$2,657	\$2,953	\$3,202	\$3,331	\$3,562	\$4,045
Taxes	(485)	(540)	(805)	(1,153)	(827)	(960)	(999)	(1,069)	(1,213)
Net income	\$1,439	\$1,624	\$1,553	\$1,504	\$2,126	\$2,241	\$2,332	\$2,493	\$2,831
Basic shares outstanding	608	609	607	593	573	555	539	524	510
Impact of dilutive securities	4	4	3	2	2	2	2	2	2
Diluted shares outstanding	613	613	610	595	575	557	541	526	512
Basic EPS	\$2.37	\$2.67	\$2.56	\$2.54	\$3.71	\$4.03	\$4.33	\$4.76	\$5.55
Diluted EPS	\$2.35	\$2.65	\$2.55	\$2.53	\$3.70	\$4.02	\$4.31	\$4.74	\$5.53
Depreciation & amortization	208	330	379	443	497	537	578	620	655
Stock based compensation	135	192	217	221	252	273	299	318	339
EBITDA	2,228	2,664	2,912	3,253	3,626	3,932	4,128	4,413	4,944

In Percent (Margins)	2014 A	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Revenue	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of sales	(59.8%)	(59.9%)	(60.1%)	(61.8%)	(61.5%)	(61.5%)	(62.1%)	(62.0%)	(60.4%)
Gross Margin	40.2%	40.1%	39.9%	38.2%	38.5%	38.5%	37.9%	38.0%	39.6%
SG&A Margin	(21.8%)	(22.8%)	(22.7%)	(20.7%)	(20.6%)	(20.6%)	(20.8%)	(20.8%)	(21.5%)
Operating Margin	18.4%	17.3%	17.2%	17.5%	17.8%	17.9%	17.1%	17.2%	18.1%
Interest Income	0.6%	0.7%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.7%
Interest expense	(0.0%)	(0.1%)	(0.1%)	(0.2%)	(0.1%)	(0.1%)	(0.1%)	(0.0%)	(0.0%)
Other expense / income	(0.2%)	(0.4%)	(0.4%)	(0.3%)	(0.3%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)
Pretax Margin	18.7%	17.4%	17.5%	17.9%	18.3%	18.3%	17.6%	17.6%	18.6%
Taxes (Effective Rate)	(25.2%)	(25.0%)	(34.1%)	(43.4%)	(28.0%)	(30.0%)	(30.0%)	(30.0%)	(30.0%)
Net income	14.0%	13.1%	11.5%	10.2%	13.2%	12.8%	12.3%	12.3%	13.0%
EBITDA Margin	21.7%	21.5%	21.6%	22.0%	22.5%	22.5%	21.8%	21.9%	22.7%

Source: S&P Capital IQ; Team Analysis

In Million USD	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Cash & equivalents ST & LT market. securities	\$4,950	\$5,231	\$5,291	\$5,293	\$5,246	\$5,374	\$5,507	\$5,948
Accounts receivable	2,622	2,905	3,222	3,512	3,803	4,126	4,393	4,740
Inventory	-	-	-	-	-	-	-	-
Prepaid expenses	-	-	-	-	-	-	-	-
Other current assets	338	526	833	833	833	833	833	833
Property, plant & equipment	1,271	1,311	1,324	1,364	1,395	1,414	1,419	1,414
Acquired intangible assets (inc. Goodwill)	3,269	3,505	3,685	3,712	3,756	3,823	3,905	4,018
Deferred Tax Asset	348	425	418	456	493	535	570	615
Other long-term assets	269	359	448	448	448	448	448	448
Total assets	\$13,065	\$14,262	\$15,221	\$15,619	\$15,974	\$16,554	\$17,074	\$18,015
Accounts payable	\$165	\$175	\$210	\$228	\$247	\$270	\$287	\$302
Short-Term Debt	406	81	175	281	236	325	293	371
Other liabilities	-	319	330	330	330	330	330	330
Revolver	-	-	-	-	-	-	-	-
Deferred Tax Liabilities	3	16	194	211	229	248	264	285
Long-term debt	881	797	698	605	543	480	417	354
Accrued Expenses & Deferred revenue	2,191	1,984	2,180	2,376	2,573	2,792	2,972	3,207
Other long-term liabilities	140	162	765	765	765	765	765	765
Total liabilities	\$3,787	\$3,534	\$4,552	\$4,797	\$4,923	\$5,210	\$5,329	\$5,615
Common stock / additional paid in capital	459	364	55	307	580	878	1,196	1,535
Retained earnings / accumulated deficit	8,925	10,478	10,544	12,245	14,038	15,903	17,898	20,163
Treasury Stock	-	-	-	(1,800)	(3,636)	(5,509)	(7,419)	(9,367)
Other comprehensive income / (loss)	(106)	(114)	70	70	70	70	70	70
Total equity	\$9,278	\$10,728	\$10,669	\$10,822	\$11,052	\$11,343	\$11,745	\$12,401

Source: S&P Capital; Team Analysis

In Million USD	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Net income	1,624	1,553	1,504	2,126	2,241	2,332	2,493	2,831
Depreciation and amortization	330	379	443	497	537	578	620	655
Stock based compensation	192	217	221	252	273	299	318	339
Accounts receivable	(328)	(283)	(317)	(290)	(291)	(324)	(266)	(347)
Inventory	-	-	-	-	-	-	-	-
Accounts payable	20	10	35	18	19	23	17	15
Accrued expenses & def revenues	364	(207)	196	196	197	219	180	235
Prepaid expenses and other assets	-	-	-	-	-	-	-	-
Deferred tax assets (DTAs)	(114)	(77)	7	(38)	(38)	(42)	(35)	(45)
Deferred tax liabilities (DTLs)	(9)	13	178	17	17	19	16	21
Other assets	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-
Other long-term assets	-	-	-	-	-	-	-	-
Other non current liabilities	-	-	-	-	-	-	-	-
Non-cash (PIK) interest	-	-	-	-	-	-	-	-
Cash from operating activities	2,079	1,603	2,267	2,780	2,956	3,105	3,343	3,704
Capital expenditures	(273)	(300)	(284)	(404)	(437)	(474)	(505)	(545)
Purchases of intangible assets	(122)	(135)	(148)	(161)	(175)	(190)	(202)	(218)
Cash from investing activities	(395)	(435)	(432)	(565)	(612)	(664)	(707)	(763)
Short term debt	(294)	(325)	\$94	\$106	(45)	\$89	(32)	\$78
Long term debt	(56)	(84)	(99)	(93)	(62)	(63)	(63)	(63)
Common dividends	-	-	(265)	(425)	(448)	(466)	(499)	(566)
New share issuances	-	-	-	-	-	-	-	-
Share repurchases	(451)	(751)	(1,100)	(1,800)	(1,836)	(1,873)	(1,910)	(1,948)
Other comprehensive income / (loss)	-	-	-	-	-	-	-	-
Revolver	-	-	-	-	-	-	-	-
Cash from financing activities	(801)	(1,161)	(1,370)	(2,212)	(2,391)	(2,313)	(2,504)	(2,500)
Net change in cash during period	\$883	\$8	\$465	\$2	(47)	\$128	\$133	\$441

Source: S&P Capital IQ; Team Analysis

In Million USD	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Revenue By Segment								
Consulting	7,152	7,755	8,605	8,933	9,716	10,588	11,412	12,583
% growth	31.98%	8.44%	10.96%	3.82%	8.77%	8.97%	7.79%	10.26%
Outsourcing	5,265	5,732	6,205	7,211	7,763	8,379	8,780	9,206
% growth	8.68%	8.88%	8.26%	16.21%	7.66%	7.94%	4.78%	4.85%
Total Segment Revenue Profit:	\$12,416	13,487	14,810	16,144	17,480	18,967	20,192	21,788
% growth	20.98%	8.63%	9.81%	9.01%	8.27%	8.51%	6.46%	7.91%
IT Industry Consulting and Outsourcing Spending								
Project Oriented								
Application Development	40,216	41,567	43,607	45,962	48,674	51,691	54,948	58,464
% growth	(2.28%)	3.36%	4.91%	5.40%	5.90%	6.20%	6.30%	6.40%
Business Consulting	98,066	104,540	113,352	124,914	141,028	161,900	186,832	216,352
IT Consulting	33,910	34,733	36,367	38,476	41,054	44,010	47,443	51,381
% growth	(4.62%)	2.43%	4.70%	5.80%	6.70%	7.20%	7.80%	8.30%
Systems Integration	121,197	122,979	127,142	132,101	137,913	144,947	153,353	162,708
% growth	(5.01%)	1.47%	3.39%	3.90%	4.40%	5.10%	5.80%	6.10%
Network Consulting	38,455	39,476	41,246	43,597	46,562	49,914	53,608	58,164
% growth	(3.22%)	2.66%	4.48%	5.70%	6.80%	7.20%	7.40%	8.50%
Total Addressable Market	\$341,308	\$331,844	\$343,295	\$361,714	\$385,050	\$415,230	\$452,462	\$496,184
% growth	(2.77%)	3.45%	5.37%	6.45%	7.84%	8.97%	9.66%	10.26%
Cognizant Technology Solutions Market Share	1.59%	2.16%	2.26%	2.38%	2.32%	2.34%	2.34%	2.30%
Outsourcing								
Business Processes	176,169	180,931	189,786	199,275	208,841	220,013	232,114	245,298
% growth	(1.75%)	2.70%	4.89%	5.00%	4.80%	5.35%	5.50%	5.68%
Technology	258,842	263,151	271,947	281,465	292,020	303,701	316,608	330,064
% growth	(5.48%)	1.66%	3.34%	3.50%	3.75%	4.00%	4.25%	4.25%
Total Addressable Market	\$435,011	\$444,082	\$461,733	\$480,740	\$500,861	\$523,714	\$548,722	\$575,362
Cognizant Technology Solutions Market Share	1.21%	1.29%	1.34%	1.50%	1.55%	1.60%	1.60%	1.60%

Source: Bloomberg; S&P Capital IQ; Team Analysis

In Million USD	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Revenue	\$12,416	\$13,487	\$14,810	\$16,144	\$17,480	\$18,891	\$20,192	\$21,788
Financial Services	\$5,003	\$5,366	\$5,636	\$5,890	\$6,110	\$6,339	\$6,574	\$6,883
% growth		7.26%	5.03%	4.50%	3.75%	3.74%	3.70%	4.70%
Technology	\$3,668	\$3,871	\$4,263	\$4,653	\$5,072	\$5,511	\$5,951	\$6,486
% growth		5.55%	10.13%	9.15%	9.00%	8.65%	7.99%	9.00%
Products and Resources	\$2,344	\$2,660	\$3,040	\$3,421	\$3,813	\$4,236	\$4,613	\$5,065
% growth		13.49%	14.29%	12.54%	11.45%	11.10%	8.90%	9.80%
Communications, Media & Technology	1,402	1,590	1,871	2,180	2,485	2,805	3,055	3,354
% growth		13.43%	17.67%	16.50%	14.00%	12.90%	8.89%	9.80%

Source: Bloomberg; S&P Capital IQ; Team Analysis

	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Profitability								
Gross Profit Margin	40.08%	39.88%	38.20%	38.46%	38.49%	37.95%	38.00%	39.60%
Operating Margin	17.25%	17.17%	17.48%	17.82%	17.86%	17.14%	17.21%	18.13%
Net Profit Margin	13.08%	11.51%	10.16%	13.17%	12.82%	12.29%	12.35%	12.99%
Return on Assets	11.89%	10.53%	9.75%	13.46%	13.78%	13.87%	14.21%	15.72%
Return on Equity	16.24%	14.52%	14.00%	19.44%	20.01%	20.20%	20.65%	22.83%
Return on Invested Capital								
Asset Turnover								
Total Asset Turnover	0.95x	0.99x	1.00x	1.05x	1.11x	1.17x	1.20x	1.24x
Fixed Asset Turnover	9.77x	10.45x	11.24x	12.01x	12.67x	13.51x	14.26x	15.38x
Account Receivable Turnover	4.74x	4.88x	4.83x	4.79x	4.78x	4.78x	4.74x	4.77x
Inventory Turnover	NA	NA	NA	NA	NA	NA	NA	NA
Liquidity								
Current Ratio	2.86x	3.36x	3.03x	2.81x	2.73x	2.61x	2.59x	2.56x
Quick Ratio	2.74x	3.16x	2.76x	2.57x	2.50x	2.40x	2.39x	2.38x
Avg. Days Sales Outstanding	77	75	76	76	76	76	77	76
Avg. Days Inventory Outstanding	NM	NM	NM	NM	NM	NM	NM	NM
Avg. Days Payable Outstanding	8	8	8	8	8	8	8	8
Solvency								
Total Debt / Equity	13.88%	8.18%	8.18%	8.19%	7.05%	7.10%	6.04%	5.85%
Total Debt / Capital	12.19%	7.57%	7.56%	7.57%	6.58%	6.63%	5.70%	5.52%
LT Debt / Equity	9.50%	7.43%	6.54%	5.59%	4.91%	4.23%	3.55%	2.85%
LT Debt / Capital	8.34%	6.87%	6.05%	5.17%	4.59%	3.95%	3.35%	2.70%
Total Liabilities / Total Assets	28.99%	24.78%	29.91%	30.71%	30.82%	31.48%	31.21%	31.17%
EBIT / Interest Expense	754.0x	119.0x	121.9x	112.6x	184.0x	271.9x	276.3x	387.4x
EBITDA / Interest Expense	31.7x	25.3x	24.5x	27.1x	29.5x	30.7x	32.1x	34.1x
EBITDA less CAPEX / Interest Expense	22.7x	22.3x	24.1x	26.2x	27.2x	28.4x	30.4x	30.4x
Total Debt / EBITDA	0.0x	0.5x	0.3x	0.3x	0.2x	0.2x	0.2x	0.2x
Net Debt / EBITDA	NM	NM	NM	NM	NM	NM	NM	NM

