

IT Sector Update

INSTITUTIONAL RESEARCH

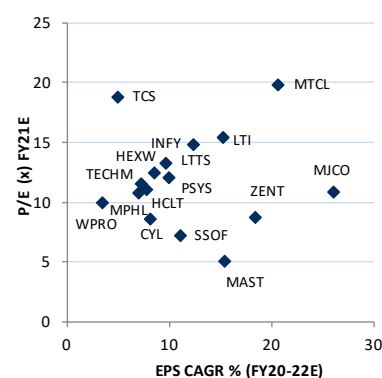
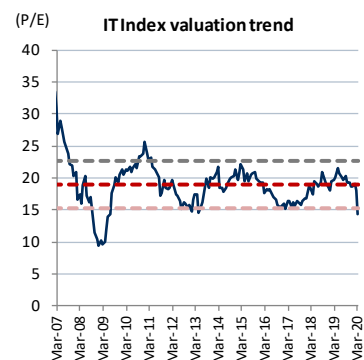
Indian IT: Built to last

IT sector is 'built to last' and will navigate through the near-term economic shocks. We have observed improving 'structural' trends in (1) Key demand drivers (performance and outlook of large enterprise clients for sector & company-specific), (2) Technology supply-chain (trends from leading global products & platform), and (3) Supply metrics (H-1B trends on wages, count & geo diversification).

Our checks with IT companies suggest 1) Moderate acceleration in deal pipeline, 2) 5-20% increase in ACV of digital deals, 3) Growth in digital driven largely by existing logos (increasing stickiness), 4) Continuity in vendor consolidation, 5) Limited impact on service delivery from COVID-19 (but pipeline conversion uncertainty), 6) Deal sourcing strategy evolving with increase in non-RFP/higher POC conversion & more joint GTM with partners, and 7) Re-skilling & training reducing the demand-supply gap in new technologies, despite the supply shortage.

- Uptick in Retail & CPG enterprise growth:** IT services growth multiplier to enterprise growth at 1.6x and expectation of growth acceleration is premised on: 1) Growth premium of IT services vs. enterprise growth below its historical avg. (BFSI at discount), and 2) Recovery in Retail & CPG enterprise growth.
- Robust Tech spend in BFSI, despite growth slowdown:** Tech spend intensity by large BFS remains strong, despite the recent slowdown (~6% YoY growth in BFS tech spend even though rev growth was 1.6% in CY19). Notwithstanding the interest rate trajectory impacting rev performance, tech spend is supported by 1) Investments to build strong digital channels/platforms, 2) Decommissioning of legacy applications and deployment of BOTs/automation, 3) Infrastructure modernisation with shift to hybrid cloud model, and 4) Investments in RegTech and Security.
- Onsite metrics improving:** Indian IT's H-1B dependence has lowered based on increasing localisation, lower H-1B count & geo-diversification offsetting the impact of rising H-1B wages. Onsite wage inflationary risk mitigated by geo diversification of H-1B (shift to lower cost delivery locations of Texas, Virginia, Florida, Connecticut as compared to California and NY-NJ cluster).
- Digital playbook intact for Indian IT & improving partner ecosystem:** Key indicators include (1) Shift to hybrid cloud and multi-cloud model (supportive of Indian IT's on-prem + cloud portfolio), (2) Increase in size of digital deals (Microsoft's USD 10mn+ signings, SAP's >EUR 5mn cloud deal signings), (3) Focus on verticalisation of cloud offerings a large opportunity, (4) Accelerated digital growth in core verticals – BFSI, Retail (4.5-5.0x increase in USD 10mn+ accounts over 4-yrs for F1000 Salesforce accounts in BFSI/Retail as compared to 3x increase overall).
- COVID-19:** We have cut EPS est. by ~7% (rev cut 2-7%) and TP by ~17%, factoring delay in pipeline conversion and core business vol./pricing impacting 1Q/2QFY21. Impact on travel & hospitality segment expected to be higher (Mindtree/Hexaware). Tailwinds include increase in outsourcing intensity, USD-INR and G&A (travel cost at 1.6 - 4.2% of rev). Maintain constructive view on the sector.
- Top picks: Infosys, LTI and Sonata**

Company	CMP (Rs)*	RECO	TP (Rs)
TCS	1,658	REDUCE	1,815
Infosys	555	BUY	735
Wipro	173	REDUCE	205
HCL Tech	451	BUY	560
TechM	595	BUY	750
LTI	1,491	ADD	1,710
Mphasis	701	ADD	845
LTTS	1,236	ADD	1,465
Mindtree	853	REDUCE	865
Hexaware	276	ADD	355
Cyient	326	ADD	415
Zensar	101	BUY	120
Persistent	595	ADD	810
Sonata	224	BUY	350
Majesco	262	BUY	455
Mastek	241	BUY	465



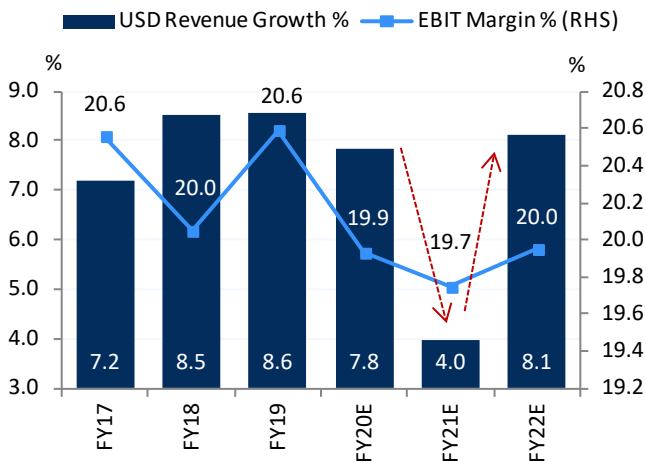
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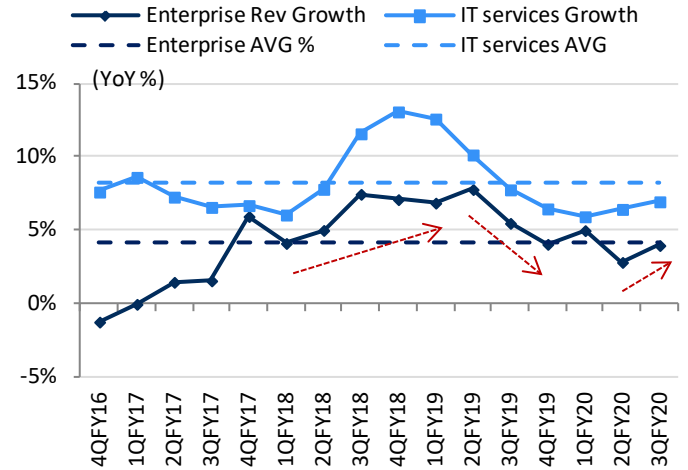
Focus Charts

Revenue and Margin trend



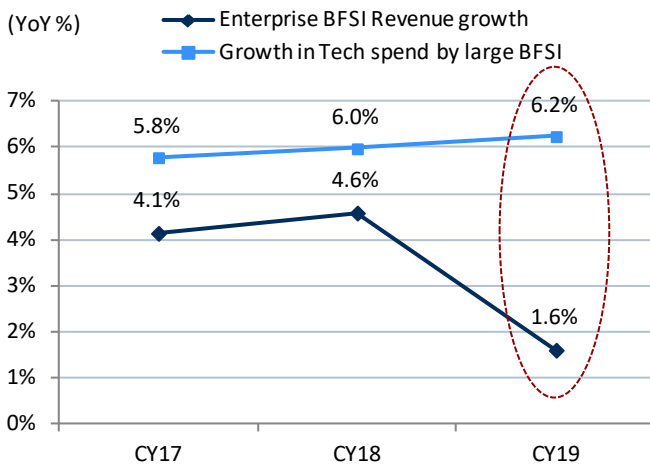
Source: Company, HDFC sec Inst Research, *Factoring recovery in 2HFY21E

IT services growth multiplier at 1.6x of enterprise



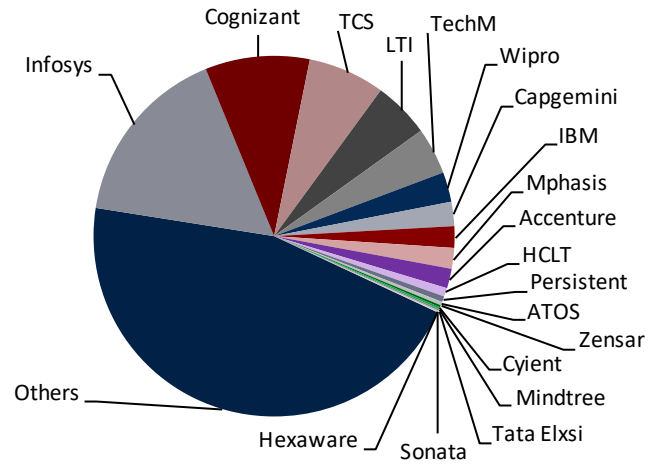
Source: USCIS, Company, HDFC sec Inst Research; Enterprise aggregation of T60 clients by H-1B count, IT services growth aggregation of ACN, CTSH, TCS, INFY, HCLT, Wipro, TechM

Strong growth in BFSI tech spend despite growth deceleration



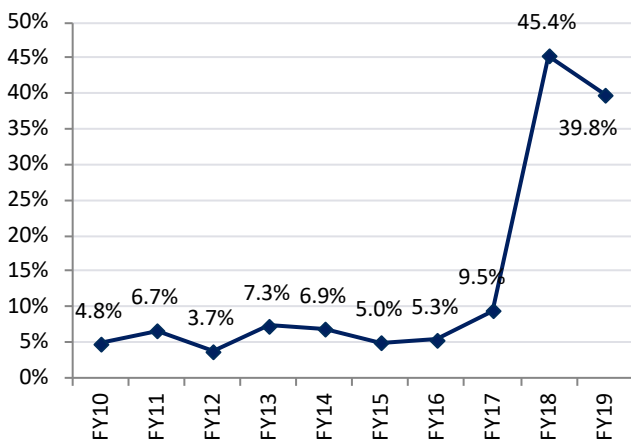
Source: Company, HDFC sec Inst Research; BFSI revenue/Tech spend aggregate of JPM, BofA, Wells, Citi, Morgan Stanley, Goldman Sachs, Capital One

Top-5 IT Services vendors account for 42% of H-1Bs deployed at Top-12 Enterprises clients



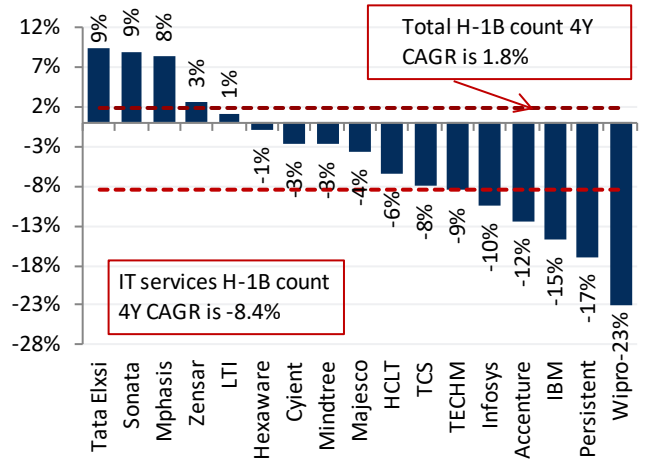
Source: USCIS, HDFC sec Inst Research, Enterprise clients aggregate of Apple, Citi, Amex, Cisco, J&J, Well Fargo, Aetna, Comcast, Travelers, Charles Schwab, JPM

Initial H-1B denials (IT Services*) has moderated



Source: USCIS, HDFC sec Inst Research, *Includes CTSH, ACN and CAP along with Indian IT