Source: S&P Capital IQ; Team Analysis

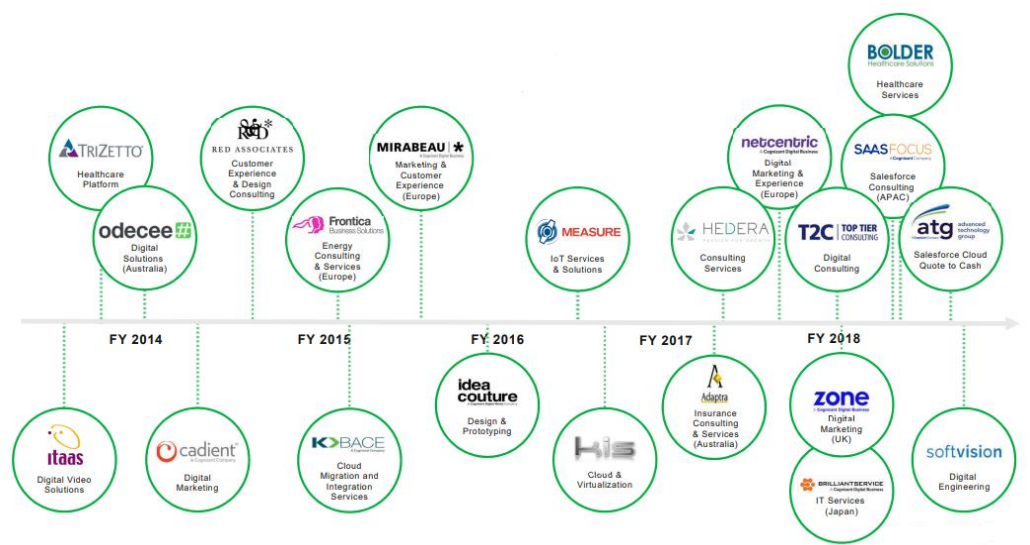
Appendix 8

Growth Rates

	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Historical								
Revenue	12,416	13,487	14,810	16,144	17,480	18,967	20,192	21,788
Gross Profit	4,976	5,379	5,658	6,209	6,727	7,198	7,673	8,628
EBITDA	2,664	2,912	3,253	3,626	3,932	4,128	4,413	4,944
EBIT	2,142	2,316	2,589	2,877	3,122	3,251	3,475	3,950
Net Income	1,624	1,553	1,504	2,126	2,241	2,332	2,493	2,831
Earnings Per Share	\$2.67	\$2.56	\$2.54	\$3.71	\$4.03	\$4.33	\$4.76	\$5.55
Unlevered Free Cash Flows	1,678	1,290	1,687	2,160	2,288	2,385	2,576	2,875
Levered Free Cash Flows	1,690	1,302	1,701	2,331	2,461	2,559	2,755	3,063
Growth Over Prior Period								
Revenue	20.98%	8.63%	9.81%	9.01%	8.27%	8.51%	6.46%	7.91%
Gross Profit	20.72%	8.10%	5.19%	9.73%	8.36%	6.99%	6.61%	12.44%
EBITDA	27.28%	9.31%	11.71%	11.48%	8.43%	4.97%	6.91%	12.04%
EBIT	13.63%	8.12%	11.79%	11.12%	8.51%	4.13%	6.91%	13.65%
Net Income	12.86%	(4.37%)	(3.16%)	41.37%	5.40%	4.05%	6.92%	13.55%
Earnings Per Share	13.48%	(4.06%)	(0.87%)	46.20%	8.81%	7.23%	10.00%	16.66%
Unlevered Free Cash Flows	42.30%	(23.16%)	30.80%	28.03%	5.96%	4.22%	8.01%	11.60%
Levered Free Cash Flows	43.04%	(22.97%)	30.70%	37.02%	5.60%	3.97%	7.64%	11.19%
2 Year Compound Growth Rate								
Revenue	18.49%	14.64%	9.22%	9.41%	8.64%	8.39%	7.48%	7.18%
Gross Profit	17.93%	14.23%	6.63%	7.44%	9.04%	7.67%	6.80%	9.49%
EBITDA	19.75%	17.95%	10.50%	11.59%	9.94%	6.69%	5.94%	9.44%
EBIT	12.99%	10.84%	9.94%	11.46%	9.81%	6.30%	5.51%	10.23%
Net Income	14.97%	3.89%	(3.77%)	17.01%	22.07%	4.72%	5.48%	10.19%
Earnings Per Share	14.90%	4.34%	(2.48%)	20.39%	26.13%	8.02%	8.60%	13.28%
Unlevered Free Cash Flows	27.46%	4.57%	0.25%	29.41%	16.47%	5.08%	6.10%	9.79%
Levered Free Cash Flows	27.89%	4.97%	0.34%	33.83%	20.29%	4.79%	5.79%	9.40%
3 Year Compound Growth Rate								
Revenue	19.12%	15.11%	13.00%	9.15%	9.03%	8.60%	7.74%	7.62%
Gross Profit	17.49%	14.56%	11.14%	7.66%	7.74%	8.35%	7.31%	8.65%
EBITDA	20.62%	16.16%	15.83%	10.83%	10.53%	8.26%	6.76%	7.93%
EBIT	16.31%	11.34%	11.16%	10.33%	10.47%	7.88%	6.50%	8.16%
Net Income	15.60%	8.12%	1.48%	9.40%	13.01%	15.74%	5.45%	8.10%
Earnings Per Share	15.74%	8.20%	2.58%	11.62%	16.40%	19.49%	8.67%	11.23%
Unlevered Free Cash Flows	37.14%	7.67%	12.67%	8.77%	21.07%	12.23%	6.05%	7.90%
Levered Free Cash Flows	37.45%	8.00%	12.93%	11.32%	23.67%	14.59%	5.73%	7.56%
5 Year Compound Growth Rate								
Revenue	22.01%	17.12%	15.05%	12.79%	11.24%	8.84%	8.41%	8.03%
Gross Profit	20.76%	15.81%	13.02%	11.66%	10.29%	7.66%	7.36%	8.81%
EBITDA	22.34%	18.23%	16.47%	14.31%	13.44%	9.15%	8.67%	8.73%
EBIT	19.97%	15.30%	13.72%	11.39%	10.62%	8.70%	8.46%	8.82%
Net Income	17.23%	11.94%	7.42%	11.59%	9.27%	7.50%	9.93%	13.49%
Earnings Per Share	17.51%	12.34%	8.08%	12.92%	11.42%	10.16%	13.22%	16.96%
Unlevered Free Cash Flows	31.87%	18.41%	20.99%	15.89%	14.17%	7.28%	14.84%	11.25%
Levered Free Cash Flows	32.05%	18.62%	21.19%	17.67%	15.82%	8.66%	16.18%	12.48%

Source: S&P Capital IQ; Team Analysis

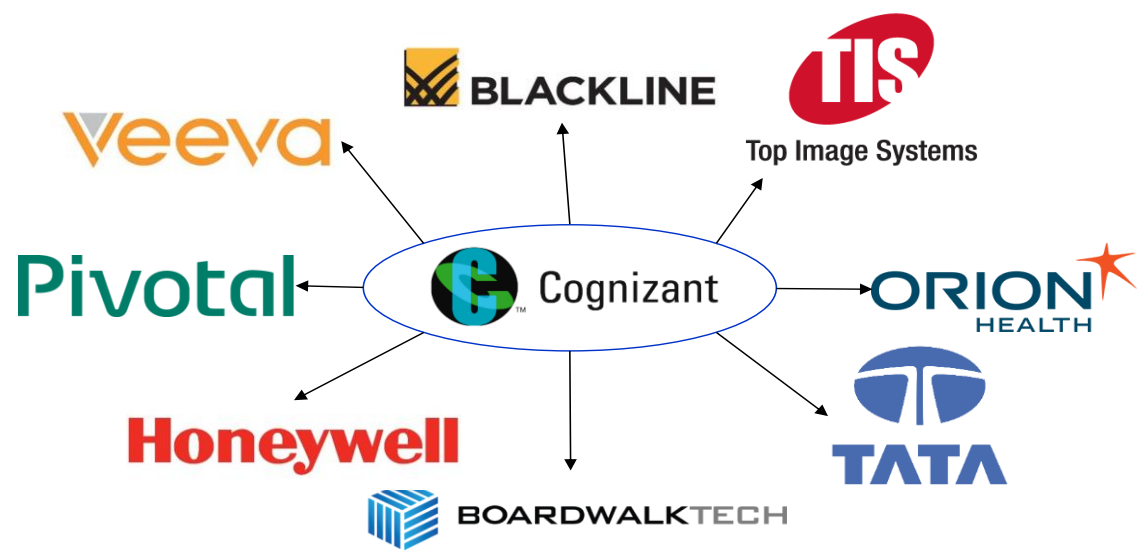
Cognizant's M&A Transactions Since FY 2014



Source: Cognizant; S&P Capital IQ

Cognizant

Suppliers of Cognizant



Despite being an Information Technology company, Cognizant relies on third parties for the development of its software products. In addition, the company also resells certain software products of third parties, as well as use the same products to deliver its services and solutions.

Appendix 11

Customers

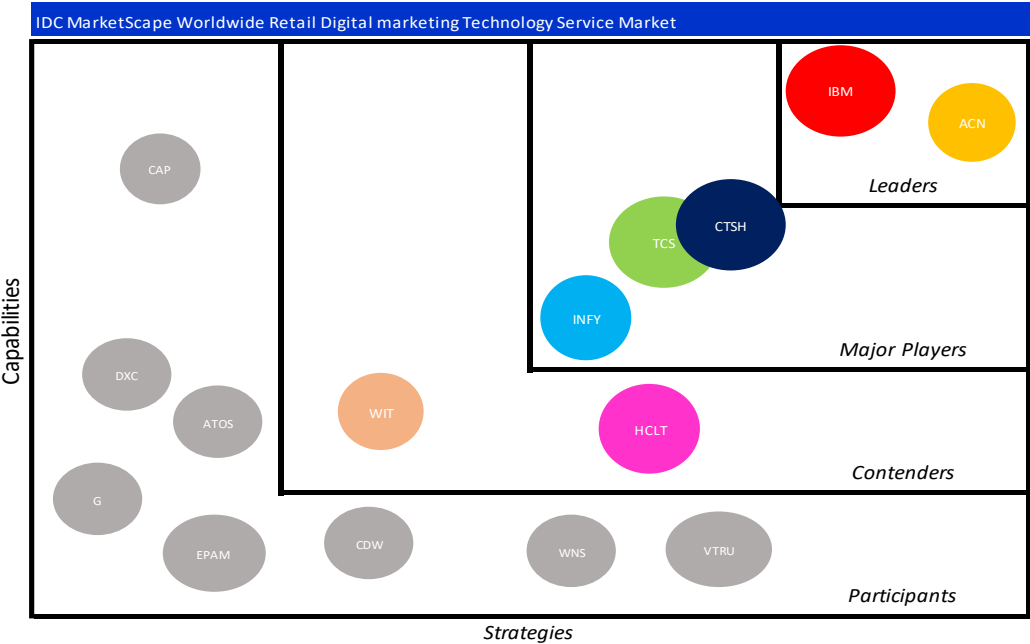
Cognizant's Largest Customers by Relationship Value (USD In Millions)

Company	Industry	Market Capitalization	FY 2017 Revenue	FY 2017 Net Income	Sales Contribution	Relationship Value
JPMorgan Chase & Co	Financial Services	319,784	131,412	30,709	2.44%	98
Wells Fargo & Co	Financial Services	211,104	101,060	20,689	2.13%	86
Bank of America Corp	Financial Services	238,251	110,584	26,696	1.69%	82
UnitedHealth Group Inc	Healthcare	239,662	226,247	11,986	1.64%	68
Citigroup Inc	Financial Services	123,304	97,120	16,672	1.63%	62
AmerisourceBergen Corp	Healthcare	19,663	167,940	1,658	1.61%	62
CVS Health Corp	Healthcare	80,216	184,765	6,622	1.45%	61
McKesson Corp	Healthcare	25,867	208,357	67	1.41%	60
Johnson & Johnson	Healthcare	370,732	81,581	15,297	1.23%	59
Cardinal Health Inc	Healthcare	16,200	136,809	256	1.04%	58
HSBC Holdings PLC	Financial Services	174,080	67,306	9,683	1.02%	58
Sanofi	Financial Services	90,089	36,204	8,434	1.01%	57
BNP Paribas SA	Financial Services	65,835	67,949	7,537	1.00%	56
Deutsche Bank AG	Financial Services	20,162	41,599	(1,049)	0.98%	55
Express Scripts Holding Co	Healthcare	53,548	100,065	4,517	0.96%	54
Barclays PLC	Financial Services	29,416	26,799	(1,922)	0.94%	54
UBS Group AG	Financial Services	45,137	42,153	4,792	0.92%	53
American Express Co	Financial Services	80,736	43,281	6,787	0.90%	52
Anthem Inc	Healthcare	70,960	90,039	3,843	0.88%	51
AT&T Inc	Telecommunications	244,136	160,546	29,463	0.86%	50
Royal Bank of Canada	Financial Services	138,032	57,406	12,115	0.84%	50
TD Bank	Financial Services	133,674	53,017	11,048	0.82%	49

Source: Bloomberg

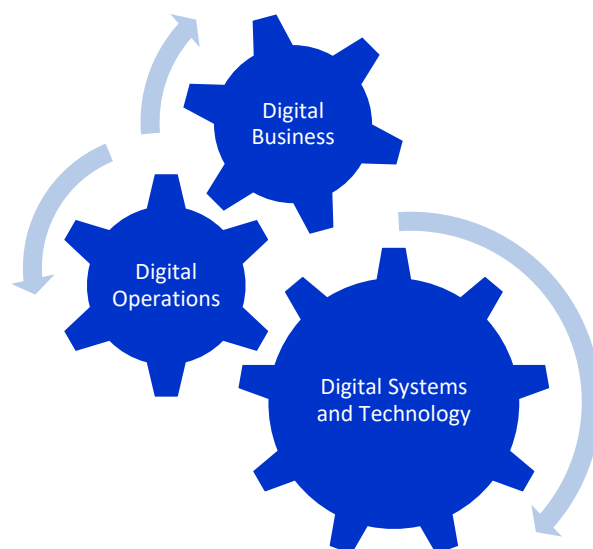
Appendix 12

Digital Marketing Business Comparison



Source: IDC

The International Data Corporation outlines the leaders in the digital marketing industry. Market leaders are identified as IBM and Accenture with Cognizant closing the gap between the two leaders.

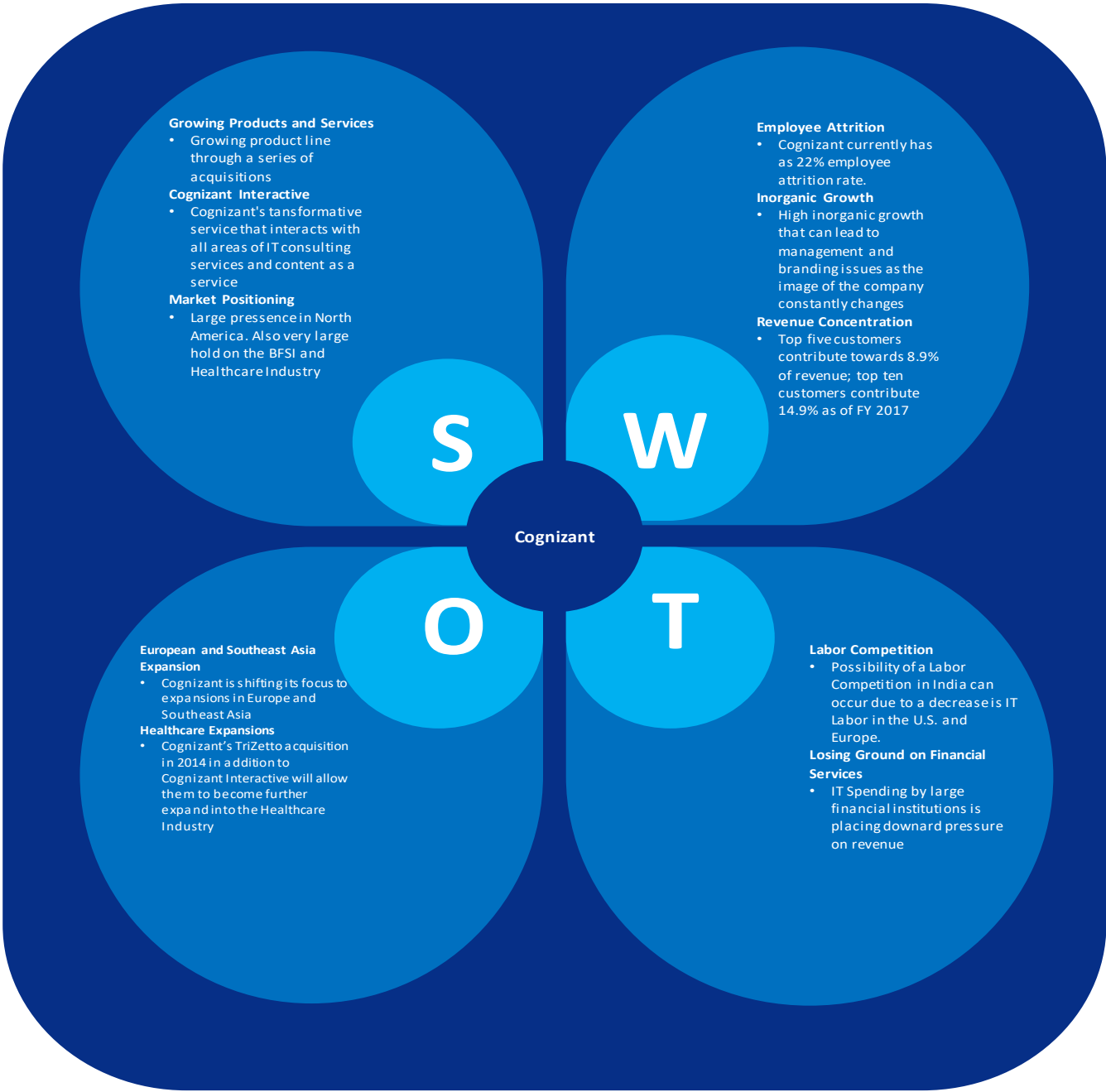


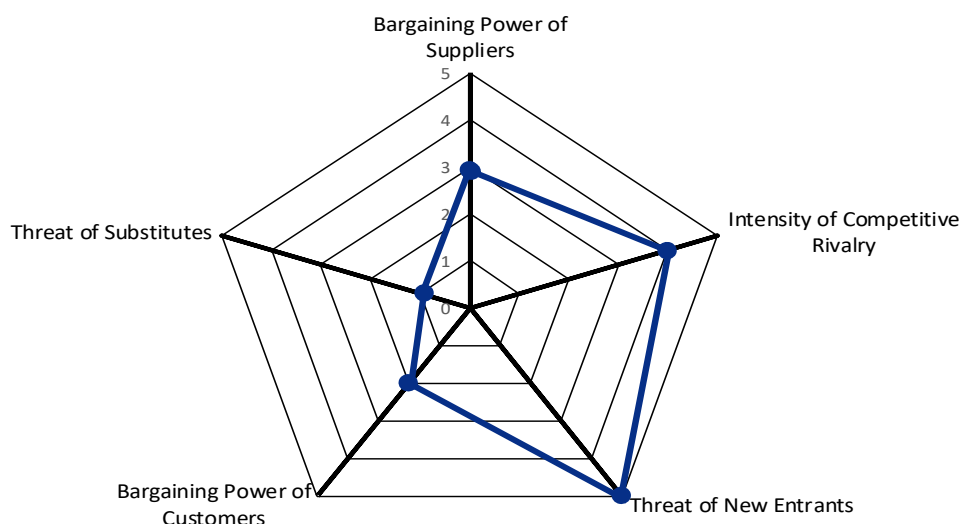
Cognizant has aligned its operations to pursue a more digital oriented strategy. Currently, cognizant operations under three main business practices:

- **Digital Business:** Its purpose is designed to help customers design and implement digital business models.
- **Digital Operations:** Provides digital tools for managing customers and business processes
- **Digital Systems and Technology:** Focuses its efforts in helping customers simply, modernize, and protect applications, platforms, and technology infrastructure.

Business Areas	Role	Key Priorities
Digital Business	Smart products, User Experience, Develop go to market approaches	Interactive Analytics and AI
Digital Operations	Platform and software applications for better efficiency	Intelligent Process Automaoation Industry and Platform Solutions
Digital Systems and Tech	Simplify and modernize application	Core Modernization Digital Engineering

These business areas coincide with Cognizant’s six business practices, related to its initiative in building momentum of emerging new business.





Competition [MEDIUM]

The Information Technology Industry is dynamic and changes with its tailwinds and headwinds. Competitors of CTSH consist of companies of similar product lines, clientele, and size. Smaller companies do exist that may or may not compete in similar fields; however, they are often acquired by larger IT companies. CTSH largest direct competitors is Accenture.

Threat of New Entrants [HIGH]

As the industry moves from using enterprise data centers to support infrastructure to lower cost models using cloud-based infrastructure, we will see a significant reduction in the initial capital needs of new entrants. Consulting companies increase industry saturation using partnerships with major cloud-based infrastructure vendors, which includes Amazon Web Services, Google, IBM, Microsoft, and Oracle. Despite that, the differentiating factor in this market is the value of their existing customer base and their brand. As there are few limitations on international outsourcing and IT consulting services beyond CFIUS and similar regulations, firms are incentivized to outsource rather than acquire or develop IT capabilities in house due to intellectual property barriers.

Bargaining Power of Suppliers [MEDIUM]

Few cloud vendors that offer infrastructure technology can cater to the offer cloud services that CTSH outsources to large customers (i.e., JP Morgan, Citi, United Healthcare Group). There are no switch costs associated within this relationship; however, numerous acquisitions of smaller cloud vendors are by Amazon, Google, IBM, Microsoft, and Oracle. However, that does not take away from the massive costs associated with switching a provider. These acquisitions are causing massive decreases in the number competitive forces that can. Suppliers are dominated by few vendors, such as Microsoft, Google, IBM, and Amazon, but is causing greater competition in terms of product lines and services offered. However, smaller yet capable niche cloud providers do exist. CTSH does maintain relationship with more recent suppliers (ACI worldwide, Inc. (ACIW), Honeywell Automation India Limited (HON), InterXion Holding N.V. (INXN), and Veeva Systems, Inc. (VEEV)) which are important to different automation, cloud management, AI, and Analytics processes

Bargaining Power of Customers [MEDIUM]

The Financial Services and Healthcare Segments make up 78% of CTSH's revenue. Transformations in these industries may require lower expenditures related Information Technology. In addition to the pricing pressure affecting CTSH's revenues, large companies are using multiple companies for large contracts. With uneasy market conditions in the U.K. due to Brexit, there is increased pricing sensitivity within the CTSH's FS segment. At the same time, with the depreciation of the Indian rupee, companies are looking towards India for offshore services. CTSH focuses more on horizontal integration to improve core competencies through acquisitions smaller companies that offer similar service but are more catered towards a specific market. This is opposed to backward integration to decrease bargaining power of customers. The cost associated with acquiring and developing cloud developers is a costly investment, with the added risk of it not being as useful as other cloud vendors in the market. Services across the competitive landscape are not vastly different from one another; with companies primarily focusing on cloud infrastructure (hybrid data center/cloud infrastructure), digital assets, and the Internet of Things services. Constant innovation is the only way to remain competitive in this industry.

Threat of Substitutes [LOW]

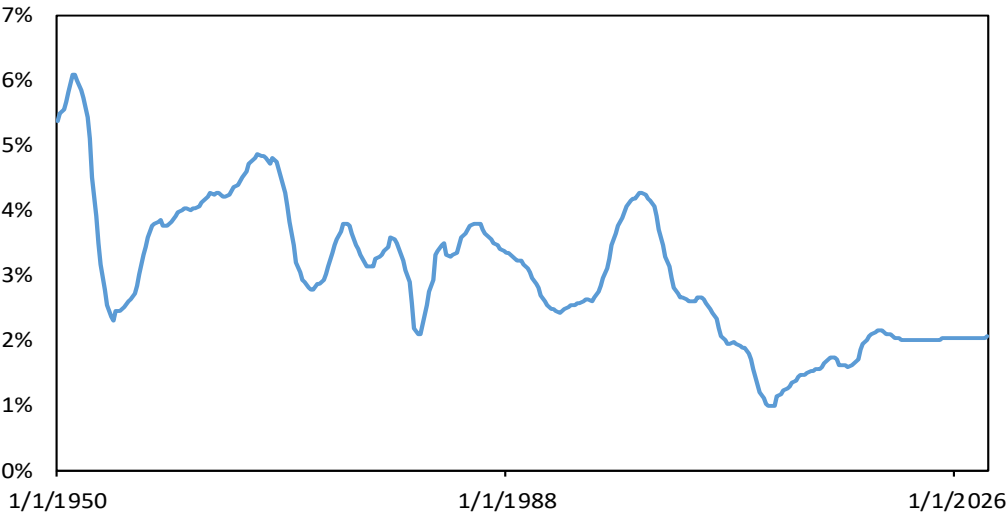
Low market interest in enterprise data centers due to high costs. The market favors easy access to data located in cloud infrastructure, however; industries prefer hybrid infrastructure that includes data centers and cloud services. Hybrid infrastructure is a combination of enterprise data centers and cloud infrastructure that allows companies to keep specific data private and other data public at the same time. Meanwhile, large cloud vendors are beginning forward integration of smaller IT companies that decrease the value their relationship with CTSH. Oracle and its Aconex acquisition, and its most recent acquisition DataFox, Google's recent acquisition of Onward, and Amazon's acquisition of Thinkbox software. Cloud vendors have been easing their service offering into the business processes and operations.