H-1B Count lower over FY15-19



Source: USCIS, HDFC sec Inst Research

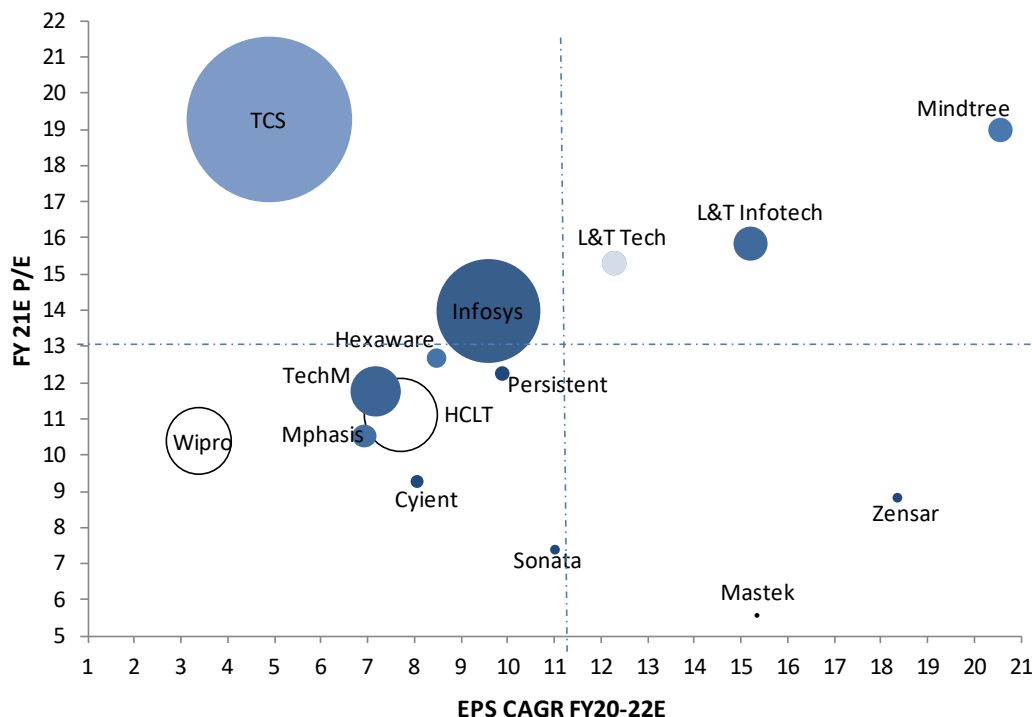
IT Sector Valuation Universe

Company	MCap (Rs bn)	CMP (Rs)	TP (Rs)	RECO	EPS (Rs)				P/E (x)				RoE (%)				\$ Rev CAGR% FY20-22	EPS CAGR% FY20-22
					FY19	FY20E	FY21E	FY22E	FY19	FY20E	FY21E	FY22E	FY19	FY20E	FY21E	FY22E		
TCS	6,221	1,658	1,815	REDUCE	83.9	86.9	88.0	95.6	19.8	19.1	18.8	17.3	36.1	35.8	35.3	37.6	4.6	4.9
Infosys	2,356	555	735	BUY	37.1	38.3	41.7	46.0	14.9	14.5	13.3	12.1	24.3	25.5	27.1	27.5	6.8	9.6
Wipro	987	173	205	REDUCE	15.8	17.5	17.3	18.7	11.0	9.9	10.0	9.3	17.3	17.7	16.4	15.3	3.6	3.4
HCL Tech	1,222	451	560	BUY	37.3	40.1	40.6	46.5	12.1	11.2	11.1	9.7	26.0	23.8	20.4	20.1	7.6	7.7
TechM	575	595	750	BUY	48.9	50.5	51.4	58.0	12.2	11.8	11.6	10.3	22.0	21.4	19.9	19.8	6.2	7.2
Tier-1 IT Median									12.2	11.8	11.6	10.3	24.3	23.8	20.4	20.1	6.2	7.2
LTI	259	1,491	1,710	ADD	87.1	85.8	96.4	113.9	17.1	17.4	15.5	13.1	34.6	28.1	27.1	27.6	12.3	15.2
Mphasis	131	701	845	ADD	57.6	61.7	64.8	70.6	12.2	11.4	10.8	9.9	20.0	20.9	20.0	19.9	8.2	6.9
L&T Tech	129	1,236	1,465	ADD	67.8	77.4	83.1	97.6	18.2	16.0	14.9	12.7	32.0	29.9	27.3	27.2	10.9	12.3
Mindtree	140	853	865	REDUCE	44.1	39.8	43.0	57.8	19.4	21.4	19.9	14.8	24.9	18.8	20.5	24.4	7.5	20.6
Hexaware *	82	276	355	ADD	19.6	21.5	22.0	25.3	14.1	12.8	12.5	10.9	26.5	24.6	22.0	22.3	9.4	8.5
Cyient	37	326	415	ADD	43.6	35.8	37.7	41.8	7.5	9.1	8.6	7.8	19.5	15.1	14.7	14.9	3.3	8.1
Zensar	23	101	120	ADD	14.2	10.7	11.5	15.0	7.1	9.4	8.8	6.7	17.6	11.9	11.6	13.7	5.5	18.3
Persistent	45	595	810	ADD	47.8	48.0	49.2	57.9	12.4	12.4	12.1	10.3	15.7	14.7	14.9	15.8	9.3	9.9
Tata Elxsi	45	723	NA	NR	46.6	40.0	48.3	57.0	15.5	18.1	15.0	12.7	34.5	24.5	25.4	25.5	12.5	19.4
Sonata	23	224	350	BUY	23.7	28.2	30.9	34.8	9.5	8.0	7.3	6.5	35.1	35.7	34.6	34.4	9.9	11.0
Intellect	8	63	NA	NR	7.7	(0.3)	4.3	9.9	8.3	NM	14.9	6.4	11.1	(0.4)	5.4	11.4	11.9	NA
eClerx	15	393	NA	NR	61.7	60.0	57.7	59.8	6.4	6.5	6.8	6.6	17.6	16.0	15.4	14.8	0.7	(0.2)
Majesco	7	262	455	BUY	18.3	19.3	24.0	30.7	14.3	13.5	10.9	8.5	8.4	7.8	9.1	10.6	10.9	26.0
HGS	12	571	NA	NR	84.6	127.0	128.0	141.3	6.8	4.5	4.5	4.0	8.5	14.1	13.6	13.7	4.5	5.5
Mastek	7	241	465	BUY	39.9	41.0	47.1	54.6	6.0	5.9	5.1	4.4	15.9	15.4	15.6	15.7	26.5	15.3
Tier-2 IT AVG									11.6	11.9	11.2	9.0	21.5	18.5	18.5	19.5	9.6	12.6
Tier-2 IT Median									12.2	11.9	10.9	8.5	19.5	16.0	15.6	15.8	9.4	11.6

Company	MCap (USD bn)	CMP USD	TP	RECO	EPS (USD)				P/E (x)				RoE (%)				\$ Rev CAGR% FY19-22	EPS CAGR% FY19-22
					FY19	FY20E	FY21E	FY22E	FY19	FY20E	FY21E	FY22E	FY19	FY20E	FY21E	FY22E		
Accenture	100	153	NA	NR	6.7	7.4	7.8	8.6	22.6	20.7	19.5	17.8	42.0	38.6	33.3	31.1	NA	8.4
Cognizant	24	44	NA	NR	3.8	4.1	4.4	4.8	11.6	10.7	9.8	9.1	16.4	18.9	19.3	18.6	NA	8.5
Capgemini^	10	56	NA	NR	5.9	6.9	7.7	8.6	10.7	9.1	8.1	7.3	10.8	12.8	13.2	12.9	NA	13.6
Global IT AVG									15.0	13.5	12.5	11.4	23.1	23.4	21.9	20.8	NA	10.2
Global IT									11.6	10.7	9.8	9.1	16.4	18.9	19.3	18.6		8.5

Source: HDFC sec Inst Research, Bloomberg, *Dec YE, ^CMP, MCap and EPS in EUR terms, CMP as on 17-03-2020

IT Sector P/E and EPS Growth Matrix



Source: HDFC sec Inst Research, Note: Size of Bubble represents M-cap

IT index down 25% over the past month

Current drawdown of ~30% off peak is highest since GFC in 2008 (60%) and 2000-01 (85%)



Stock Performance (%)

Stocks/Index	1W	1M	3M	6M	1Y	3Y CAGR	5Y CAGR
Nifty	(11.9)	(23.3)	(23.2)	(13.0)	(16.9)	3.0	3.6
Nifty IT	(15.2)	(24.6)	(21.3)	(22.8)	(20.6)	3.7	(0.7)
Indian IT Sector							
TCS	(14.0)	(23.0)	(21.6)	(20.1)	(16.8)	8.5	4.7
Infosys	(17.2)	(26.1)	(20.1)	(31.6)	(20.9)	1.3	(0.7)
Wipro	(16.2)	(26.3)	(26.6)	(26.4)	(35.4)	(5.7)	(8.4)
HCL Tech	(16.6)	(26.5)	(19.2)	(14.6)	(12.4)	0.0	(3.1)
Tech Mahindra	(14.4)	(27.6)	(22.3)	(14.4)	(25.9)	7.3	(3.3)
L&T Infotech	(18.4)	(23.3)	(7.4)	(5.9)	(5.3)	29.9	NA
Mphasis	(12.8)	(24.5)	(20.4)	(29.4)	(29.8)	1.2	9.8
L&T Technology	(16.8)	(25.7)	(15.0)	(21.3)	(14.8)	19.0	NA
Mindtree	(8.1)	(15.3)	7.7	22.2	(12.0)	19.8	2.9
Hexaware	(19.9)	(24.8)	(17.4)	(25.5)	(18.1)	7.2	0.4
Cyient	(10.0)	(21.1)	(10.8)	(21.7)	(48.4)	(9.6)	(8.9)
Tata Elsi	(17.3)	(22.0)	(10.0)	21.5	(21.3)	0.5	5.1
Zensar	(18.9)	(29.1)	(40.7)	(53.0)	(56.0)	(17.7)	(3.3)
Persistent	(12.3)	(14.0)	(10.5)	4.8	(13.8)	(3.4)	(6.3)
eClerx	(17.5)	(31.8)	(22.9)	(17.1)	(64.5)	(35.0)	(18.7)
Sonata	(26.6)	(32.5)	(24.3)	(26.4)	(29.2)	8.1	6.7
Intellect	(34.4)	(49.8)	(54.6)	(68.0)	(65.6)	(8.0)	(4.4)
Majesco	(24.3)	(29.1)	(29.5)	(32.6)	(41.9)	0.5	NA
HGS	(18.5)	(31.9)	(3.4)	0.9	(5.1)	0.6	2.1
Mastek	(31.8)	(34.4)	(39.0)	(26.0)	(40.9)	15.3	(7.6)
Global Peers*							
Accenture	(12.6)	(28.2)	(25.0)	(22.0)	(8.7)	6.0	10.4
Cognizant	(21.9)	(36.3)	(29.3)	(32.4)	(42.4)	(12.5)	(8.8)
Capgemini	(24.5)	(45.6)	(41.5)	(42.2)	(41.2)	(9.4)	(3.0)

Source: Bloomberg, HDFC sec Inst Research, *USD/Local currency terms, Prices as on 16-03-2020

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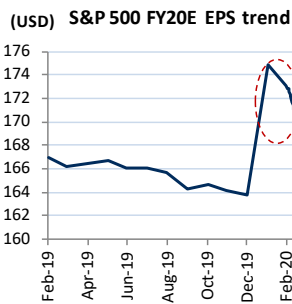
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Enterprise Trends: the shape of demand curve

IT services growth multiplier at 1.6x enterprise growth

IT services growth has averaged 1.6x enterprise growth

S&P 500 earnings est cut by ~3% since Feb-20



■ In this enterprise study we've compared IT sector growth markers with revenue growth trends of their large clients, weighted by H-1B/client as per data from USCIS. We reckon that the focus client set (T-60 for the sector trends and T-20 for company trends) provides deeper insights as compared to a comparison with broader S&P 500 and sub-indices.

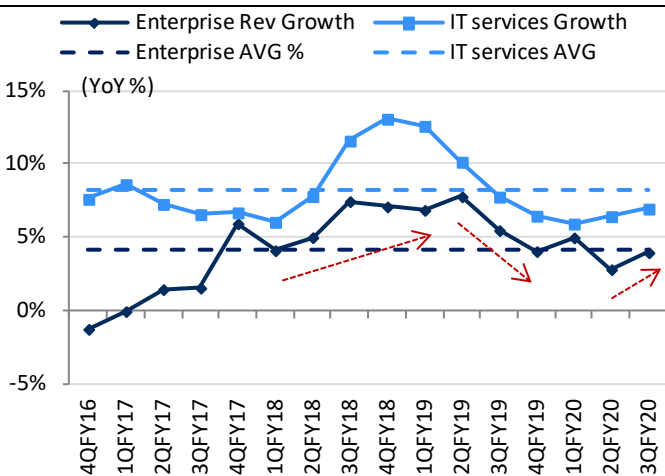
■ Performance of large enterprise clients improved in Dec-qr reaching the 3-yr avg. of 4.2% YoY. IT services (aggregate of TCS, INFY, HCLT, Wipro, TechM, Accenture, Cognizant with TTM rev at USD 118bn) revenue performance also accelerated mildly, yet remains below the 3-yr avg. of 8.2% YoY.

■ We have assessed the growth trends across large clients (based on H-1B FTEs) of IT companies vs. NorthAm revenue growth trends of the IT companies. While the co-relation is sub-optimal at 0.5 (limitations of change in client-mix, delivery via offshore/L1), the correlation increases (upto 0.8) with a lag of 2-4 quarters.

■ Arguably, the inherent factors that alter the correlation include 1) Non-discretionary scope of projects, 2) Increased outsourced intensity despite slowdown (or vice versa), and 3) Dynamics of a multi-vendor environment. Despite the above factors, we believe that the empirical study and the broader correlation provide a compass towards tracking the extremities and the medians.

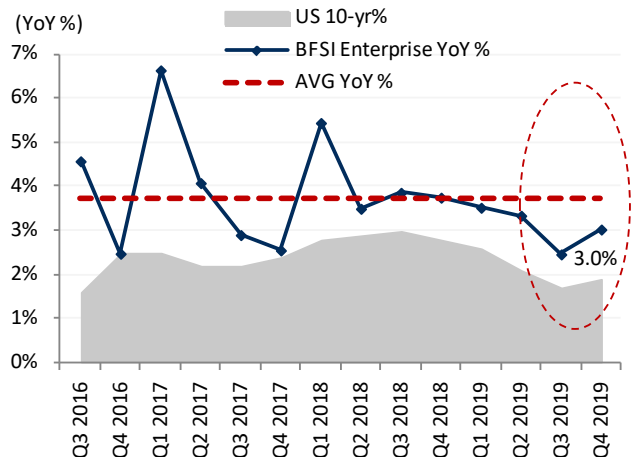
■ Key inferences from empirical study that can be drawn are 1) Growth uptick indication for IT services based on growth premium of IT services companies vs. Enterprise growth below their historical avg. with acceleration in enterprise growth in Dec-qr, 2) Growth surprise on the downside for IT services' BFSI vertical appears minimal observing the prior growth premium/discount to enterprise growth rate. However, recent spate of guidance cuts by multiple enterprises impacted by COVID-19 (detailed later) likely to alter the near-term trajectory with pull-back in discretionary IT spend.