Economic Projections of Federal Reserve Board members										
Variable	Median					Median				
	2018	2019	2020	2021	Long Run	2018	2019	2020	2021	Long Run
Change in Real GDP	3.0%	2.5%	2.3%	2.0%	2.2%	3.0% - 3.1%	2.3% - 2.5%	1.8% - 2.0%	1.5% - 2.0%	1.8% - 2.4%
September Projection	3.1%	2.5%	2.0%	1.8%	1.9%	3.0% - 3.2%	2.4% - 2.7%	1.8% - 2.1%	1.6% - 2.0%	1.8% - 2.2%
Unemployment Rate	3.7%	3.5%	3.6%	3.8%	4.4%	3.7%	3.5% - 3.7%	3.5% - 3.8%	3.6% - 3.9%	4.2% - 4.5%
September Projection	3.7%	3.5%	3.5%	3.7%	4.5%	3.7%	3.4% - 3.6%	3.4% - 3.8%	3.5% - 4.0%	4.3% - 4.6%
PCE Inflation	1.9%	1.9%	2.1%	2.1%	2.0%	1.8% - 1.9%	1.8% - 2.1%	2.0% - 2.1%	2.0% - 2.1%	2.0%
September Projection	2.1%	2.0%	2.1%	2.1%	2.0%	2.0% - 2.1%	2.0% - 2.1%	2.1% - 2.2%	2.0% - 2.2%	2.0%
Core PCE Inflation	1.9%	2.0%	2.0%	2.0%		1.8% - 1.9%	2.0% - 2.1%	2.0% - 2.1%	2.0% - 2.1%	
September Projection	2.0%	2.1%	2.1%	2.1%		1.9% - 2.0%	2.0% - 2.1%	2.1% - 2.2%	2.0% - 2.1%	
Federal Funds Rate	2.4%	2.9%	3.1%	3.1%	2.8%	2.4%	2.6% - 3.1%	2.9% - 3.4%	2.6% - 3.1%	2.5% - 3.0%
September Projection	2.4%	3.1%	3.4%	3.4%	3.0%	2.1% - 2.4%	2.9% - 3.4%	3.1% - 3.6%	2.9% - 3.6%	2.8% - 3.0%

Source: Board of Governors of the Federal Reserve

Federal Reserve Member banks of the U.S. Federal Reserve is tasked with providing their individual assessment regarding the appropriate monetary policy. The primary benchmarks used in their analysis involves GDP growth, the U.S. unemployment rate inflation and the Federal Funds Rate (the rate at which banks lend to one another). Each participant’s long-term projections represent the rate to which each variable would be expected to converge under appropriate monetary policy conditions. We have used this analysis to guide our interest rate and long-term growth assumptions for CTSH.

Long-Term Potential GDP Growth



Source: U.S. Congressional Budget Office

Core Comps					
Criteria	Accenture PLC	HCL Technologies	Infosys	Tata Consultancy	Wipro Ltd
In The Same Industry	✓	✓	✓	✓	✓
Same Products & Services	✓	✓	✓	✓	✓
Identified Competitor	✓	✓	✓	✓	✓
Covered by Same Analyst	✓	✓	✓	✓	✓
Size Compared to Cognizant	Larger	Smaller	Similar	Larger	Similar

Source: Team Analysis

The IT Services industry consist of a very diverse group of firms that offer a wide range of services. Consider this, we needed a way of establishing which equities were worth our time. As such, we have decided establish our peer group based on the following factors:

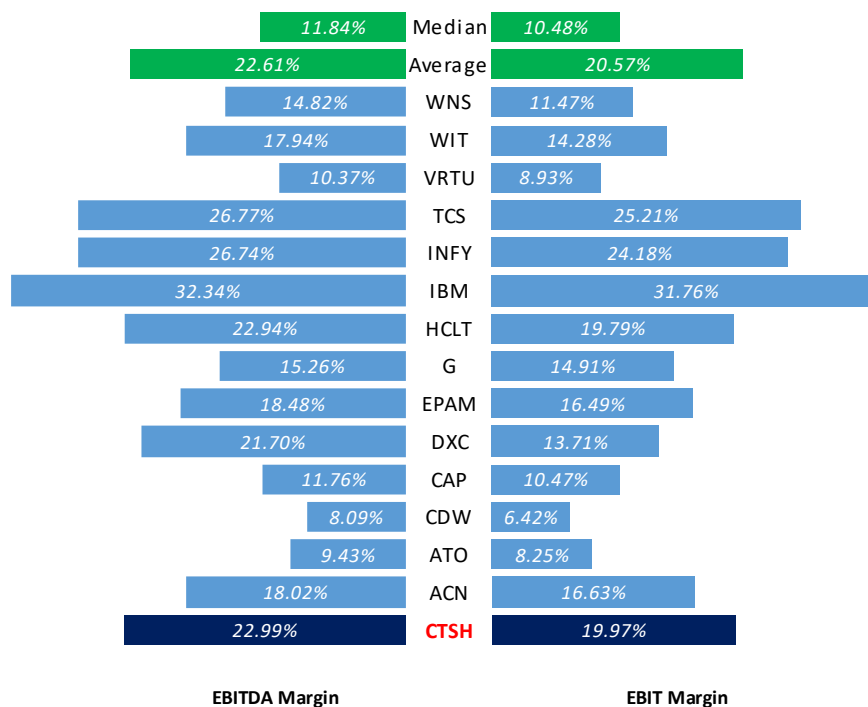
1. **Same Industry/Sector:** Companies that are in the same sector would be more applicable for our analysis
2. **Same Products & Services:** Firms that offer the same products and services would make an apples to apples comparison easier; especially if they revenue streams from similar clients.
3. **Identified Competition:** Firms are constantly scanning the industry for likely threats. We look for companies with an identified list of competitors.
4. **Covered by the Same Equity Analyst:** Companies in a particular coverage group are more likely to be covered by the same analyst if they are similar in scope.
5. **Size Compared to Cognizant:** Some companies are too small (or large) to be compared to Cognizant. We avoided firms where there are significant differences in size.

Using this have identified companies that are more similar to Cognizant (Core Comps) and companies that are very similar, with slight differences (Extended Comps).

Extended Comps								
Criteria	Atos SE	CDW	Capgemini SE	EPAM Systems	Genpact Ltd	IBM	Vitusa Corp	WNS Holdings
In The Same Industry	✓	✓	✓	✓	✓	✓	✓	✓
Same Products & Services	✓	✓	✓	✓	✓	✓	✓	✓
Identified Competitor	✓	✓	✓	✓	✓	✓	✓	✓
Covered by Same Analyst	✓	✓	✓	✗	✓	✓	✗	✗
Size Compared to Cognizant	Smaller	Smaller	Smaller	Smaller	Smaller	Larger	Smaller	Smaller