IT services growth multiplier at 1.6x enterprise growth



Source: Company, HDFC sec Inst Research; Enterprise aggregation of T60 enterprises by H-1B count, IT services growth aggregation of Accenture, Cognizant, TCS, INFY, HCLT, Wipro, TechM

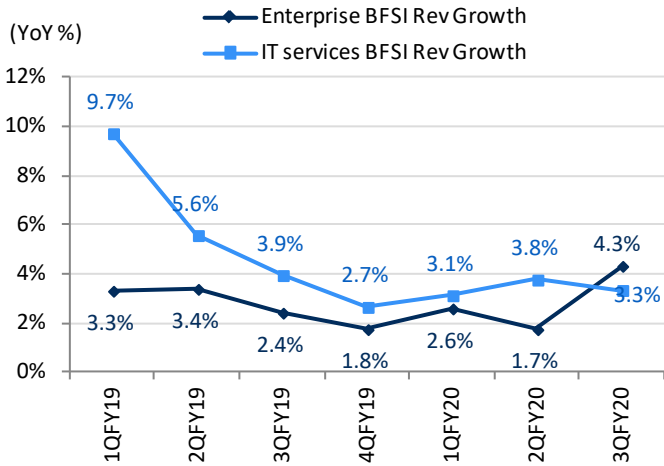
BFSI recovered, but rate cut and capital market segment are risks



Source: Company, HDFC sec Inst Research; Aggregate of Citi, BofA, JPM, Morgan Stanley, Capital One, Charles Schwab, Wells Fargo, Citizens Financial, SunTrust, Allstate, State Street, UBS, AIG

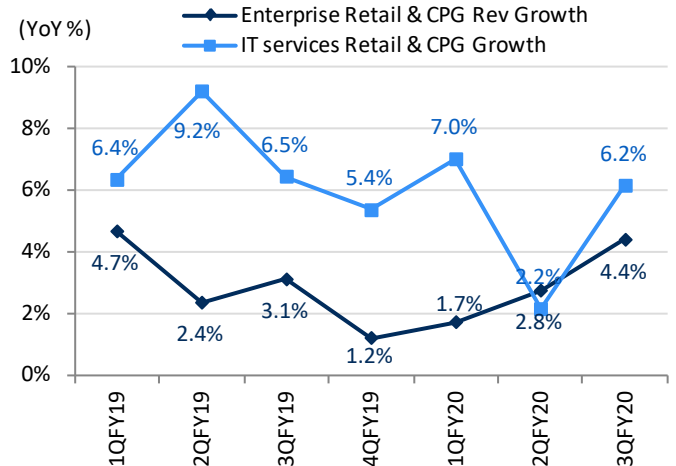
- BFSI growth expected to be negatively impacted by interest rate cut and volatility in capital markets segment. BFSI enterprise (large accounts of TCS, INFY, Wipro, TechM, Accenture, Cognizant) growth rate at 3.3% YoY in Dec-qr as compared to its 2-yr avg. of ~4.5%.
- Enterprise that constitute T20 accounts of TCS and Infosys have recovered from the 2-3 qtr lows which is a positive read-across for IT sector growth. In the absence of worsening macro trends, the growth recovery in enterprises may translate into stronger discretionary spend by enterprises.

BFSI enterprise rev & IT services BFSI rev near parity



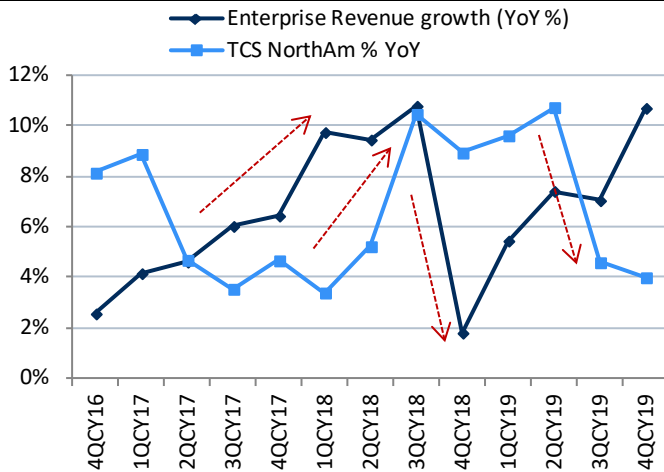
Source: Company, HDFC sec Inst Research; IT services aggregate of TCS, INFY, Wipro, TechM, Accenture, Cognizant and Enterprise BFSI aggregate of Citi, JPM, BofA, Wells Fargo, Charles Schwab, SunTrust, UBS, Discover Fin, Synchrony, Capital One, Travelers, HSBC, CNA Fin, AIG, Chubb, Hartford, Barclays, Northern Trust

Recovery in Retail & CPG



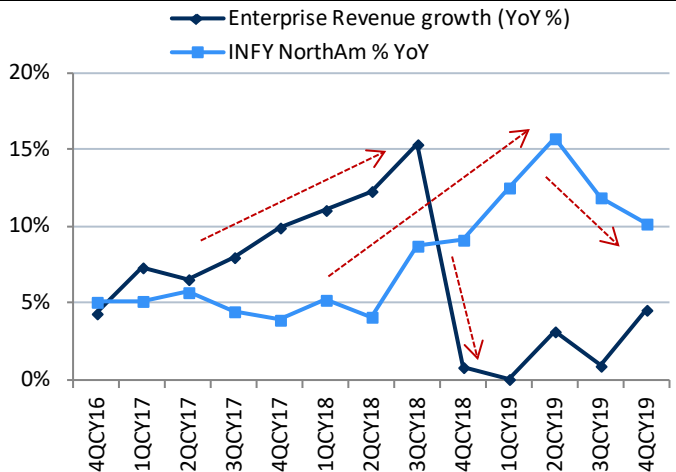
Source: Company, HDFC sec Inst Research; IT services aggregate of TCS, INFY, HCLT, Wipro and Enterprise Retail & CPG aggregate of Walmart, Home Depot, GAP, Nike, Kohl's, Best Buy, MacDonald

TCS' NorthAm & Enterprise growth trend



Source: Company, HDFC sec Inst Research; Enterprise growth wt avg. of Citi, Apple, Home Depot, Humana, CVS, Cisco, BofA, Walgreens, Comcast, Amex, Morgan Stanley, J&J, Cigna, FCA, United Airlines

INFY's NorthAm & Enterprise growth trend



Source: Company, HDFC sec Inst Research; Enterprise growth wt avg. of Apple, Amex, Capital One, Consolidated Edison, Charles Schwab, Wells Fargo, AT&T, Cisco, Citizens Financial, Comcast, Toyota, SunTrust, BP, GAP, Allstate

Top-20 Clients of IT Services Vendors by H-1B

S.No	TCS	Infosys	Wipro	HCL Tech	Tech Mahindra
1	Citigroup	Apple	Capital One	United Services Auto	AT&T
2	Apple	American Express	Apple	T-Mobile	Nissan
3	Home Depot	Capital Group	Charles Schwab	Merck & Co	Cisco
4	Humana	Aetna	State Street Bank	Microsoft	General Electric
5	CVS Health	Edison	Citigroup	Google	Chevron
6	Cisco	Charles Schwab	Cisco	Cisco	Google
7	United Services Auto	Citigroup	FedEx	Collins Aerospace	Master Card
8	Bank of America	Well Fargo	Hewlett Packard	Intel	Applied Material Inc
9	Walgreen	AT&T	US Bank	Boeing	Rackspace
10	Comcast	Cisco	MasterCard	FedEx	Nestle
11	American Express	Citizen Bank	Honda	Johnson & Johnson	GE Appliance
12	Morgan Stanley	Comcast	Cigna	Becton Dickinson	Morgan Stanley
13	Johnson & Johnson	SunTrust Bank	Kohls	BNSF Railway	Thomson Reuter
14	Cigna	Toyota	Nike	AT&T	Navistar
15	Kaiser	PWC	VF Services, Inc.	Staples	GE Healthcare
16	Farmers Group	BP Corporation	UBS	The Walt Disney	Genentech Inc
17	FCA	The Gap Inc	Change Healthcare	Bank of America	Verizon
18	JP Morgan	Allstate Insurance	Microsoft	Ford Motor	Ford Motor
19	State Farm	Fidelity	T-Mobile	Xerox	CenturyLink
20	United Airlines	Northwestern Mutual	Johnson & Johnson	AIG	T-Mobile

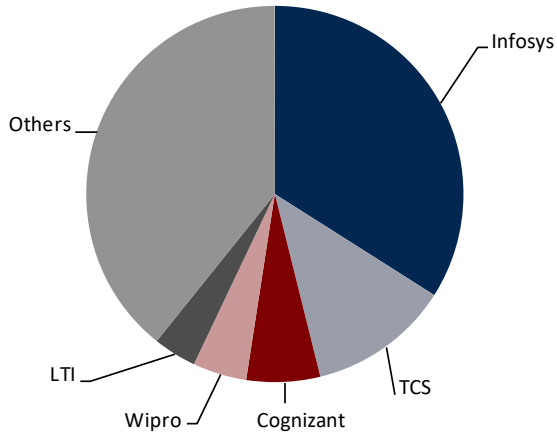
Source: USCIS, HDFC sec Inst Research

S.No	Cognizant	LTI	Mphasis	Capgemini	Mindtree
1	JP Morgan	Citigroup	JP Morgan	Discover Financial	Microsoft
2	Aetna	Travelers	Charles Schwab	Citigroup	Southwest Airlines
3	Anthem	Johnson & Johnson	FedEx	Synchrony Financial	Lincoln Group
4	Centene	Chevron	AIG	Morgan Stanley	Equifax
5	Kaiser	Apple	Hewlett Packard	State Farm	Marriott International
6	American Express	Marsh & McLennan Co	DXC Technology	Well Fargo	American Express
7	Travelers	Cisco	First Republic Bank	Mufg Union Bank	Home Depot
8	Well Fargo	UTC	SE2	Farmers Group	AIG
9	Capital One	Honda	Sprint	Barclays	Empowered Benefits
10	Comcast	Viacom	Advisor Group	HSBC	Delta Air Lines
11	Apple	OTIS	QBE Americas	Mcdonald'S	Toyota
12	Metropolitan Life	Procter and Gamble	Well Fargo	Chubb	Catalina
13	CVS Health	Phillips 66	Wyde Corporation	Coca Cola	Avis
14	First Data	Catalent Pharma Solutions	Microsemi Corporation	The Walt Disney	Procter & Gamble
15	The Hartford	LOreal	TD Ameritrade	General Electric	Asso. Of American Medical
16	Verizon	Insurity	United Airlines	Moog Inc	Academy Sports
17	Walgreen	DCP Midstream	The Western Union Company	Cna Financial Corp	Wolters Kluwer
18	Farmers Group	Terex Corporation	Pfizer	Ge Aviation	Staples
19	Liberty Mutual	CBS Corporation	Thomson Reuter	Metlife	Harvard Business School
20	Pepsi Co	Procter & Gamble	Blue Shield of California	T-Mobile	Google

Source: USCIS, HDFC sec Inst Research

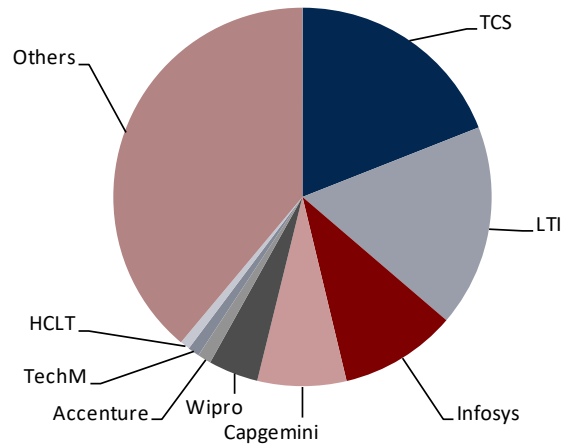
Key Tech vendors for large Enterprise (based on H-1B FTEs)

Apple: Infosys & TCS account for 46% of Total H-1Bs



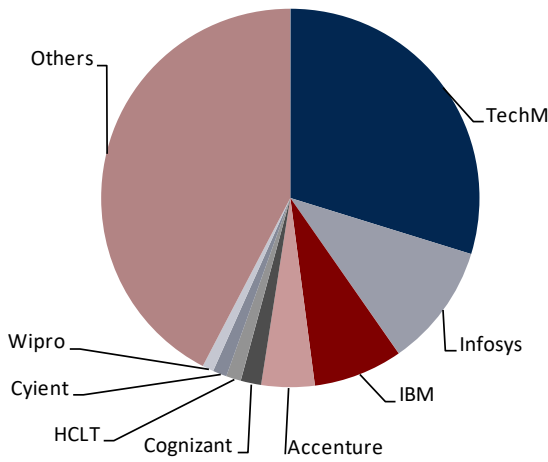
Source: USCIS, HDFC sec Inst Research

Citigroup: TCS & LTI account for 36% of Total H-1Bs



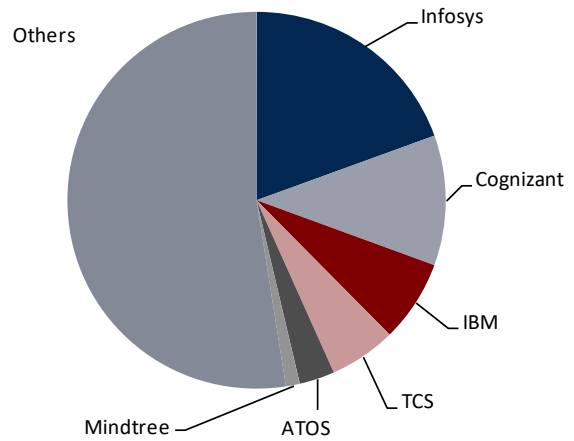
Source: USCIS, HDFC sec Inst Research

AT&T: TechM & Infosys account for 40% of Total H-1Bs



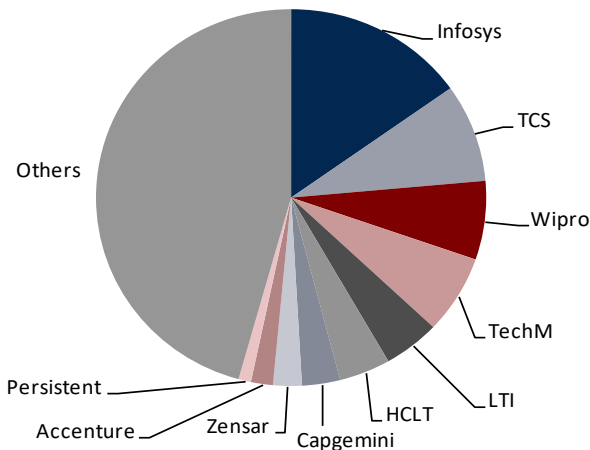
Source: USCIS, HDFC sec Inst Research

AMEX: Infosys & Cognizant account for 31% of Total H-1Bs



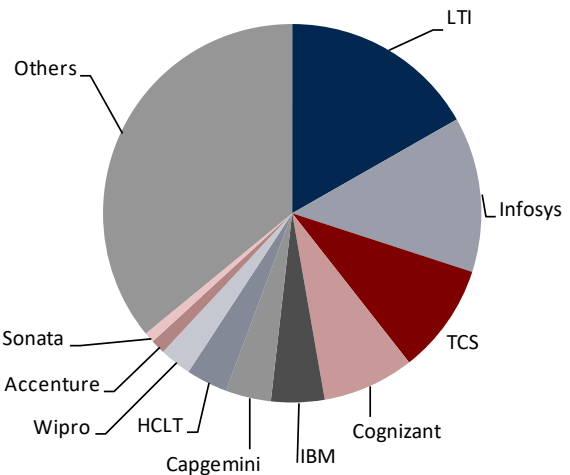
Source: USCIS, HDFC sec Inst Research

Cisco: Infosys & TCS account for 24% of Total H-1Bs



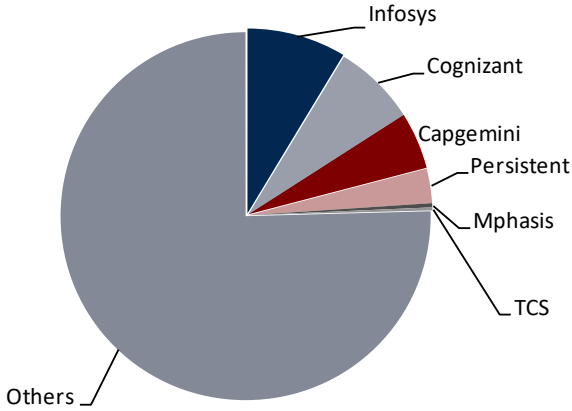
Source: USCIS, HDFC sec Inst Research

J&J: LTI & Infosys account for 30% of Total H-1Bs



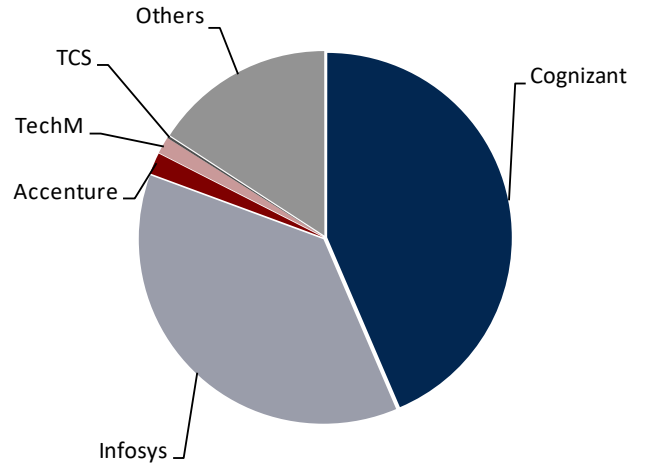
Source: USCIS, HDFC sec Inst Research

Wells Fargo: Infosys & Cognizant account for 16% of H-1Bs



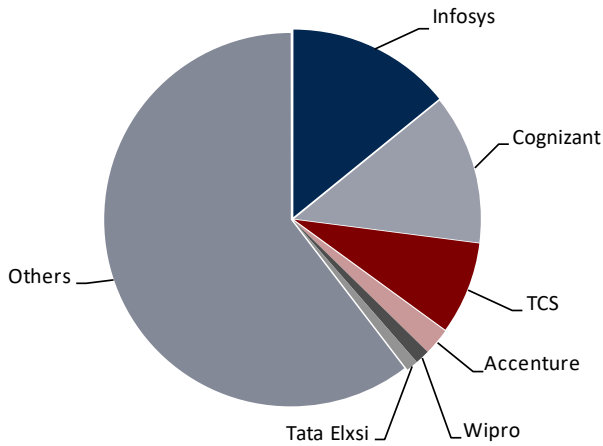
Source: USCIS, HDFC sec Inst Research

Aetna: Cognizant & Infosys account for 81% of Total H-1Bs



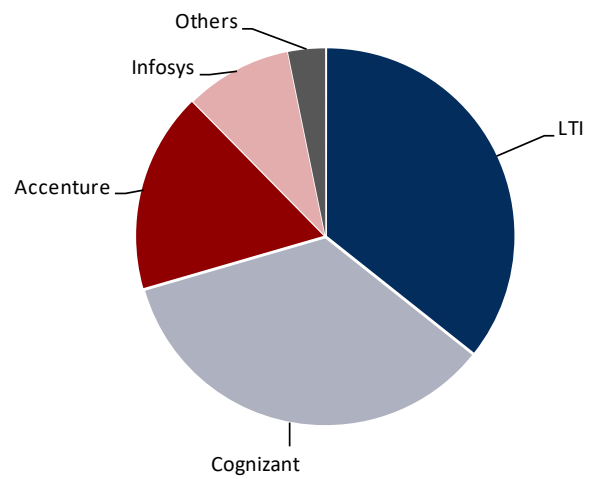
Source: USCIS, HDFC sec Inst Research

Comcast: Cognizant & Infosys account for 27% of Total H-1Bs



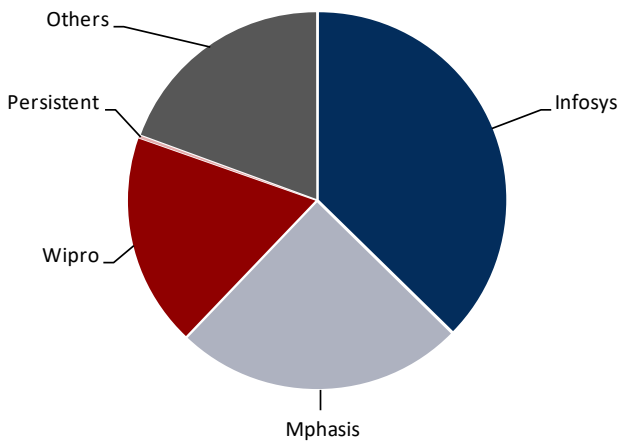
Source: USCIS, HDFC sec Inst Research

Travelers: Cognizant & Infosys account for 71% of Total H-1Bs



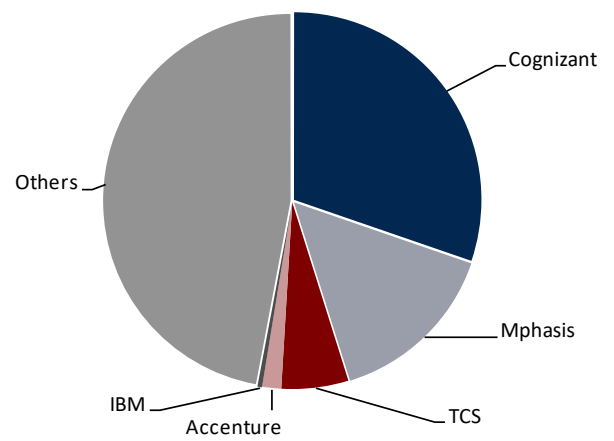
Source: USCIS, HDFC sec Inst Research

Charles Schwab: Mphasis & Infosys account for 62% of Total H-1Bs



Source: USCIS, HDFC sec Inst Research

JPMorgan Chase: Mphasis & Cognizant account for 45% of Total H-1Bs



Source: USCIS, HDFC sec Inst Research

BFS Tech spend intensity increasing

European banks' performance have lagged US banks

As per VMware, more than half of T30 global banks have made major commitment to modernise their IT infrastructure

Temenos AG has guided for 10-15% growth in CY20 as compared to 11% CC organic in CY19

- We have assessed the performance, growth outlook/guidance and commentary on tech spends for >20 large BFSI customers for IT sector. The interest rate trajectory following the recent rate cuts as well as the impact on capital market segment may dent IT spend by large BFS. Tech spend intensity has increased, despite the recent slowdown in revenue growth of large BFS enterprises following the interest rate trajectory (6.2% YoY in tech spend vs. 1.6% growth in enterprise revenue in CY19).

- Some of the key trends in tech spend include 1) Investments to build strong digital channels/platforms, 2) Decommissioning of legacy applications and deployment of BOTs/automation, 3) Continued in-sourcing with growth in tech spend of large BFSI ahead of the IT services revenue from BFSI vertical, 4) Infrastructure modernisation with shift to hybrid cloud model, 5) Investments in RegTech and Security.

Large US BFS Aggregate (JPM, BofA, Citi, Wells Fargo, Goldman Sachs, Morgan Stanley) (USD mn)	FY18	FY19	YoY %
Revenue (NII+Non-interest income)	439,209	447,845	2.0%
PAT	118,213	118,319	0.1%

Large Europe BFS Aggregate (HSBC, Deutsche, Barclays, RBS, UBS, Banco Santander, BNP Paribas) (EUR mn)	FY18	FY19	YoY %
Revenue (NII+Non-interest income)	211,094	213,985	1.4%
PAT	36,150	26,200	-27.5%

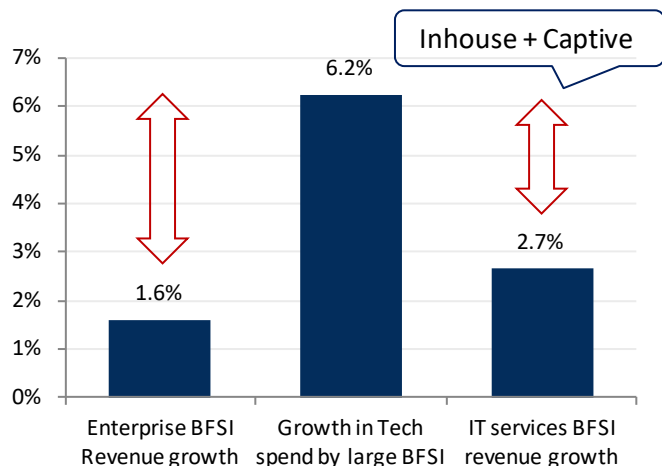
Source: Company, HDFC sec Inst Research

Large BFSI enterprise by H-1B FTEs

Citigroup	Wells Fargo	JP Morgan
Aetna	Travelers	Charles Schwab
Discover Financial	Morgan Stanley	SunTrust Bank
Metlife	AIG	Capital One
Bank of America	State Farm	Citizens Bank
UBS	Northwestern Mutual	Allstate Insurance
Chubb	The Hartford	Fidelity
Synchrony Financial	State Street	Fannie Mae
Nationwide	Liberty Mutual	

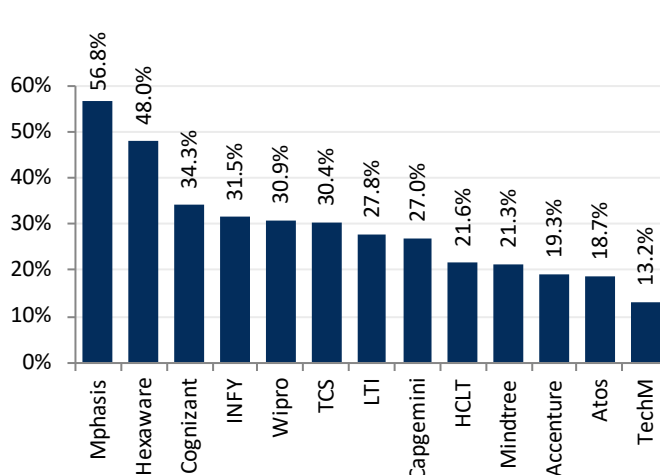
Source: USCIS, HDFC sec Inst Research

Growth in Tech spend by large BFS spend > IT services revenue growth from BFSI vertical



Source: Company, HDFC sec Inst Research

BFSI % of Revenue



Source: Company, HDFC sec Inst Research, Dec-qtr

Tech Commentary by large global BFSI

Citigroup's Tech & communication spend at USD 7.1bn in CY19, -1.6% YoY, while JPM's Tech & communication expense at USD 9.8bn grew 11.6% YoY.

BofA's Information processing & communication spend (USD 4.6bn) grew at 2% in CY19, Wells Fargo's Technology & equipment spend (USD 2.8bn) grew 13.1%

Barclays' infrastructure cost has remained flat over CY16-19

- **Citigroup:** "Investments will be in the form of technology, people and focused on things such as data, governance and infrastructure. And so, those are important investments that we'll be making. And those three drivers will be what impacts or is underneath that guidance. As I mentioned, we will move to keep the expenses flat." **Key vendors: TCS, INFY, Wipro and LTI.**
- **Bank of America:** BofA completed USD 3bn investments in new technology code in CY19 towards improving digital and mobile capabilities. Tech spend was flat in CY19 at USD 3.3bn and it has guided for flat overall spend in CY20. **Key vendors: TCS and Infosys.**
- **Wells Fargo:** Re-assessment of technology spend by Wells Fargo in the wealth and investment management division impacted IT projects, following the strategic priorities with the reconstituted leadership team. "Our opportunity to use technology, to drive both automation and new solutions will only grow in importance." **Key vendors: Infosys, Cognizant, Capgemini and Persistent.**
- **Morgan Stanley:** "We are making a number of numerous investments across all of our platforms to enhance the digitalization of our firm and overall technological capabilities given our scale and other efficiencies." **Key vendors: Capgemini, TCS, Infosys and TechM.**
- **UBS:** "Last year, we spent \$3.4 billion on technology, which included our investment in transformation to make us more efficient and effective. A few examples are moving processes to the cloud, decommissioning over 400 legacy application and deploying 1,100 robots. In Global Wealth Management, we invested over \$100 million in our strategic initiatives, including development of ultra high net worth capabilities and increasing our presence in APAC." One area where we've been active and driving efficiency is in-sourcing technology headcount, IT and other services; outsourcing costs are down more than \$250 million or 19%, partly offset by higher personnel expenses and we are reducing risk and improving effectiveness. **Key vendors: Cognizant, Infosys, Wipro.**
- **Goldman Sachs:** "Our platform rollout to third-party clients remains planned for the first half of this year. We launched the firm's first ever credit card platform in partnership with Apple and generated over \$850 million in net revenues across our broader Consumer banking business. We realigned our investing businesses into a cohesive unit to support our alternatives growth platform. We enhanced the effectiveness and efficiency of the firm by integrating major portions of our operations and engineering teams into our businesses." There have been new CTO/CIO hires at Goldman which may also impact sourcing strategy. **Key vendors: Infosys and Capgemini.**
- **AIG:** "In IT, where we have two workstreams, we will transform the operating model of the function itself and build a modern, scalable and secured technology foundation to improve operational stability and enable faster business technology deployment. The key components of this program focus on materially eliminating legacy technology debt, simplifying our business application portfolio and strategically moving to cloud services. To deliver on this digital-first approach, we will modernize our underlying technology infrastructure." **Key vendors: Cognizant, TCS, Mphasis and Mindtree.**
- **Capital One:** "We remain all-in on our technology transformation and our progress continues. We're realizing significant and growing benefits across the company. We expect the larger improvement in 2021 to be aided by the full exit of the data centers and the associated cost of straddling two environments, increased traction in our businesses enhanced by technology." **Key vendors: Infosys, Cognizant, Wipro and Accenture.**