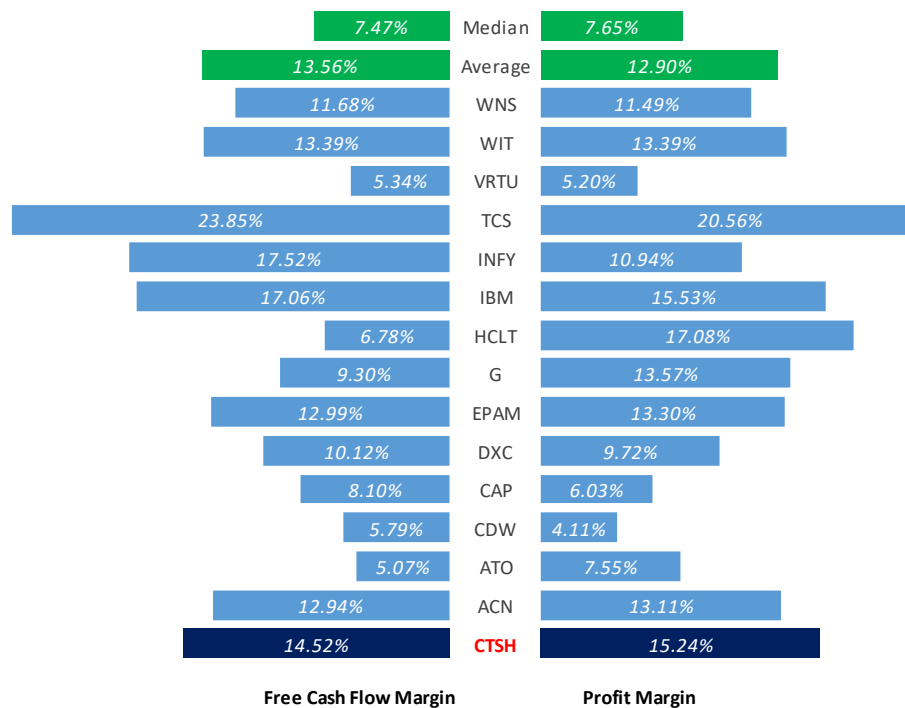
Source: Team Analysis

Cognizant's EBITDA/EBIT Margin Vs. Peers



Source: S&P Capital IQ; Team Analysis

Cognizant's Free Cash Flow/Profit Margin Vs. Peers



Source: S&P Capital IQ; Team Analysis

Latest Fiscal Quarter	CTSH	ACN	ATO	CDW	CAP	DXC	EPAM	G	IBM	INFY	TCS	VRTU	WIT	WNS
Profitability														
Gross Profit Margin	38.2%	29.9%	14.1%	16.1%	26.5%	26.9%	36.5%	38.5%	46.4%	36.0%	58.0%	28.9%	29.2%	33.6%
EBITDA Margin	20.6%	16.5%	14.1%	7.7%	11.3%	17.3%	14.6%	14.2%	20.4%	26.1%	9.5%	7.5%	19.0%	15.8%
Operating Margin	16.8%	14.0%	7.5%	16.1%	9.2%	26.9%	36.5%	38.5%	46.4%	36.0%	58.0%	28.9%	29.2%	33.6%
Net Profit Margin	16.8%	14.0%	4.7%	3.4%	6.4%	7.1%	5.0%	9.6%	11.0%	22.7%	2.3%	0.1%	14.7%	11.4%
Return on Assets	9.6%	17.0%	4.7%	9.4%	4.8%	6.0%	11.2%	7.9%	4.7%	18.9%	3.2%	(1.2%)	10.7%	13.5%
Return on Equity	13.1%	38.7%	13.4%	69.0%	11.0%	15.7%	13.7%	20.8%	29.0%	23.9%	10.5%	(3.4%)	16.4%	20.5%
Return on Invested Capital	13.4%	47.0%	8.2%	18.5%	36.3%	7.3%	14.2%	9.6%	10.2%	20.5%	6.9%	(30.9%)	10.7%	15.8%
Asset Turnover														
Total Asset Turnover	1.00x	1.7x	0.9x	2.2x	0.8x	1.2x	1.3x	0.9x	0.7x	0.9x	1.2x	1.0x	0.7x	1.0x
Fixed Asset Turnover	11.2x	32.6x	17.5x	93.5x	16.7x	10.8x	18.1x	13.7x	7.2x	6.0x	10.7x	8.5x	8.1x	13.1x
Account Receivable Turnover	4.83x	5.4x												
Liquidity														
Current Ratio	3.21x	1.34x	1.19x	1.34x	1.35x	0.98x	5.31x	1.71x	1.29x	3.55x	1.22x	2.54x	2.37x	2.39x
Cash Ratio	1.78x	0.50x	0.42x	0.06x	0.47x	0.27x	3.22x	0.60x	0.31x	1.86x	0.07x	1.11x	1.38x	1.32x
Quick Ratio	2.79x	0.99x	0.91x	0.98x	0.91x	0.60x	4.69x	1.43x	1.09x	2.79x	0.19x	1.81x	1.85x	1.75x
CFO/Avg Curren Liabilities	1.03x	0.60x	0.22x	0.35x	0.31x	0.29x	1.27x	0.33x	0.49x	1.01x	0.35x	0.38x	0.51x	NA
Solvency														
Total Debt / Equity	6.5x	0.2x	23.8x	326.6x	40.0x	45.6x	2.6x	70.5x	210.3x	0.0x	111.5x	53.1x	9.3x	12.4x
Total Debt / Capital	7.6x	0.2x	27.2x	76.7x	32.6x	37.7x	2.5x	46.0x	73.0x	0.0x	53.4x	35.6x	22.2x	15.3x
LT Debt / Equity	8.2x	0.2x	37.4x	329.2x	48.4x	60.6x	2.6x	85.1x	270.6x	0.0x	114.7x	55.2x	28.5x	18.0x
LT Debt / Capital	6.0x	0.2x	17.3x	76.1x	26.9x	28.4x	2.5x	38.1x	56.7x	0.0x	52.0x	34.2x	7.3x	10.5x
Total Liabilities / Total Assets	6.0x	0.2x	17.3x	76.1x	26.9x	28.4x	2.5x	38.1x	56.7x	0.0x	52.0x	34.2x	7.3x	10.5x
EBIT / Interest Expense	107.9x	298.9x	36.3x	NA	21.5x	5.5x	NA	8.2x	16.9x	NA	1.4x	6.1x	24.0x	24.9x
EBITDA / Interest Expense	127.1x	346.4x	59.4x	NA	27.0x	11.5x	NA	10.6x	23.1x	NA	2.9x	9.7x	30.1x	35.9x
EBITDA less CAPEX / Interest Expense	114.8x	314.7x	37.6x	NA	22.6x	10.8x	NA	9.2x	17.9x	NA	1.8x	7.6x	23.8x	25.4x
Total Debt / EBITDA	0.2x	0.0x	1.1x	2.6x	2.8x	1.8x	0.1x	3.3x	2.5x	0.0x	3.5x	3.8x	1.0x	0.7x
Net Debt / EBITDA	-1.2x	-0.6x	-0.2x	2.4x	1.5x	1.1x	-2.6x	2.3x	1.6x	-1.3x	3.4x	1.1x	-2.3x	-1.1x
1 Year Growth Rates														
Revenue Growth	9.8%	13.2%	12.9%	8.7%	18.4%	222.8%	25.0%	6.5%	0.6%	3.0%	4.5%	18.9%	(1.0%)	25.8%
EBITDA Growth	9.6%	24.5%	3.5%	5.0%	40.2%	592.3%	28.3%	0.2%	12.1%	2.2%	(7.9%)	67.2%	(7.8%)	64.7%
EBIT Growth	8.4%	26.1%	(0.6%)	5.7%	108.3%	NA	29.4%	(3.6%)	18.0%	1.5%	(16.9%)	152.5%	(7.6%)	144.9%
EPS Diluted	(0.8%)	16.5%	45.6%	29.3%	1087.1%	NA	(29.4%)	4.7%	55.1%	13.1%	29.0%	NA	(3.4%)	129.6%
Free Cash Flow Growth	57.8%	21.3%	(27.0%)	28.9%	(184.4%)	312.4%	22.2%	14.4%	(14.6%)	12.7%	114.2%	576.4%	(15.0%)	48.2%
5 Year Growth Rates														
Revenue Growth	15.1%	6.5%	(4.3%)	8.4%	14.9%	NA	27.3%	7.6%	(4.1%)	11.8%	3.9%	25.1%	7.8%	10.5%
EBITDA Growth	14.0%	6.5%	8.0%	9.4%	8.0%	NA	21.3%	4.3%	(7.2%)	11.0%	6.0%	12.0%	5.9%	8.5%
EBIT Growth	12.8%	6.1%	7.6%	11.1%	1.5%	NA	21.2%	4.4%	(9.0%)	11.0%	7.1%	7.1%	4.2%	17.5%
EPS Diluted	8.0%	5.2%	15.5%	32.2%	3.0%	NA	2.4%	11.4%	(8.6%)	11.5%	NA	NA	4.5%	31.8%
Free Cash Flow Growth	20.4%	13.0%	NA	20.3%	NA	NA	50.5%	5.8%	(3.6%)	14.4%	NA	35.6%	2.1%	18.6%

Source: S&P Capital IQ; Bloomberg; Team Analysis

Comparison of Capital Return Priorities Among Core Peers

Criteria	Cognizant Technologies	Accenture PLC	HCL Technologies	Infosys	Tata Consultancy	Wipro Ltd
Share Repurchases	Over \$3 billion in repurchases since 2012	Over \$13 billion in repurchases since 2012	Recently implimented its share buyback program	Recently implimented its share buyback program	Inconsistent share buyback history	Recently implimented its share buyback program
Dividends	Started paying dividends on May 5th, 2017	~2% average 5 year dividend yield	1.77% average 5 year dividend yield	2.29% average 5 year dividend yield	1.56% average 5 year dividend yield	0.90% average 5 year dividend yield
M & A	10 acquisition since 2017	>40 acquisition since 2017	10 acquisition since 2017	8 acquisition since 2017	3 acquisition since 2017	Only 1 acquisition since 2017
Cash Return	Current returns 35% of FCF	100%+ free cash flow returned to shareholders	100% free cash flow returned to shareholders	Twice the amount of cashflow returned	100% free cash flow returned to shareholders	Twice the amount of cashflow returned
Valuation	Among one of the lowest multiples in the industry, despite growing at a rate of +20 for many years	Consistent margin expansion, robust growth and capital allocation gives ACN a 12.59x EV/EBITDA	Low multiples compared to industry peers all across the board, mainly due to earnings inconsistency	Cash Flow inconsistency makes this stock undervalued by EV/EBITDA and P/FCF	Currently trades above industry average for EV/EBITDA, P/E and P/FCF	Currently trades above industry average for EV/EBITDA, P/E and P/FCF

Source: S&P Capital IQ; Team Analysis

Comps Derived Beta (USD in Millions)

Company Name	Observed β	Share Price	Dil. Shares	Market Cap	Cash	Debt	Tax Rate	Delev. β
Accenture PLC	1.089	\$150.45	655	98,589	5,065	25	27.44%	1.131
Atos SE	1.222	\$64.81	105	6,835	1,989	1,719	18.33%	1.263
CDW Corp/DE	1.134	\$81.69	158	12,923	144	3,236	20.79%	0.953
Capgemini SE	1.170	\$84.80	172	14,593	1,897	2,967	27.27%	1.111
DXC Technology Co	1.118	\$62.62	290	18,145	2,648	8,379	0.00%	0.850
EPAM Systems Inc	1.348	\$138.59	55	7,620	583	25	58.26%	1.391
Genpact Ltd	0.964	\$29.22	197	5,758	504	1,216	18.64%	0.875
HCL Technologies Ltd	0.690	\$13.57	1,402	19,035	895	70	20.88%	0.715
International Business Machine	1.024	\$123.82	937	116,067	12,580	40,353	49.49%	0.914
Infosys Ltd	0.845	\$10.27	4,515	46,361	3,684	-	20.92%	0.902
Tata Consultancy Services Ltd	0.886	\$1900.65	3,849	102,770	5,991	2,470	24.09%	0.910
Virtusa Corp	1.057	\$46.75	29	1,374	241	300	78.61%	1.048
Wipro Ltd	0.752	\$5.34	4,524	24,157	4,130	1,942	21.85%	0.809
WNS Holdings Ltd	0.808	\$45.65	53	2,416	221	50	27.33%	0.852

Target Company	Observed β	Share Price	Dil. Shares	Market Cap	Cash	Debt	Tax Rate	Delev. β
Cognizant Technology Solutions	0.9591	\$67.82	579	39,300	4,856	724	43.39%	1.020

Industry Average Beta: 0.9828

Cognizant Technology Solutions Beta 0.9243

Source: Bloomberg; Team Analysis

A method of acquiring the cost of equity is probably the most controversial subjects in finance (especially beta). We've used the Capital Asset Pricing Model (CAPM) because it's the most widely used and the most convenient for determine the cost of equity. CAPM is determined by the following:

$$k_e = r_{RF} + \beta(r_M - r_{RF})$$

Where:

k_e is the cost of equity

r_{RF} is the risk free rate

β is the beta of a company's stock

r_M is the return of the overall market

$r_M - r_{RF} = r(ERP)$ is the market risk premium

Three different ways you can acquire the beta of the company involves the following: 1) Observable Beta through data aggregators (Yahoo, S&P Capital IQ), 2) Regression analysis, 3) Comps-derived approach.

We have elected use a comps derived to remove the systematic biases associated with conducting a regression analysis. When it comes to using the beta from a data aggregator, sometimes it's unclear how the beta is calculated. Considering the differences in capital structure of our comps, we need to deleverage all of their betas. We deleverage the betas with the following formula:

$$\beta_{eta_u} = \frac{\beta_{eta_L}}{[1 + (1 - T_m)(D/E)]}$$

Where:

β_{eta_L} is the levered beta

β_{eta_u} is the unlevered beta

T_m is the effective tax rate

E is the market value of equity

D is the market value of debt

Once we have our unlevered for all of our comps, we average them and re-leverage based on CTS capital structure using the following formula:

$$\beta_{eta_L} = \beta_{eta_u}(1 + (1 - T_m)(D/E))$$

The Weighted Average Cost of Capital (WACC) reflects the riskiness of acquiring future cash flows. We calculate WACC with the following formula:

$$WACC = \frac{D}{EV} k_d(1 - T_m) + \frac{E}{EV} k_e$$

Where:

k_d is the pre-tax cost of debt

k_e is the cost of equity

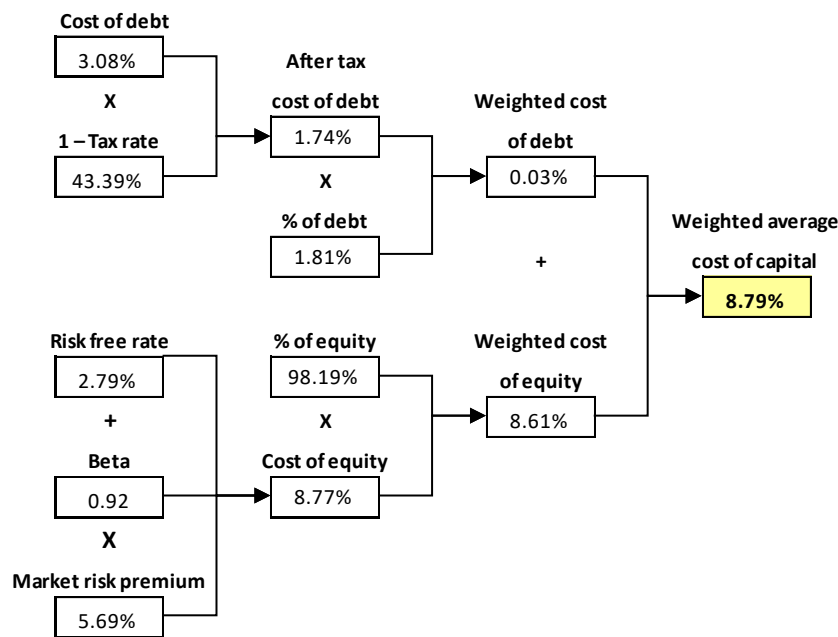
D is the market value of debt

E is the market value of equity

EV represents the enterprise value of the company

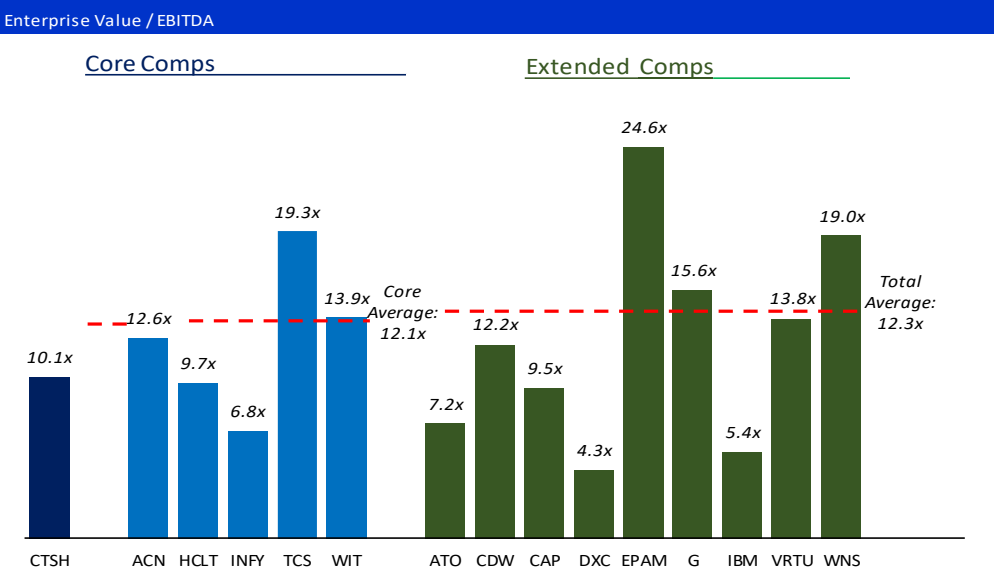
T_m is the effective tax rate

Cognizant's Weighted Average Cost of Capital

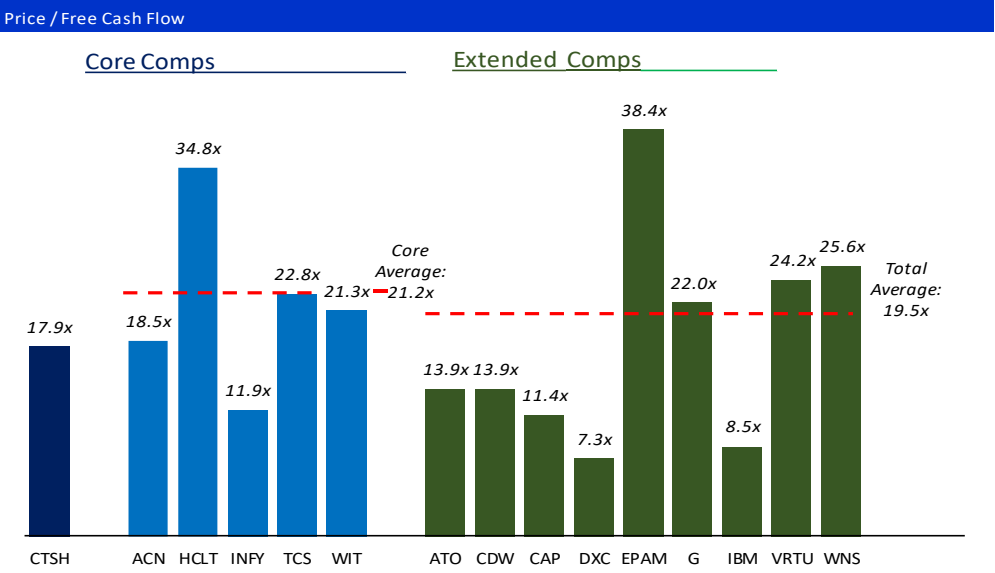


Source: Bloomberg; Team Analysis

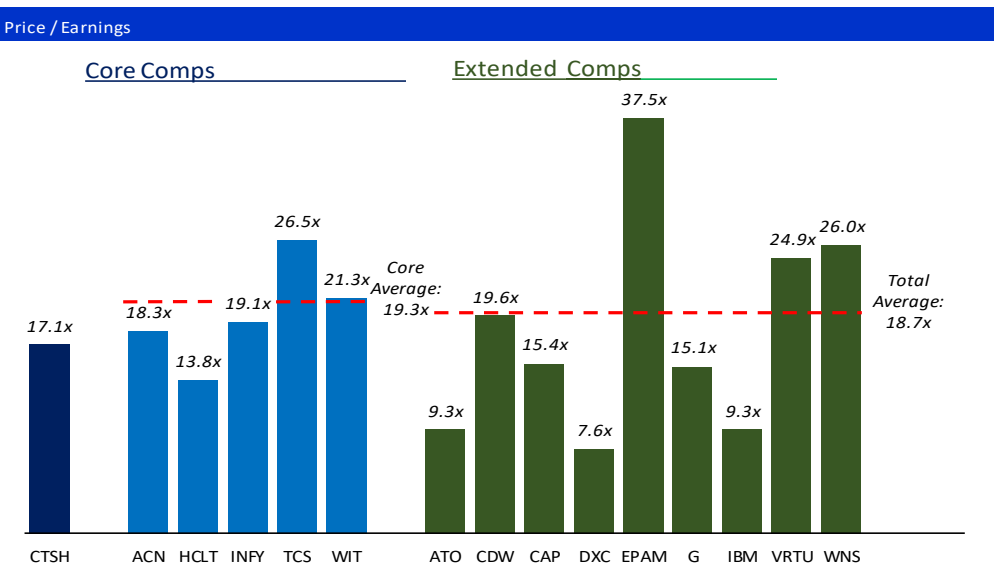
The weighted average of both debt and equity represents the portion of the business that belongs to both debt and equity owners.



Source: S&P Capital IQ; Team Analysis

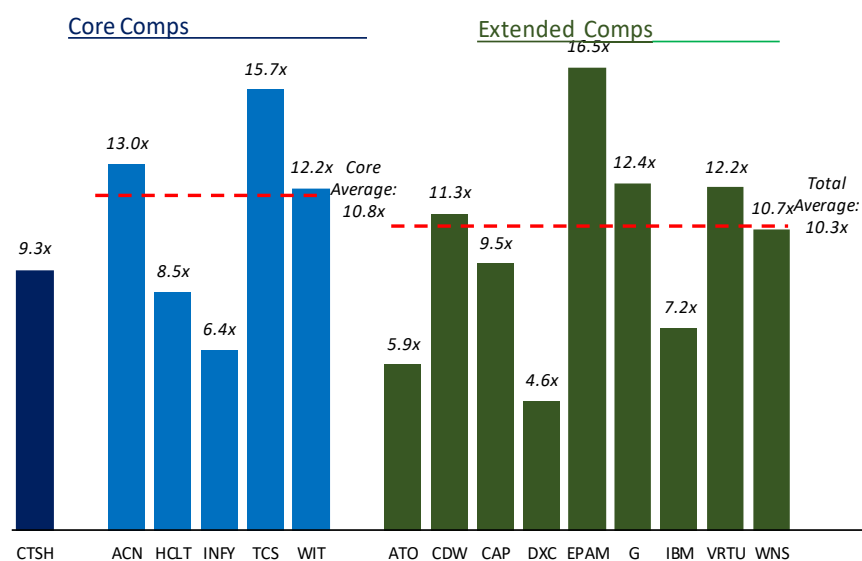


Source: S&P Capital IQ; Team Analysis



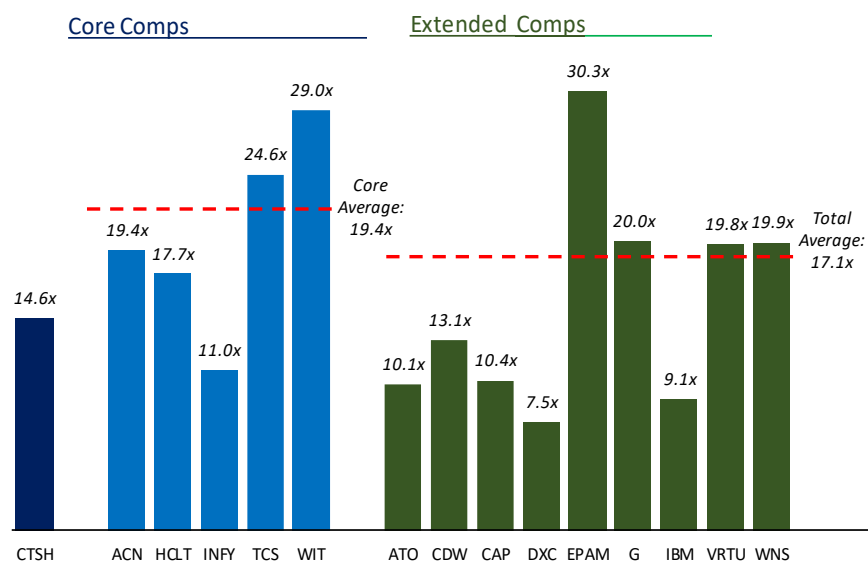
Source: S&P Capital IQ; Team Analysis

Enterprise Value / EBITDA



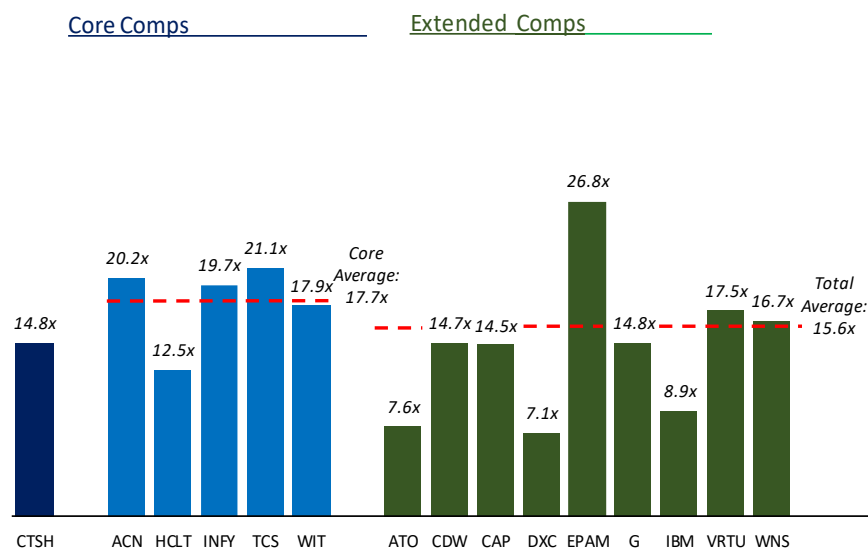
Source: S&P Capital IQ; Team Analysis

Price / Free Cash Flow



Source: S&P Capital IQ; Team Analysis

Price / Earnings



Source: S&P Capital IQ; Team Analysis

Appendix 25

Relative Valuation

Cognizant's Peer Group Analysis

Company Name	Enterprise Value / EBITDA			Price / Free Cash Flow			Price / Earnings			Peg Ratio
	LTM	18' Forecast	19' Forecast	LTM	18' Forecast	19' Forecast	LTM	18' Forecast	19' Forecast	
Accenture PLC	12.59x	13.03x	12.06x	18.49x	19.37x	17.61x	18.26x	20.24x	18.61x	1.97x
Atos SE	7.18x	5.90x	5.65x	13.90x	10.12x	9.26x	9.32x	7.59x	7.14x	1.53x
CDW Corp/DE	12.22x	11.28x	11.02x	13.89x	13.11x	13.07x	19.60x	14.73x	14.01x	1.13x
Capgemini SE	9.45x	9.46x	8.90x	11.45x	10.38x	9.61x	15.37x	14.54x	13.71x	1.97x
DXC Technology Co	4.30x	4.61x	4.38x	7.34x	7.45x	7.01x	7.64x	7.10x	6.32x	1.10x
EPAM Systems Inc	24.65x	16.48x	13.66x	38.36x	30.33x	25.69x	37.46x	26.81x	22.48x	1.25x
Genpact Ltd	15.63x	12.36x	11.11x	22.01x	19.98x	15.70x	15.08x	14.76x	13.19x	1.48x
HCL Technologies Ltd	9.74x	8.48x	7.79x	34.79x	17.69x	14.51x	13.82x	12.46x	11.46x	1.45x
International Business Machine	5.44x	7.20x	6.91x	8.49x	9.06x	8.80x	9.33x	8.93x	8.73x	1.81x
Infosys Ltd	6.76x	6.40x	6.05x	11.95x	11.04x	10.13x	19.13x	19.68x	18.29x	2.13x
Tata Consultancy Services Ltd	19.31x	15.66x	14.11x	22.85x	24.63x	21.60x	26.51x	21.09x	19.08x	2.20x
Virtusa Corp	13.84x	12.19x	9.34x	24.23x	19.79x	15.85x	24.88x	17.51x	14.14x	0.88x
Wipro Ltd	13.90x	12.18x	11.94x	21.28x	29.04x	N/A	21.29x	17.89x	16.90x	2.00x
WNS Holdings Ltd	19.00x	10.73x	9.64x	25.58x	19.87x	18.30x	26.01x	16.66x	15.28x	1.35x
Maximum	24.65x	16.48x	14.11x	38.36x	30.33x	25.69x	37.46x	26.81x	22.48x	2.20x
75th Percentile	15.6x	12.4x	11.9x	24.2x	20.0x	17.8x	24.9x	19.7x	18.3x	2.0x
Median	12.2x	10.7x	9.3x	18.5x	17.7x	14.0x	18.3x	14.8x	14.0x	1.5x
25th Percentile	7.2x	7.2x	6.9x	11.9x	10.4x	9.5x	13.8x	12.5x	11.5x	1.1x
Minimum	4.3x	4.6x	4.4x	7.3x	7.5x	7.0x	7.6x	7.1x	6.3x	0.9x
Cognizant Technology Solutions	10.1x	9.3x	8.6x	17.9x	14.6x	13.5x	17.1x	14.8x	13.6x	1.1x