- **Discover Financial:** “We'll continue to invest in growth. But I'm also optimistic about our ability to find efficiencies as well especially leveraging some of those investments on the technology side, around robotic process automation around advanced analytics.”
- **SunTrust Bank:** “We expect to achieve an annual run rate of investment of approximately \$200 million by the fourth quarter of 2020. These investments will be directed towards personnel, branding, digital and technology. **Key vendors: Cognizant.**
- **Citizens Bank:** “We aim to deliver a more customer-centric efficient and agile environment by modernizing our IT practices and our cross organization operating model. This IT work will further modernize our infrastructure and platforms and transform our technology delivery approach. We are accelerating migration to the cloud, utilizing data and artificial intelligence more ambitiously and digitizing end-to-end processes.” **Key vendors: Infosys, Accenture.**
- **The Hartford:** “We've been on a program to invest in our platform, whether it be, call it technology, whether it be, digital, whether it be, product and underwriting.” **Key vendors: Cognizant, Infosys, Accenture.**
- **Synchrony Financial:** “During our five years as a public company, we have made significant investments in people and technology, and that has propelled the company forward and enabled the development of innovative offerings for our partners, and enhanced our capabilities and user experiences for our cardholders. We continue to see strong growth of 7% to 8% in our Payment Solutions and CareCredit sales platforms. Technology and data analytics remain a key focus as we strive to provide best-in-class customer experiences.” **Key vendors: Capgemini, Accenture.**
- **Fidelity:** “Disrupted technologies and new business models are forcing the industry to evolve by embracing future ready innovations like automation, artificial intelligence and machine learning, cloud native technologies in digital omnichannel. We will be the primary beneficiary of the growing momentum towards outsource cloud-based technology from legacy in-house software. Finally, in capital markets, our investments in advanced technology, in Reg-tech are paying dividends.” **Key vendors: Infosys, Capgemini, TCS.**

Global BFS segmental performance

Capital market/Investment banking sub-segment lagging overall growth

JPMorgan Chase

USD mn	FY18	FY19	YoY %	% of Total
Consumer & Community Banking	52,079	55,883	7.3%	47.1%
Corporate & Investment Bank	36,448	38,298	5.1%	32.3%
Commercial Banking	9,059	8,984	-0.8%	7.6%
Asset & Wealth Management	14,076	14,316	1.7%	12.1%
Corporate	(128)	1,211	NA	1.0%
Total Net Revenue	111,534	118,692	6.4%	100.0%
PAT	32,474	36,431	12.2%	30.7%

Bank of America

USD mn	FY18	FY19	YoY %	% of Total
Consumer Banking	37,618	38,587	2.6%	42.0%
Global Wealth & Investment Management	19,453	19,537	0.4%	21.3%
Global Banking	20,001	20,483	2.4%	22.3%
Global Markets (IB, Brokerage)	16,183	15,614	-3.5%	17.0%
Others	(1,625)	(2,382)	NA	-2.6%
Total Net Revenue	91,630	91,839	0.2%	100.0%
PAT	26,696	25,998	-2.6%	28.3%

BofA's Global market segment and Citi's Equity market segments underperformed the other segments

Wells Fargo

USD mn	FY18	FY19	YoY %	% of Total
Community Banking	46,913	45,316	-3.4%	53.3%
Wholesale Banking	28,766	27,677	-3.8%	32.5%
Wealth & Investment Management	16,376	17,341	5.9%	20.4%
Other	(5,587)	(5,271)	NA	-6.2%
Total Net revenue	86,468	85,063	-1.6%	100.0%
PAT	22,390	19,550	-12.7%	23.0%

Citigroup

USD mn	FY18	FY19	YoY %	% of Total
Global Consumer Banking	32,339	32,971	2.0%	44.4%
- Retail Banking	12,627	12,549	-0.6%	16.9%
- Cards	19,712	20,422	3.6%	27.5%
Institutional Clients Group	38,325	39,301	2.5%	52.9%
Banking	21,236	21,888	3.1%	29.5%
- Treasury & Trade Solutions	9,914	10,293	3.8%	13.9%
- Investment Banking	5,011	5,216	4.1%	7.0%
- Private Bank	3,398	3,458	1.8%	4.7%
- Corporate Lending	2,913	2,921	0.3%	3.9%
Markets & Securities services	17,089	17,413	1.9%	23.4%
- Fixed income markets	11,661	12,884	10.5%	17.3%
- Equity markets	3,427	2,908	-15.1%	3.9%
- Security services	2,631	2,631	0.0%	3.5%
- Others	(675)	(578)	NA	-0.8%
Gain/ (Loss) on Loan Hedges	45	(432)	NA	-0.6%
Corporate	2,190	2,014	-8.0%	2.7%
Total Revenues, Net of Interest Expense	72,854	74,286	2.0%	100.0%
PAT	18,045	19,401	7.5%	26.1%

Source: Company, HDFC sec Inst Research

Goldman Sachs

USD mn	FY18	FY19	YoY %	% of Total
Investment Banking	8,178	7,599	-7.1%	20.8%
Global Markets	14,438	14,779	2.4%	40.4%
- Equity intermediation	4,684	4,374	-6.6%	12.0%
Asset Management	8,835	8,965	1.5%	24.5%
Consumer & Wealth Management	5,165	5,203	0.7%	14.2%
Total Net Revenue	36,616	36,546	-0.2%	100.0%
PAT	9,860	7,897	-19.9%	21.6%

UBS and Deutsche's IB segment lagged other segments

Deutsche Bank's IT cost has been declining since CY16 spend of EUR 3.9bn

UBS had the strongest cut at 19% YoY in CY19 in its Outsourcing & IT services expenses (USD 1.2bn)

Morgan Stanley

USD mn	FY18	FY19	YoY %	% of Total
Institutional Securities	20,582	20,386	-1.0%	49.2%
Wealth Management	17,242	17,737	2.9%	42.8%
Investment Management	2,746	3,763	37.0%	9.1%
Total Net Revenue	40,107	41,419	3.3%	100.0%
PAT	8,748	9,042	3.4%	21.8%

HSBC

USD mn	FY18	FY19	YoY %	% of Total
Retail Banking	15,388	16,654	8.2%	30.1%
Wealth Management	5,986	6,746	12.7%	12.2%
CMB	14,465	15,292	5.7%	27.6%
GPB	1,757	1,848	5.2%	3.3%
GB&M	14,934	14,916	NA	26.9%
Total Net Revenue	52,287	55,409	6.0%	100.0%
PAT	15,025	8,708	-42.0%	15.7%

Deutsche Bank

EUR mn	FY18	FY19	YoY %	% of Total
Corporate Banking	5,263	5,264	0.0%	22.7%
Investment Banking	7,467	6,961	-6.8%	30.0%
Private Banking	8,641	8,245	-4.6%	35.6%
Asset Management	2,187	2,332	6.6%	10.1%
Corporate & Other	(120)	155	NA	0.7%
Capital Release Unit	1,878	208	-88.9%	0.9%
Net Revenue	25,316	23,165	-8.5%	100.0%
PAT	(52)	(5,718)	NA	-24.7%

UBS

EUR mn	FY18	FY19	YoY %	% of Total
Global Wealth Management	16,684	16,353	-2.0%	56.5%
Personal & Corporate Banking	3,802	3,715	-2.3%	12.8%
Asset Management	1,852	1,938	4.6%	6.7%
Investment Banking	8,041	7,269	-9.6%	25.1%
Corporate Center	(413)	(321)	-22.3%	-1.1%
Net Revenue	29,966	28,954	-3.4%	100.0%
PAT	4,516	4,304	-4.7%	14.9%

BNP Paribas

EUR mn	FY18	FY19	YoY %	% of Total
Domestic Markets	15,683	15,814	0.8%	35.5%
International Financial Services	16,076	17,183	6.9%	38.5%
CIB (Corporate & Institutional Banking)	10,829	12,020	11.0%	27.0%
Total revenue	42,516	44,597	4.9%	100.0%
PAT	7,526	8,173	8.6%	18.3%

RBS

GBP mn	FY18	FY19	YoY %	% of Total
UK Personal Banking	5,054	4,866	-3.7%	36.8%
Ulster Bank Rol	610	567	-7.0%	4.3%
Commercial Banking	4,602	4,318	-6.2%	32.7%
Private Banking	775	777	0.3%	5.9%
RBS International	594	610	2.7%	4.6%
NatWest Markets	1,442	1,342	-6.9%	10.2%
Central items & others	325	1,773	445.5%	13.4%
Total revenue	13,402	13,218	-1.4%	100.0%
PAT	2,151	3,800	76.7%	28.7%

Banco Santander

EUR mn	FY18	FY19	YoY %	% of Total
Retail Banking	42,231	43,523	3.1%	87.9%
Corporate & Investment Banking	5,077	5,284	4.1%	10.7%
Wealth Management & Insurance	2,099	2,223	5.9%	4.5%
Santander Global Platform	74	81	9.5%	0.2%
Corporate Centre	-1,057	-1,617	NA	-3.3%
Total revenue	48,424	49,494	2.2%	100.0%
PAT	8,064	8,252	2.3%	16.7%

Barclays

GBP mn	FY18	FY19	YoY %	% of Total
Personal Banking	4,006	4,009	0.1%	54.5%
Barclaycard Consumer UK	2,104	1,992	-5.3%	27.1%
Business Banking	1,273	1,352	6.2%	18.4%
Net Revenue	7,383	7,353	-0.4%	100.0%
PAT	1,198	281	-76.5%	3.8%

Moderation in H-1B denial rate (both initial & continuous)

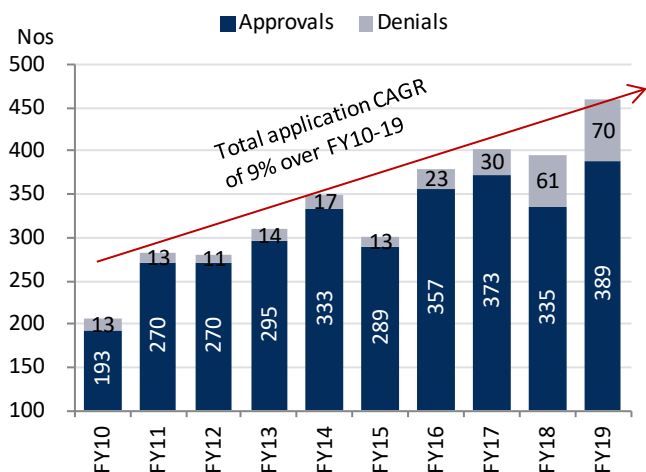
Recent Onshore/Near shore Delivery Expansion	
Company	Location New/Expansion
Infosys	Dusseldorf, Germany
	Bucharest, Romania
	London, UK
HCL Tech	Lithuania
	New Brunswick, Canada
	The Hague, Netherlands
Wipro	Melbourne, Australia
	Dallas, Texas, US
	California, US
	Virginia, US
	Minneapolis, US
TechM	Romania
	Manchester, UK

Improving onsite supply metrics

H-1B denials easing

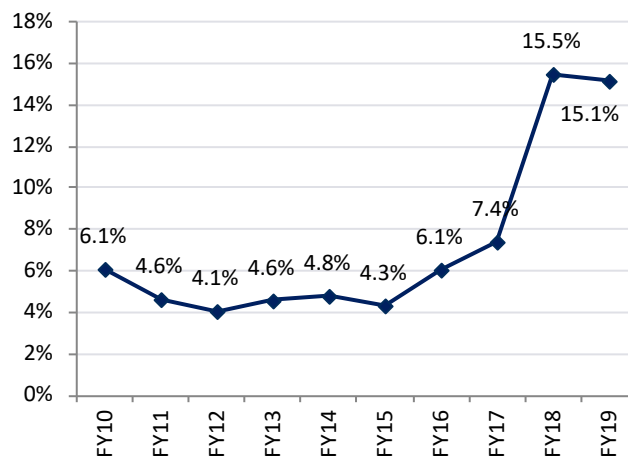
- As highlighted in our previous sector report (*IT Sector: First among equals*) the denial rates of H-1B petitions have increased significantly over FY15-18. The H-1B denial rate (aggregate) eased to 15.1% in FY19, after peaking at 15.5% in FY18. Indian IT services companies are well equipped to withstand higher rejections rates with higher localisation and local delivery centers. Wipro & HCL Tech have achieved ~70% localisation levels.
- Rejection in Initial petition (~37% of total applications) eased to 21.1% in FY19, after peaking at 24.3% in FY18. There is a similar trend in continuous H-1B petitions that surged to an all-time high of 11.8% in FY18 and now stand at 11.7% in FY19. **Higher rejections in continuous applications is a bigger challenge for IT companies, as it involves existing resources that are deployed onsite.**
- The main reasons for surge in H-1B rejections are (1) Non-ability to establish specialty occupation (2) Validity of Employer-Employee relationship, (3) Availability of work off-site, and (4) Beneficiary Qualifications. **While these reasons remain, we doesn't see further uptick in denials rates as IT services companies have re-aligned the balance between H-1Bs and locals.**

Total H-1B Applications has grown steadily despite rising denials



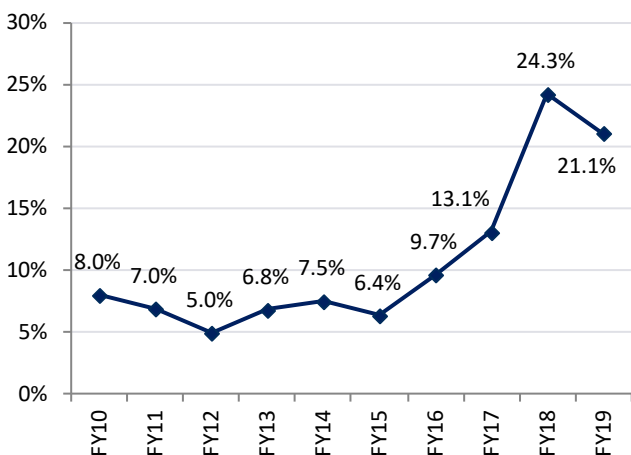
Source: USCIS, HDFC sec Inst Research, YE Sep

H-1B Aggregate Denials at peak levels peaked out in FY18



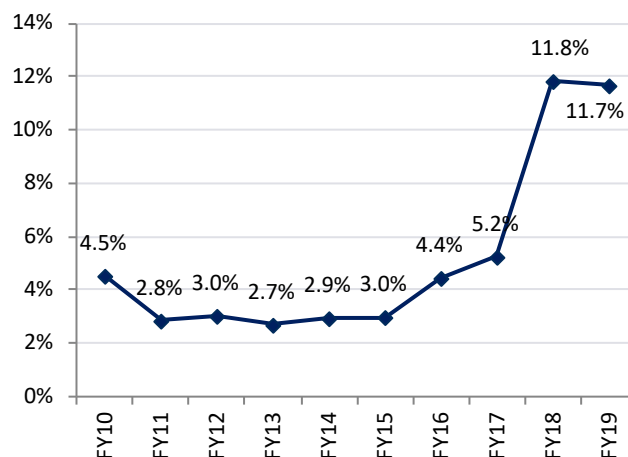
Source: USCIS, HDFC sec Inst Research

Initial H-1B denials down in FY19 after increasing sharply over FY16-18



Source: USCIS, HDFC sec Inst Research

Continuing H-1B Denials still near peak levels, higher denials in continuous application a risk



Source: USCIS, HDFC sec Inst Research

Aggregate denials for IT services is ~2x compared to Global Tech

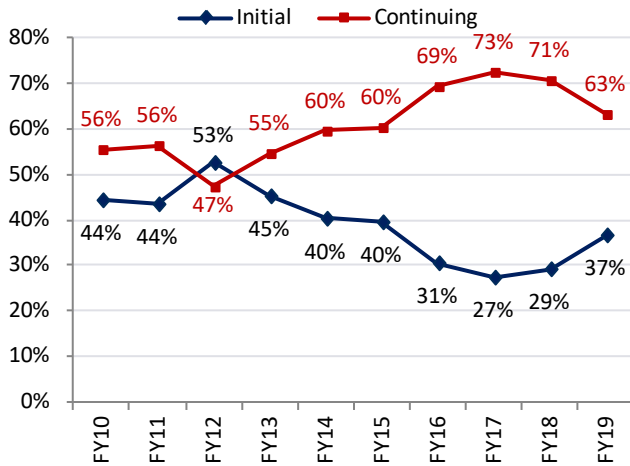
IT services has higher sensitivity to changes in continuous H-1Bs

IT services have higher sensitivity to changes in continuing H-1B

■ We have further analyzed the H-1B rejections by dividing the total application into Initial and Continuing denials for IT services and Global Tech companies. The denial in initial/continuous application for IT services is ~4/2x as compared to Global Tech companies.

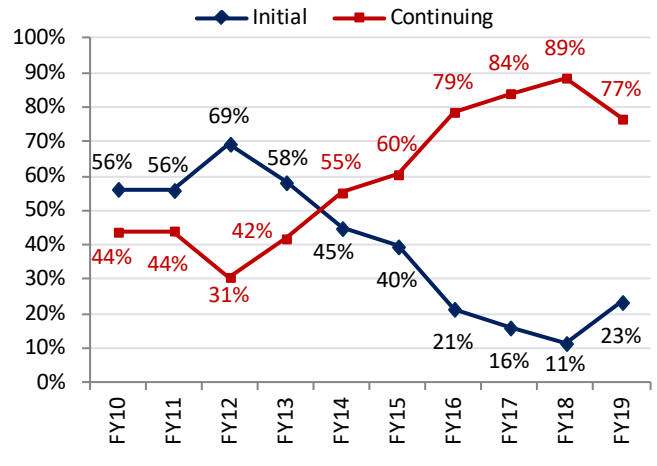
■ Rejection in initial applications for IT services companies has come down to 39.8% vs. 45.4% in FY18 (earlier average was ~6%). Similarly the rejections in continuous applications also spiked to 21.4% in FY19 vs. average of ~3% over FY10-17.

Aggregate H-1B Applications Mix: Rise in Initial applications



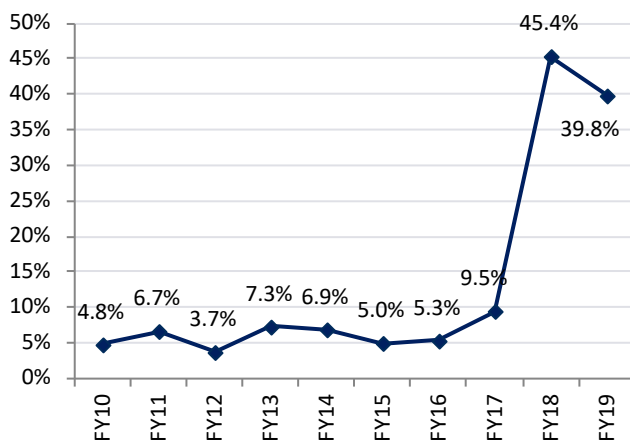
Source: USCIS, HDFC sec Inst Research

IT Services* H-1B Applications Mix (H-1B), Higher dependence on Continuing applications



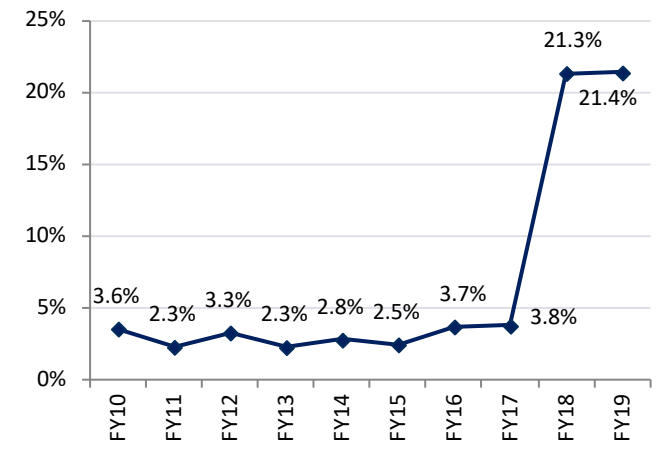
Source: USCIS, HDFC sec Inst Research, *Includes CTSH, ACN and CAP along with Indian IT services players

Initial H-1B denials for IT Services* companies has come down sharply



Source: USCIS, HDFC sec Inst Research, *Includes CTSH, ACN and CAP along with Indian IT services players

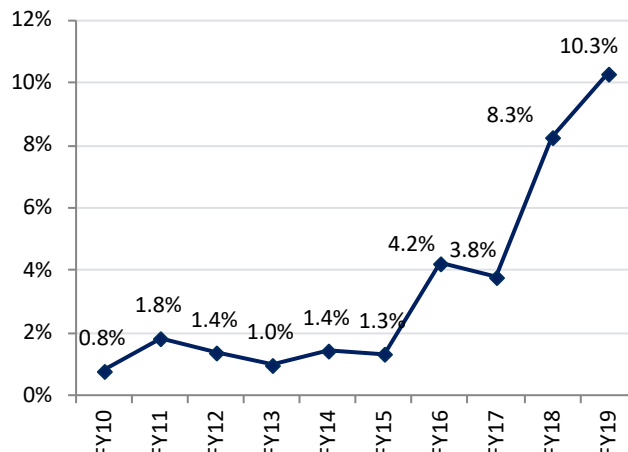
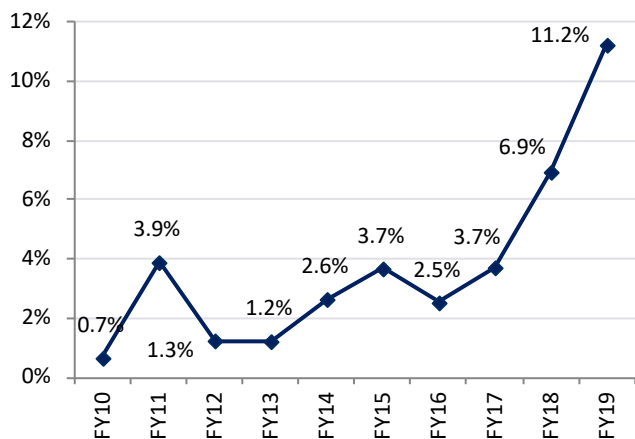
Continuing H-1B Denials for IT Services* still at peak levels



Source: USCIS, HDFC sec Inst Research, *Includes CTSH, ACN and CAP along with Indian IT services players

Initial H-1B denials (Global Majors*), On the rise vs. some relief for IT services companies

Continuing H-1B Denials (Global Majors*)



Source: USCIS, HDFC sec Inst Research, *Includes 13 Global tech players

Source: USCIS, HDFC sec Inst Research, *Includes 13 Global tech players

H-1B Denials % (IT Services)

Aggregate Denials	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19
Infosys	4.2%	2.3%	3.9%	4.2%	2.7%	1.6%	3.0%	5.4%	26.2%	31.7%
Cognizant	3.8%	6.5%	4.6%	8.5%	6.4%	4.1%	3.5%	3.4%	31.9%	30.8%
Capgemini	2.2%	1.2%	3.9%	7.8%	6.2%	3.6%	3.9%	7.5%	40.1%	26.8%
Wipro	4.3%	8.2%	2.5%	3.7%	4.3%	5.5%	4.8%	5.1%	18.4%	26.0%
HCL Tech	10.4%	2.0%	4.3%	7.7%	3.9%	1.9%	3.9%	4.1%	20.3%	25.8%
Tech M	13.4%	9.9%	5.6%	4.5%	5.7%	3.2%	7.5%	6.3%	17.4%	23.6%
Accenture	4.6%	1.8%	1.3%	2.6%	3.1%	3.0%	1.4%	3.6%	16.7%	22.8%
TCS	3.7%	7.4%	3.8%	3.5%	5.2%	4.3%	6.5%	6.0%	17.8%	22.0%
Persistent	7.0%	3.1%	0.0%	2.0%	3.2%	2.5%	3.8%	5.2%	23.6%	21.9%
Zensar	0.0%	0.0%	5.0%	1.9%	2.2%	1.7%	3.1%	1.8%	11.2%	14.0%
Mphasis	4.6%	4.8%	3.1%	6.0%	3.1%	1.6%	1.8%	3.3%	15.5%	12.6%
LTI	3.7%	1.4%	1.4%	2.5%	2.1%	2.1%	5.2%	4.9%	12.9%	11.1%
Hexaware	7.0%	1.3%	3.6%	4.6%	4.9%	2.2%	2.7%	2.7%	9.6%	8.5%
Mindtree	7.0%	0.6%	1.1%	6.0%	1.7%	2.2%	3.0%	3.3%	17.1%	7.5%
Cyient	9.0%	1.4%	3.0%	7.6%	4.2%	4.5%	4.7%	5.1%	7.2%	6.7%

Source: USCIS, HDFC sec Inst Research

Rejection rate in Tier-2 companies like Zensar, Mphasis, LTI, Hexaware, Mindtree and Cyient is lower vs. Tier-1 IT

H-1B Denials % (Global Majors)

Aggregate Denials	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19
Deloitte	0.9%	1.4%	2.1%	0.9%	6.9%	11.0%	12.2%	9.5%	24.4%	30.4%
IBM	1.8%	15.1%	3.1%	3.1%	3.1%	1.9%	4.8%	5.5%	14.1%	22.9%
E&Y	0.7%	0.6%	0.8%	1.6%	1.2%	1.0%	4.2%	6.4%	8.9%	17.8%
Morgan Stanley	0.9%	0.7%	0.9%	0.3%	0.5%	0.4%	3.0%	3.0%	4.5%	5.8%
Oracle	0.3%	1.4%	0.8%	1.0%	1.2%	0.4%	2.6%	3.3%	4.6%	5.3%
Cisco	0.6%	1.2%	1.0%	0.7%	1.2%	0.6%	1.4%	0.9%	2.4%	3.8%
Amazon	0.4%	0.2%	0.5%	0.7%	0.9%	1.0%	1.2%	1.0%	2.6%	3.6%
JP Morgan	0.7%	0.6%	0.5%	0.4%	0.5%	0.8%	0.7%	0.8%	2.8%	3.5%
Microsoft	0.4%	1.0%	1.0%	0.8%	0.9%	1.5%	2.0%	2.0%	1.5%	3.2%
Intel Corp	1.1%	2.8%	1.3%	1.0%	0.8%	0.5%	1.5%	1.3%	1.3%	2.8%
Google	0.1%	0.3%	0.4%	0.1%	0.1%	0.6%	0.9%	1.1%	1.5%	2.5%
Facebook	1.1%	0.0%	0.7%	1.0%	0.6%	0.1%	0.3%	0.6%	0.8%	2.0%
Apple	1.4%	0.3%	0.5%	0.3%	0.2%	0.9%	0.4%	1.0%	1.2%	1.3%

Source: USCIS, HDFC sec Inst Research

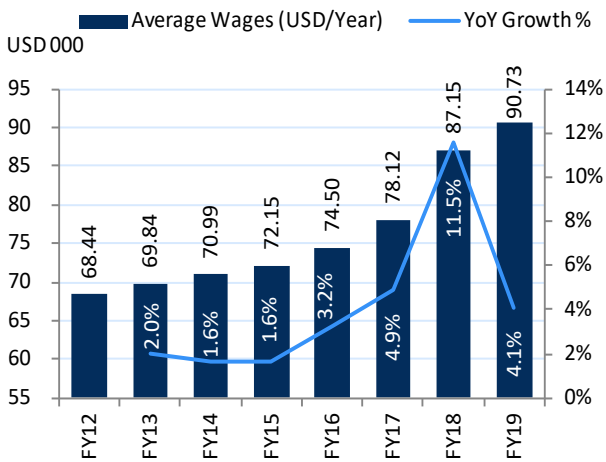
Margin impact of H-1B wage hike in the USA for Tier-1 IT at ~105bps/year vs. 20bps/year earlier, ~85bps additional headwind is now favourable

Impact of H1B rejections, localisation and higher attrition on margins

- Talent crunch, H-1B rejections, local hiring, higher sub-contracting and lower onsite utilisation resulted in increase in the onsite cost structure for Indian IT over the past 2yrs. H-1B wages in the US have grown at a CAGR of 5% over FY14-19 to USD 90,727. The rise in H-1B wages in the last two years was higher at 7.8% CAGR due to higher H-1B rejections and shortage of talent trained on newer technologies.
- In our earlier sector report (**IT Sector: First among equals**), we quantified the impact of onsite wage hike on operating margins for Tier-1 IT companies. Based on our analysis, every 1% increase in US cost has -27bps impact on operating margins. Based on this assumption, the margin impact in the last two years (FY17-19) for IT services companies is 105bps/year vs. 20bps/year over FY13-17 period. Decline in H-1B denials and local hiring at optimal levels will support the operating metrics ahead.