Source: Bloomberg; Team Analysis

Appendix 26

Implied Share Price

Cognizant's Implied Share Price Based on Peer Multiples

Company Name	Enterprise Value / EBITDA			Price / Free Cash Flow			Price / Earnings		
	LTM	18' Forecast	19' Forecast	LTM	18' Forecast	19' Forecast	LTM	18' Forecast	19' Forecast
Accenture PLC	\$82.67	\$92.33	\$92.33	\$77.20	\$96.84	\$95.89	\$72.62	\$93.02	\$93.05
Atos SE	\$50.20	\$45.70	\$45.70	\$59.81	\$53.99	\$53.80	\$37.09	\$34.88	\$35.72
CDW Corp/DE	\$44.90	\$41.95	\$41.95	\$36.69	\$37.91	\$40.26	\$77.96	\$67.69	\$70.06
Capgemini SE	\$63.83	\$69.03	\$69.03	\$50.51	\$55.19	\$55.56	\$61.13	\$66.80	\$68.55
DXC Technology Co	\$32.91	\$37.28	\$37.28	\$34.94	\$41.64	\$42.46	\$30.39	\$32.62	\$31.59
EPAM Systems Inc	\$154.98	\$114.91	\$114.91	\$152.50	\$147.60	\$136.64	\$148.99	\$123.18	\$112.40
Genpact Ltd	\$100.90	\$87.97	\$87.97	\$90.53	\$99.68	\$86.29	\$59.99	\$67.81	\$65.96
HCL Technologies Ltd	\$65.56	\$62.63	\$62.63	\$138.98	\$89.07	\$80.26	\$54.96	\$57.24	\$57.28
International Business Machine	\$39.74	\$54.26	\$54.26	\$39.32	\$49.09	\$51.49	\$37.09	\$41.05	\$43.66
Infosys Ltd	\$47.69	\$49.02	\$49.02	\$52.40	\$58.28	\$58.19	\$76.09	\$90.44	\$91.45
Tata Consultancy Services Ltd	\$122.94	\$109.59	\$109.59	\$93.72	\$121.22	\$116.01	\$105.43	\$96.92	\$95.39
Virtusa Corp	\$90.14	\$86.87	\$86.87	\$98.96	\$98.78	\$87.02	\$98.95	\$80.44	\$70.70
Wipro Ltd	\$90.49	\$86.77	\$86.77	\$87.79	\$141.61	N/A	\$84.67	\$82.22	\$84.52
WNS Holdings Ltd	\$121.13	\$77.31	\$77.31	\$104.08	\$99.16	\$99.38	\$103.47	\$76.54	\$76.38
Maximum	\$154.98	\$114.91	\$114.91	\$152.50	\$147.60	\$136.64	\$148.99	\$123.18	\$112.40
75th Percentile	\$100.90	\$87.97	\$87.97	\$98.96	\$99.68	\$96.76	\$98.95	\$90.44	\$91.45
Median	\$80.76	\$74.83	\$73.89	\$77.56	\$89.07	\$75.95	\$74.44	\$71.91	\$70.70
25th Percentile	\$47.69	\$49.02	\$49.02	\$50.51	\$53.99	\$53.22	\$54.96	\$57.24	\$57.28
Minimum	\$32.91	\$37.28	\$37.28	\$34.94	\$37.91	\$40.26	\$30.39	\$32.62	\$31.59

Cognizant's Share Price Based On Average Peer Multiple

Cognizant Technology Solutions	\$80.76	\$74.83	\$73.89	\$77.56	\$78.57	\$71.63	\$74.44	\$71.91	\$70.97
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Source: Bloomberg; Team Analysis

Appendix 27

Free Cash Flow Projections

Free Cash Flow Projections

Fiscal Year	2015 A	2016 A	2017 A	2018 P	2019 P	2020 P	2021 P	2022 P
Fiscal Year End Date	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021	12/31/2022
EBITDA	2,664	2,912	3,253	3,626	3,932	4,128	4,413	4,944
EBIT	2,142	2,316	2,589	2,877	3,122	3,251	3,475	3,950
Tax Rate	25.0%	34.1%	43.4%	28.0%	30.0%	30.0%	30.0%	30.0%
EBIAT (NOPAT)	1,607	1,525	1,466	2,071	2,185	2,276	2,433	2,765
Add: Depreciation & Amortization				497	537	578	620	655
Add: Stock-Based Compensation				252	273	299	318	339
Less: Net Working Capital				(96)	(95)	(104)	(88)	(122)
Unlevered Cash Flow From Operations				2,725	2,900	3,049	3,283	3,637
Less: Capital expenditures				(404)	(437)	(474)	(505)	(545)
Less: Purchases of intangible assets				(161)	(175)	(190)	(202)	(218)
Unlevered Free Cash Flows				2,160	2,288	2,385	2,576	2,875
% Growth					5.96%	4.22%	8.01%	11.60%
Present Value of Unlevered Free Cash Flows				2,151	2,113	2,026	2,013	2,067

Source: Bloomberg; Team Analysis

Appendix 28

Sensitivity Analysis

Terminal FCF Growth Rate vs Discount Rate for Implied Share Price

		Terminal FCF Growth Rate									
		\$86.62	3.00%	3.10%	3.20%	3.30%	3.40%	3.50%	3.60%	3.70%	3.80%
WACC:	9.5%	\$79.67	\$80.59	\$8153	\$82.50	\$83.50	\$84.54	\$85.61	\$86.72	\$87.86	
	9.4%	\$80.76	\$8171	\$82.68	\$83.69	\$84.73	\$85.80	\$86.91	\$88.06	\$89.26	
	9.3%	\$8189	\$82.87	\$83.87	\$84.92	\$85.99	\$87.11	\$88.26	\$89.46	\$90.70	
	9.2%	\$83.05	\$84.06	\$85.11	\$86.19	\$87.31	\$88.46	\$89.66	\$90.90	\$92.19	
	9.1%	\$84.25	\$85.30	\$86.38	\$87.50	\$88.66	\$89.86	\$91.11	\$92.40	\$93.74	
	9.0%	\$85.49	\$86.58	\$87.70	\$88.87	\$90.07	\$91.32	\$92.61	\$93.96	\$95.35	
	8.9%	\$86.77	\$87.90	\$89.07	\$90.28	\$9153	\$92.83	\$94.17	\$95.57	\$97.03	
	8.8%	\$88.10	\$89.27	\$90.48	\$9174	\$93.04	\$94.39	\$95.79	\$97.25	\$98.77	
	8.7%	\$89.47	\$90.69	\$9195	\$93.25	\$94.61	\$96.01	\$97.48	\$99.00	\$100.58	

Terminal EBITDA Multiple vs Discount Rate for Implied Share

		Terminal EBITDA Rate									
		\$99.99	8.5x	9.0x	9.5x	10.0x	10.5x	11.0x	11.5x	12.0x	12.5x
WACC:	9.5%	\$75.42	\$78.40	\$8138	\$84.36	\$87.34	\$90.32	\$93.30	\$96.28	\$99.25	
	9.4%	\$75.64	\$78.63	\$8162	\$84.61	\$87.60	\$90.59	\$93.58	\$96.57	\$99.56	
	9.3%	\$75.85	\$78.85	\$8185	\$84.85	\$87.85	\$90.86	\$93.86	\$96.86	\$99.86	
	9.2%	\$76.07	\$79.08	\$82.09	\$85.10	\$88.11	\$91.13	\$94.14	\$97.15	\$100.16	
	9.1%	\$76.28	\$79.31	\$82.33	\$85.35	\$88.38	\$9140	\$94.42	\$97.44	\$100.47	
	9.0%	\$76.50	\$79.54	\$82.57	\$85.60	\$88.64	\$9167	\$94.71	\$97.74	\$100.77	
	8.9%	\$76.72	\$79.77	\$82.81	\$85.86	\$88.90	\$9195	\$94.99	\$98.04	\$10108	
	8.8%	\$76.94	\$80.00	\$83.05	\$86.11	\$89.17	\$92.22	\$95.28	\$98.33	\$10139	
	8.7%	\$77.16	\$80.23	\$83.30	\$86.36	\$89.43	\$92.50	\$95.57	\$98.63	\$10170	

Terminal FCF Growth Rate vs EBITDA and Implied Share Price

		Terminal FCF Growth Rate									
		\$99.99	8.5x	9.0x	9.5x	10.0x	10.5x	11.0x	11.5x	12.0x	12.5x
EBITDA:	3,955	\$8.50	\$9.00	\$9.50	\$10.00	\$10.50	\$11.00	\$11.50	\$12.00	\$12.50	
	4,202	\$75.42	\$78.40	\$8138	\$84.36	\$87.34	\$90.32	\$93.30	\$96.28	\$99.25	
	4,450	\$75.64	\$78.63	\$8162	\$84.61	\$87.60	\$90.59	\$93.58	\$96.57	\$99.56	
	4,697	\$75.85	\$78.85	\$8185	\$84.85	\$87.85	\$90.86	\$93.86	\$96.86	\$99.86	
	4,944	\$76.07	\$79.08	\$82.09	\$85.10	\$88.11	\$91.13	\$94.14	\$97.15	\$100.16	
	5,191	\$76.28	\$79.31	\$82.33	\$85.35	\$88.38	\$9140	\$94.42	\$97.44	\$100.47	
	5,438	\$76.50	\$79.54	\$82.57	\$85.60	\$88.64	\$9167	\$94.71	\$97.74	\$100.77	
	5,686	\$76.72	\$79.77	\$82.81	\$85.86	\$88.90	\$9195	\$94.99	\$98.04	\$10108	
	5,933	\$76.94	\$80.00	\$83.05	\$86.11	\$89.17	\$92.22	\$95.28	\$98.33	\$10139	

Market Risk Premium vs Beta for WACC

		Market Risk Premium									
		8.79%	4.00%	4.50%	5.00%	5.50%	6.00%	6.50%	7.00%	7.50%	8.00%
BETA:	1.020	7.06%	7.58%	8.10%	8.62%	9.13%	9.65%	10.17%	10.69%	11.21%	
	1.050	7.07%	7.59%	8.11%	8.63%	9.15%	9.67%	10.19%	10.71%	11.23%	
	1.080	7.08%	7.60%	8.12%	8.64%	9.16%	9.68%	10.20%	10.72%	11.25%	
	1.110	7.09%	7.61%	8.13%	8.65%	9.17%	9.70%	10.22%	10.74%	11.26%	
	1.140	7.09%	7.62%	8.14%	8.66%	9.19%	9.71%	10.23%	10.76%	11.28%	
	1.170	7.10%	7.63%	8.15%	8.68%	9.20%	9.73%	10.25%	10.77%	11.30%	
	1.200	7.11%	7.64%	8.16%	8.69%	9.21%	9.74%	10.27%	10.79%	11.32%	
	1.230	7.12%	7.65%	8.17%	8.70%	9.23%	9.75%	10.28%	10.81%	11.33%	
	1.260	7.13%	7.66%	8.19%	8.71%	9.24%	9.77%	10.30%	10.82%	11.35%	

Source: Team Analysis; Bloomberg

Cognizant's Risk Profile

Probability	High					V3
	Medium		S3	F4	O1	
				S2		F2
		V1	F3	V1	V2	F1
	Low					S1
		Low		Medium		High
		Impact				

Source: Team Analysis

A risk matrix defines the level of risk of any given event relative to the probability (or likelihood) of an event occurring. Our risk matrix only has three levels: Low, Medium, and High. Our legend of specific events are outlined based on the following risk: Valuation (V), Strategic (S), Financial (F), and Operational/Other (O):

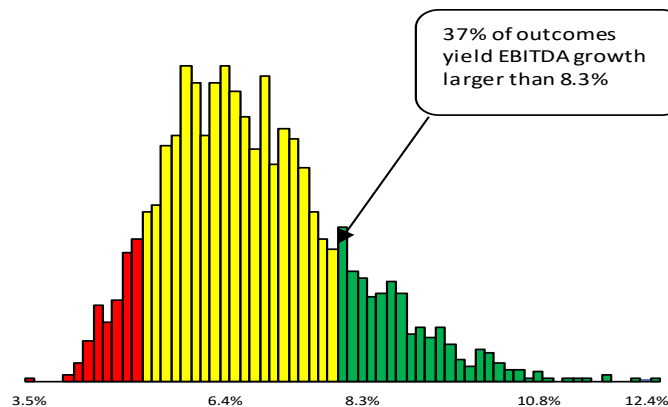
Valuation (V): Valuation-based risk are any events related to the risk of obtaining the target price. The likelihood of these events are based on the objectivity of our analysis and the quality of research that we conduct. The impacted is measured through a sensitivity and scenario analysis.

Strategic (S): Strategic-based risk are associated to goals and initiatives that Cognizant may fail to achieve. These risk are associated with anything that may compromise the company's market position or financial targets (7 – 11% revenue growth, 40% gross operating margin, etc.). We can measure the likelihood of these events by looking at the percentage of times Cognizant has beat or missed earnings expectations. The impact can be measured through a scenario analysis of Cognizant's operating performance.