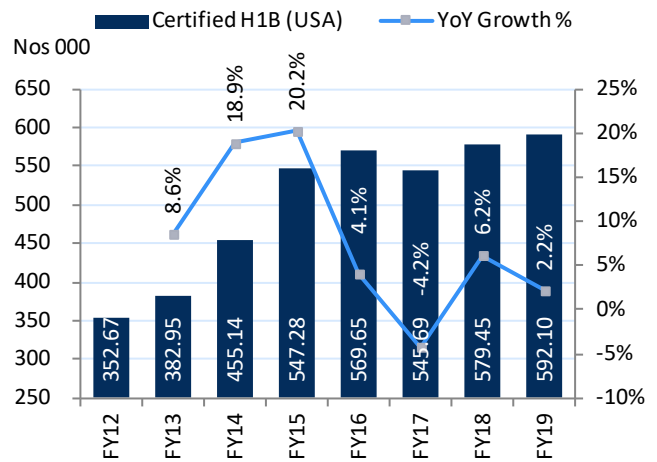
H1-B wages in US have grown at a CAGR of 5% over FY14-19 to USD 90,727

Average H-1B wages up sharply in the last two years



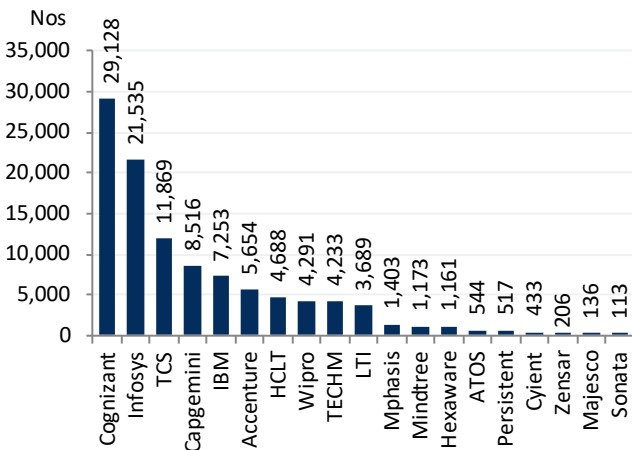
Source: Company, HDFC sec Inst Research

Total No Of Certified H-1Bs in USA has been at the same level since the last four years



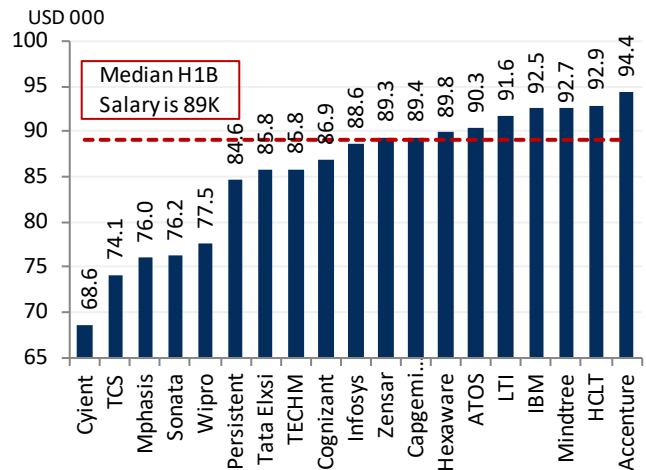
Source: Company, HDFC sec Inst Research

H-1B Count for FY19 (IT Services), Cognizant, Infosys, TCS are the largest users of H-1B visas



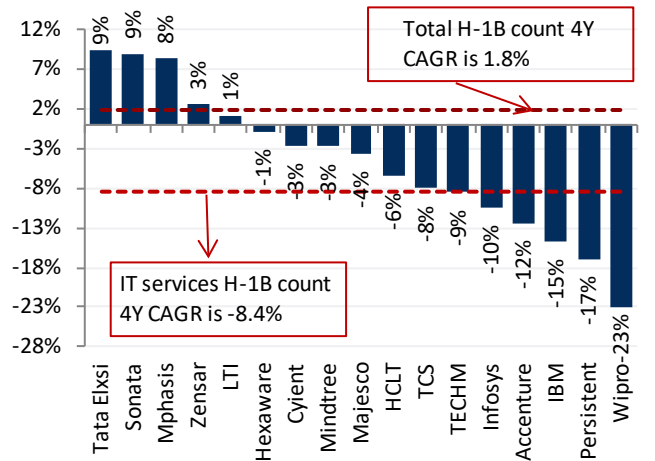
Source: USCIS, HDFC sec Inst Research

H-1B Wages For FY19, TCS is way below median and this explains the higher margin structure



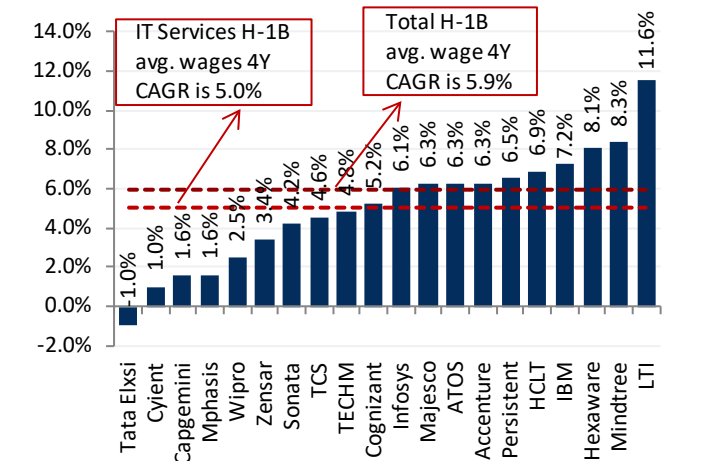
Source: USCIS, HDFC sec Inst Research

H-1B Count CAGR Over FY15-19, Wipro has increased localization to 75% to reduce dependence on H-1B



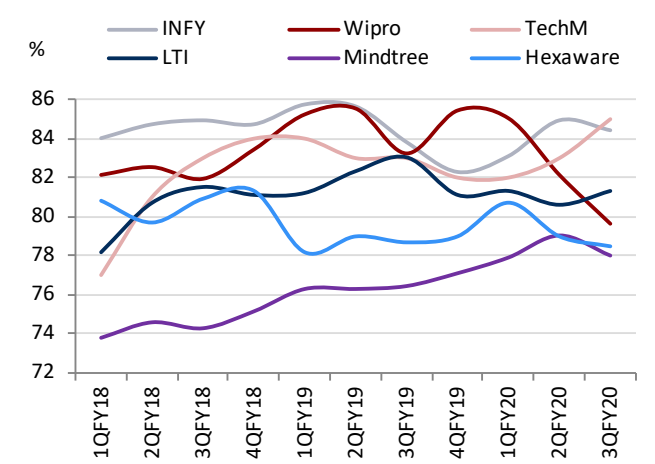
Source: USCIS, HDFC sec Inst Research

H-1B Wages CAGR Over FY15-19, IT services wages CAGR is in-line with aggregate



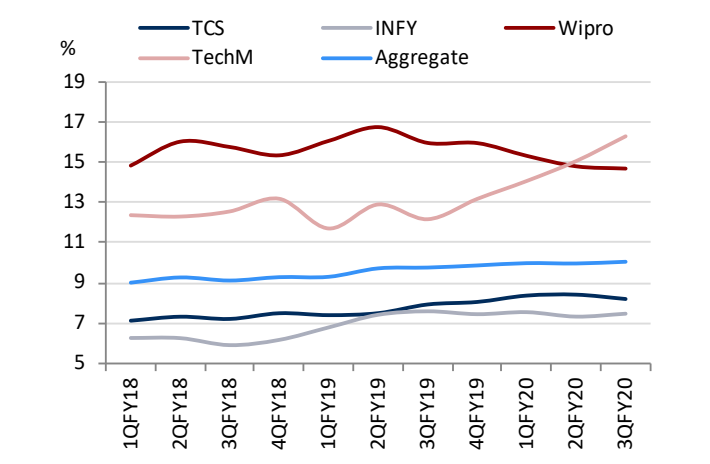
Source: USCIS, HDFC sec Inst Research

Utilisation has been coming down due to localization and increased hiring



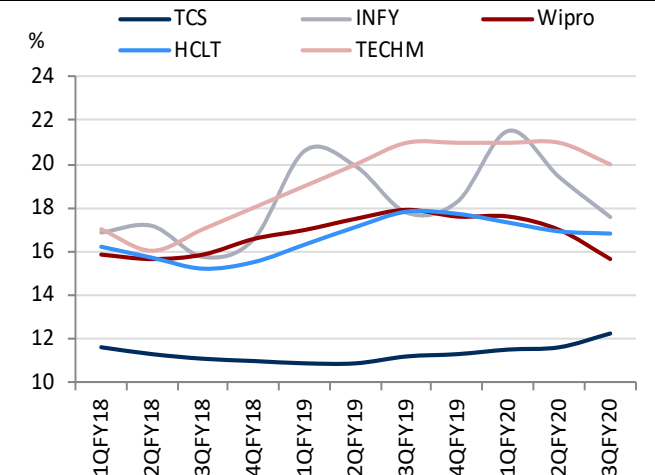
Source: Company, HDFC sec Inst Research

Sub-contracting Expense/Revenue (%) has risen due to higher rejections in Continuing applications



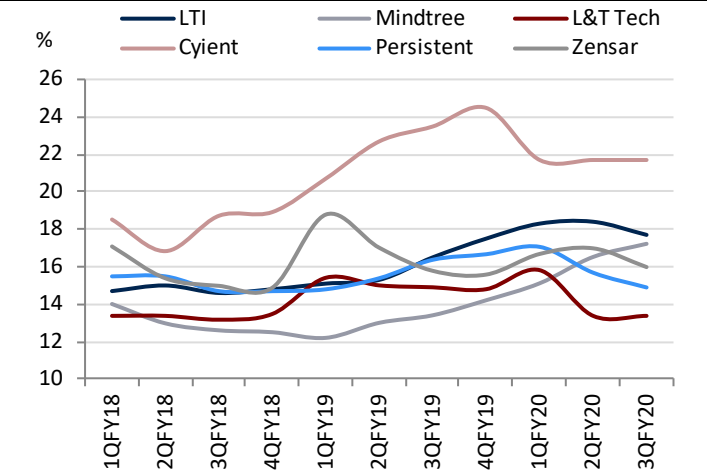
Source: Company, HDFC sec Inst Research, Note: Aggregate of TCS, INFY, Wipro, TECHM

Attrition for Tier-1 IT is easing with moderation in supply side constraints



Source: Company, HDFC sec Inst Research

Attrition for Tier-2 IT is still at elevated levels, some moderation in Persistent and LTTS



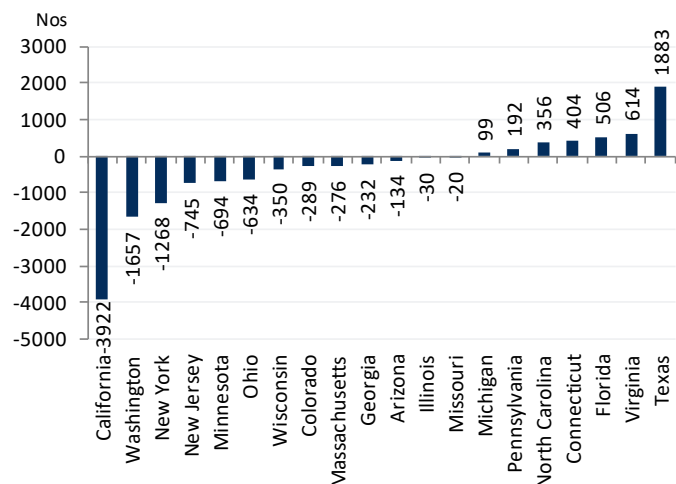
Source: Company, HDFC sec Inst Research

Onsite wage inflationary risk mitigated by geographical diversification of H-1B, shift to lower cost delivery locations of Texas, Virginia, Florida, Connecticut vs. California, NY-NJ.