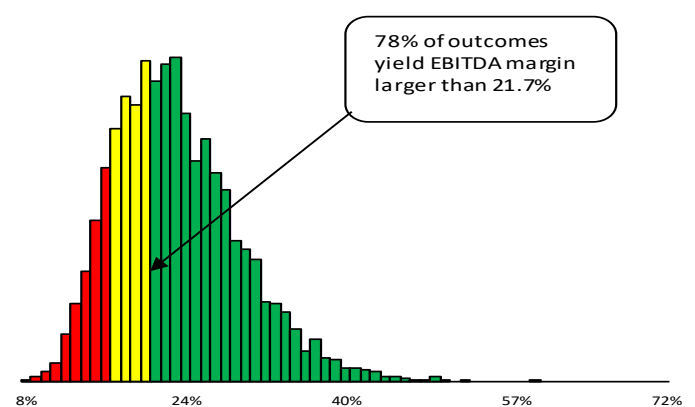
Financial (F): Financial-based risk are events associated with the financial position of Cognizant. These risk at any point may be known or unknown, and therefore, difficult to forecast. However, our guidance related to the likelihood of these risk involve analyzing economic forecast and models from various financial institutions (Federal Reserve, International Monetary Fund, etc.) The impact is measured by Cognizant's internal analysis as well as our own sensitivity analysis.

Operational/Other (O): Operational/Other risk are associated with events that are not easy to ascertain, due to asymmetrical information; however, they are usually related to the company's operations. These risk are only pointed out if they are of particular importance to management or other equity analyst.

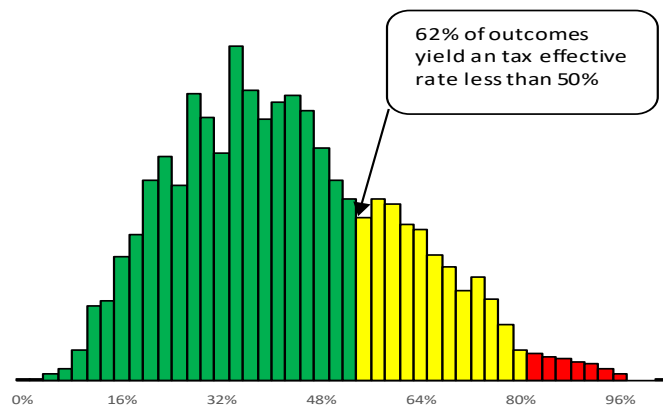
EBITDA Growth



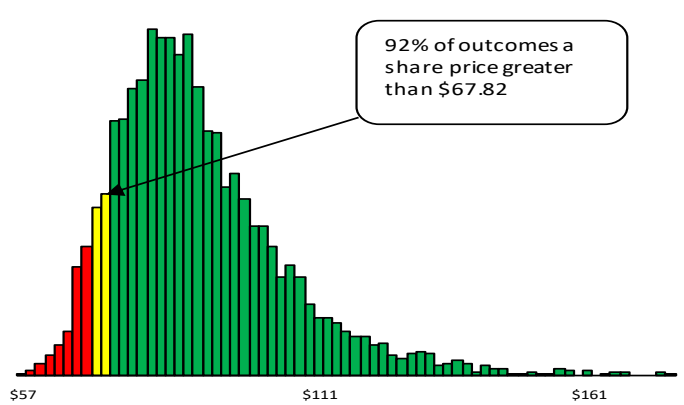
EBITDA Margin



Taxes



Share Price



Source: S&P Capital IQ; Team Analysis

A Monte Carlo analysis determines the probability of different outcomes in a process that cannot easily be predicted due to the intervention of random variables. It is performed by taking a large number of random simulations (based on previous historical data) populating a series of random outcomes. The variables that we are most interested in is EBITDA margin, growth, taxes and share price.

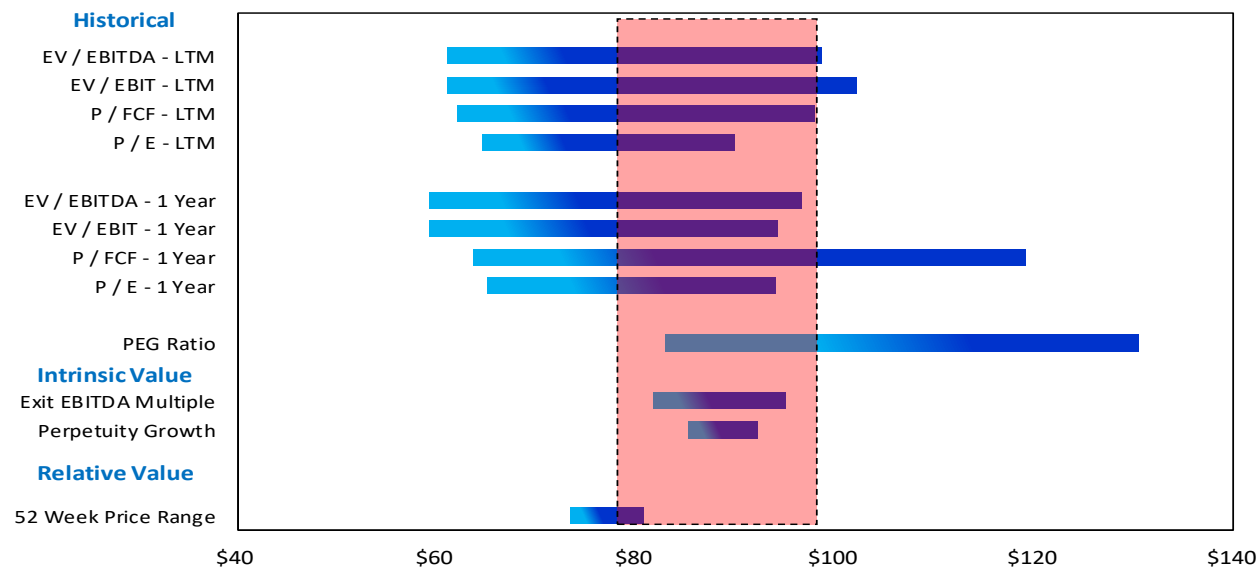
EBITDA and EBITDA margins are metrics that we have used for comparing performance relative to other companies, as well as future performance. Taxes is also another variable we've decided to measure, considering the implications taxes have in a company's capital structure, as well as the fair value of equity.

We have also considered share price returns because it appears that the S&P stock market has entered a period of higher volatility than normal.

Appendix 31

Football Field

Valuation Overview (10-K Peers)

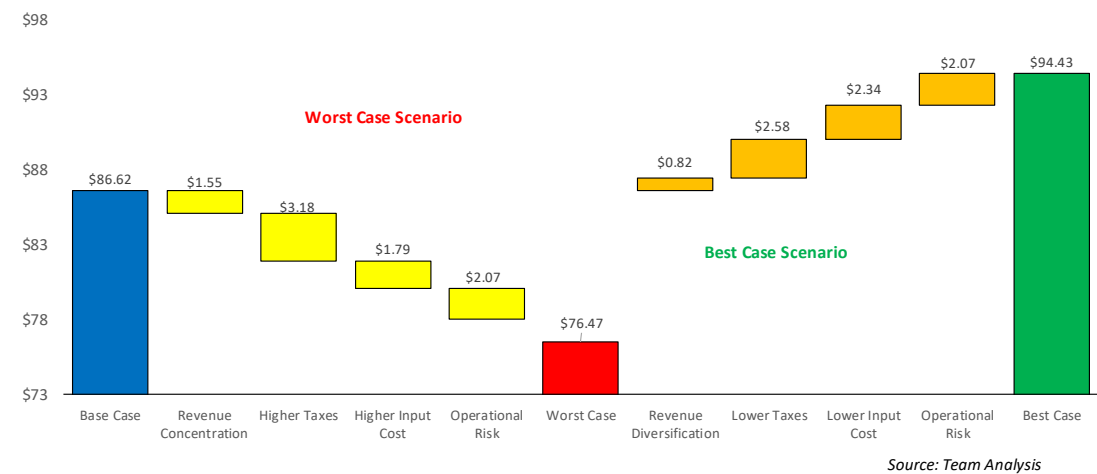


Cognizant’s fair value per share ranges from a low of \$78.02 to a high of \$100. This is based on an analysis of different valuation methods and peer multiples that we have decided to focus on.

Appendix 32

Scenario Analysis

Stock Price Scenario Analysis



Our scenario analysis provides a breakdown of the gains/losses we can expect from our fair value calculation, based on any deviations from our forecast.

Francisco D'Souza



CEO (2007 - present)
Vice - Chairman of the Board (2018 - present)
Co-Founder

D'Souza holds a bachelors degree in Business Administration from University of Macau and a MBA degree from Carnegie Mellon. He has held many positions within Cognizant itself.

Director of North American Operations, VP of North American

John M. Dineen

**Independent Director**

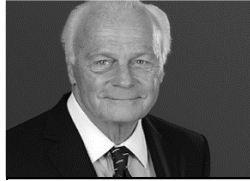
Dineen joined Cognizant's Board of Directors in April 2017. From 1986 to October 2014 he served in a variety of leadership roles at General Electric Company (GE), a global digital industrial company, including Chief Executive Officer of GE Healthcare, President and Chief Executive Officer of GE Transportation. John has Bachelor's degrees in Biology and Computer Science from the University of Vermont.

Rajeev Mehta

**President**

Mehta gained his bachelors degree from University of Maryland and proceeded to earn his MBA from dgree from Carnegie Mellon University. In addition to his duties of president, Mehta is also responsible for COO and CPO duties, and their emerging business accelerator units. Past positions within Cognizant were COO, amd SVP and General Manager of Cognzants Banking and & Financial Services.

John N. Fox Jr.

**Independent Director**

John Fox was elected to Cognizant's Board of Directors in December 2007. From 1998 until 2003 he served as Vice Chair of Deloitte & Touche LLP—a global professional services firm—and Global Director, Strategic Clients for Deloitte Consulting.

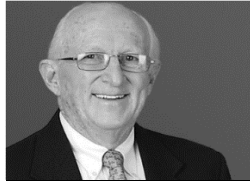
John holds a Bachelor's degree from Wabash College and an MBA degree from the University of Michigan.

Karen McLoughlin

**CFO**

Mclaughlin attended Wellesley College where she earned her bachelors degree in Economics, then moving onto an MBA degree at Columbia University. Prior to joining Cognizant as a SVP of Enterprise Transformation and Financial Planning & Analysis, she held prominent roles in other companies: Spherion Corp (6 years), Ryder Systems Inc. (3 years), PricewaterhouseCooper (6 years). McLaughlin is the current CFO of Cognizant.

John E. Klein

**Independent Director**

John E. Klein was elected to Cognizant's Board of Directors in March 1998 and served as the Chair of the Board from December 2003 to September 2018.

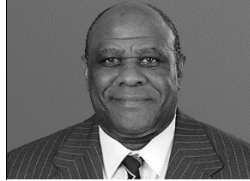
John holds a Bachelor's degree from the U.S. Merchant Marine Academy and an MBA degree from New York University.

Zein Abdalla

**Independent Director**

Zein attended Imperial College, London University where he earned a bachelors degree in electrical engineering. Prior to joining the Board of Directors in 2015, Abdalla was the President of PepsiCo, Inc., between 2012 and 2014. Zein currently serves on the Board of other companies including: The TJX Company (2012 - present), Mastercard Foundation, and Kuwait Food Company. He is also a board advisor to Mars, Incorporated and Imperial College Business Schools.

Leo S. Machay Jr.

**Independent Director**

Dr. Leo S. Mackay Jr. was appointed to Cognizant's Board of Directors in September 2012. He is currently Senior Vice President, Internal Audit, Ethics and Sustainability at Lockheed Martin Corporation, a global security and aerospace company.

Leo holds a Bachelor's degree from the United States Naval Academy, a Master's degree in Public Policy from the John F. Kennedy School of Government at Harvard University and a Ph.D. in Public Policy from

Maureen Breakiron-Evans

**Independent Director**

Evans was elected to the Board of Directors in May 2009. Prior to joining, she served as the CFO of Towers Perrin, a global professional services company from January 2007 to April 2008. She also serves on the BOD of Ally Financial Inc and is currently a member of the Audit and Digital Transformation Committee. Maureen holds a Bachelors of Business administration degree from Stetson University, an MBA degree from Harvard Business School and Masters of Liberal Arts degree from Stanford University.

Michael Patsalos-Fox

**Independent Director**

Michael Patsalos-Fox joined Cognizant's Board of Directors in July 2012 and was elected Chair of the Board in September 2018. He is the former Chief Executive Officer of Stroz Friedberg, Inc., a global cyber security firm, a position he held from 2013 to 2016.

Jonathan Chadwick

**Independent Director**

Jonathan Chadwick was elected to Cognizant's Board of Directors in April 2016. He was most recently Executive Vice President, Chief Financial Officer and Chief Operating Officer of VMware, Inc., a virtualization and cloud infrastructure solutions company, serving from November 2012 to April 2016. Jonathan is a Chartered Accountant in England and Wales and holds a Bachelor's degree with honors in Electrical and Electronic Engineering from the University of Bath in the United Kingdom.

Joseph M. Velli

**Independent Director**

Velli joined Cognizant's Board of Directors in December 2017. He previously served as Senior Executive Vice President and a member of the Senior Policy Committee of BNY Mellon. He's held numerous positions, such as heading Global Issuer Services, Global Liquidity Services, Pension and 401(k) Services, and Consumer and Retail Banking.

Joe holds a Bachelor's degree from William Paterson University and an MBA from Fairleigh Dickinson University.

Source: Cognizant; S&P Capital IQ

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