Onsite Geo diversification trends

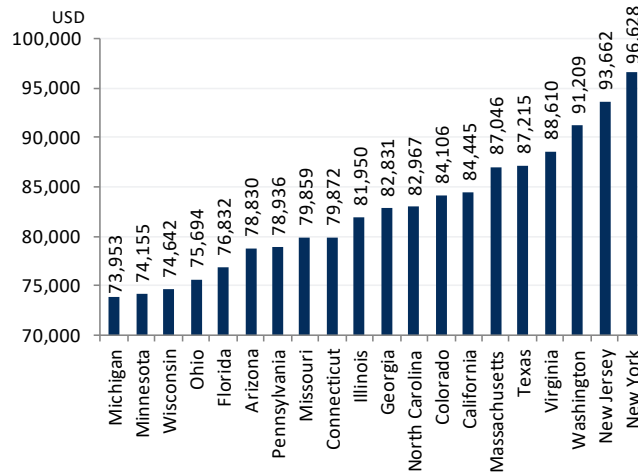
- The impact of H-1B rejections and change in cost structure (higher localization, on-site delivery centers) has led to change in geographical preferences. The H-1B applications have shifted to lower cost destinations like Texas, Virginia, Florida, and Connecticut from high cost destinations like California, Washington, New York and New Jersey.

Additions of H-1Bs For US States over FY15-19, clear shift to Texas and Florida



Source: USCIS, HDFC sec Inst Research

H-1B Average Wages Across Top-20 US States, NY, NJ, DC are high cost locations



Source: USCIS, HDFC sec Inst Research

State Wise H-1Bs Deployed at Client Locations, CAGR Over FY15-19

State	FY15	FY19	4Y CAGR %
Texas	11,677	13,560	3.8%
California	17,309	13,387	-6.2%
New Jersey	9,737	8,992	-2.0%
Illinois	7,294	7,264	-0.1%
North Carolina	5,177	5,533	1.7%
Georgia	5,362	5,130	-1.1%
Connecticut	3,971	4,375	2.5%
New York	5,530	4,262	-6.3%
Florida	3,466	3,972	3.5%
Pennsylvania	3,681	3,873	1.3%
Ohio	4,298	3,664	-3.9%
Washington	4,882	3,225	-9.8%
Arizona	2,884	2,750	-1.2%
Massachusetts	2,888	2,612	-2.5%
Virginia	1,739	2,353	7.9%
Minnesota	3,043	2,349	-6.3%
Michigan	1,940	2,039	1.3%
Wisconsin	2,277	1,927	-4.1%
Missouri	1,649	1,629	-0.3%
Colorado	1,792	1,503	-4.3%
Others	13,753	12,189	-3.0%
Total H1B Count (IT Services)	114,349	106,588	-1.7%
Total H1B Count (USA)	618,804	664,616	1.8%

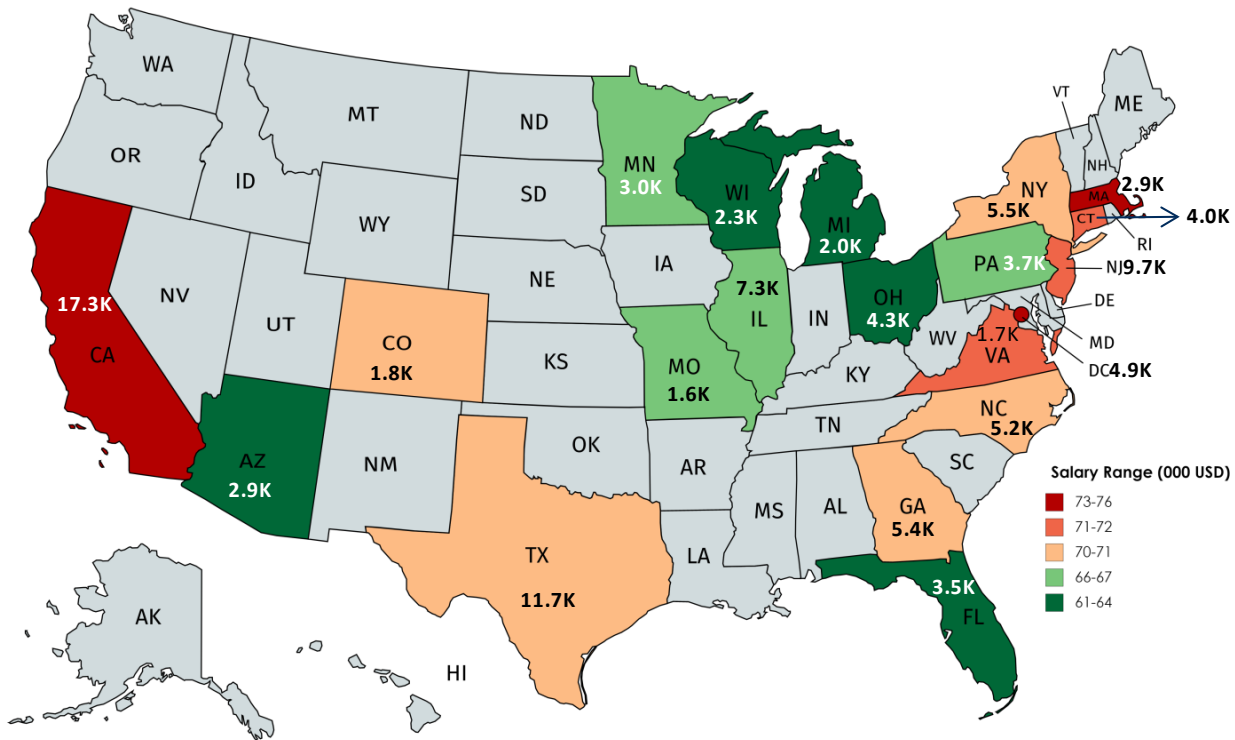
Source: USCIS, HDFC sec Inst Research

State Wise Distribution of H-1B Wages, CAGR Over FY15-19

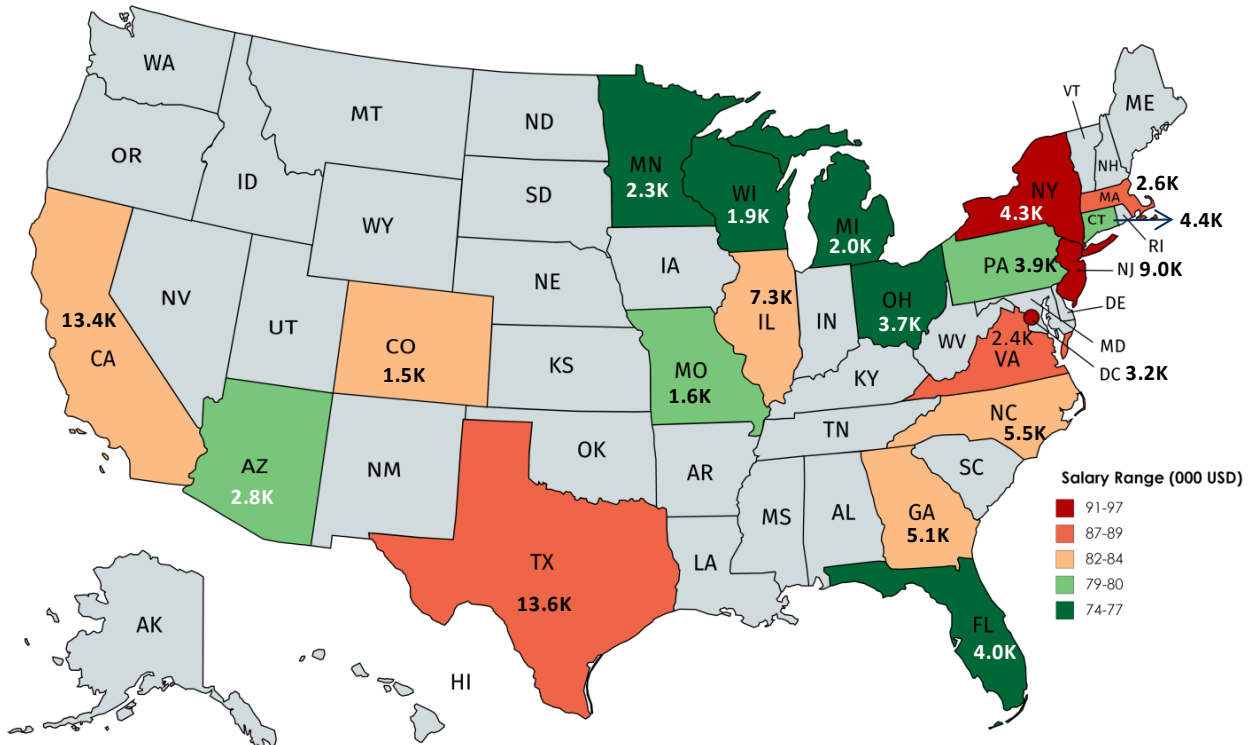
State	FY15	FY19	4Y CAGR %
Texas	70,128	87,215	5.6%
California	76,381	84,445	2.5%
New Jersey	71,005	93,662	7.2%
Illinois	65,642	81,950	5.7%
North Carolina	68,883	82,967	4.8%
Georgia	70,915	82,831	4.0%
Connecticut	72,385	79,872	2.5%
New York	70,851	96,628	8.1%
Florida	63,048	76,832	5.1%
Pennsylvania	67,079	78,936	4.2%
Ohio	62,860	75,694	4.8%
Washington	73,727	91,209	5.5%
Arizona	64,015	78,830	5.3%
Massachusetts	72,767	87,046	4.6%
Virginia	71,152	88,610	5.6%
Minnesota	65,613	74,155	3.1%
Michigan	63,758	73,953	3.8%
Wisconsin	62,563	74,642	4.5%
Missouri	66,834	79,859	4.6%
Colorado	70,935	84,106	4.3%
Others	61,250	74,168	4.9%
Average H1B Wages (IT Services)	68,180	82,267	4.8%
Average H1B Wages (USA)	72,152	90,727	5.9%

USA Geographical Mapping of Wages and H1Bs (FY15 vs. FY19)

Average wages and H1Bs nos for FY15



Average wages and H1Bs nos for FY19



Color coding represents the average H1B wages in Top-20 states for FY15 and FY19. Top-20 US states are as per visa count.

Numbers represent the number of H1Bs deployed at various client locations by IT services companies (Indian IT + 5 Global)

Digital playbook intact

IT sector digital growth >30%, long growth runway ahead with expanding TAM

Growth in SaaS/aaS players and improving partner network supporting growth in digital

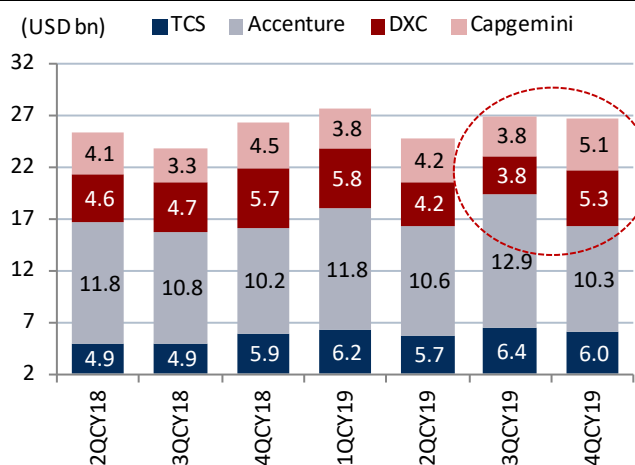
Strong deal momentum from growth laggards like DXC, Capgemini, IBM's GBS indicative of steady growth for the sector

- Demand indicators from leading global product & platforms are positive for Indian IT's perspective. Key trends include (1) Shift to hybrid cloud and multi-cloud model (supportive of Indian IT's on-prem + cloud portfolio), (2) Increase in size of digital deals (uptick in Microsoft's USD 10mn+ signings, SAP's >EUR 5mn cloud deal signings), (3) Focus on verticalisation of cloud offerings a large opportunity for Indian IT (SAP-Accenture for Utilities), (4) Accelerated digital growth in core verticals – BFSI, Retail (4.5-5.0x increase in USD 10mn+ accounts over 4-yr for F1000 Salesforce accounts in BFSI/Retail as compared to 3x increase overall).
- IT service providers' engagement with its partner network has expanded beyond certifications into setup of co-innovation centers, building industry solutions, ISV partnerships and joint sourcing of deals. These partnerships play a significant role in implementation, rollouts & upgrades, validation and support services.
- While SAP's new cloud bookings dipped in 4Q, growth in its cloud revenue remained strong at 35% YoY. Continued growth in SAP's S/4 HANA customers (7.2% CQGR) is indicative of continued opportunity in S/4 HANA migration for Indian IT. Continuity of robust growth in Salesforce, Workday and Adobe will translate into implementation/migration scope for the services vendors.

Deal Trends steady

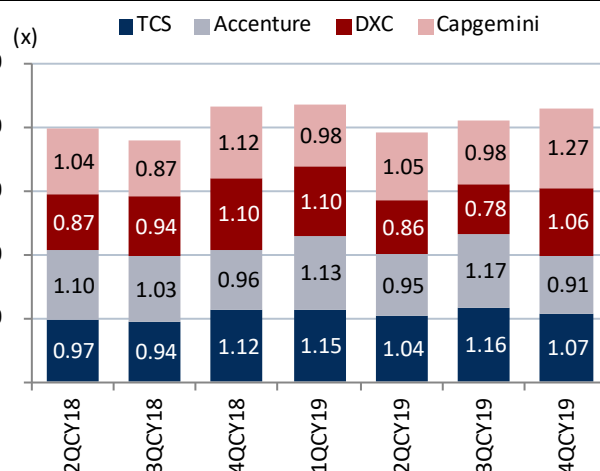
- Interestingly, within the larger global IT services the growth laggards delivered strong deal momentum. DXC posted TCV of USD 5.3bn (book-to-bill of 1.06x and its highest in 3 qtrs) and Capgemini posted TCV of USD 5.1bn (book-to-bill of 1.27x). TCS' and Accenture deal wins moderated to 1.07x and 0.91x (book-to-bill) as compared to 1.16x and 1.17x respectively in the prior quarter.
- Recent deal trend continues to be healthy and is reflective of traction in Manufacturing/Industrial and Retail & CPG verticals. Key Manufacturing/Industrial wins include HCLT-Stanley Black & Decker/UPM, Infosys-GE Appliance, LTI-OKQ8, LTTTS-Dometic and Wipro-Marelli. Key wins in Retail & CPG include HCLT-Fonterra, TCS-Coop/Walgreen Boots. Recent BFSI wins include Infosys & TCS -ABN AMRO.

Trends in Deal Wins (TCV), uptick for Capgemini/DXC, while Accenture/TCS moderates



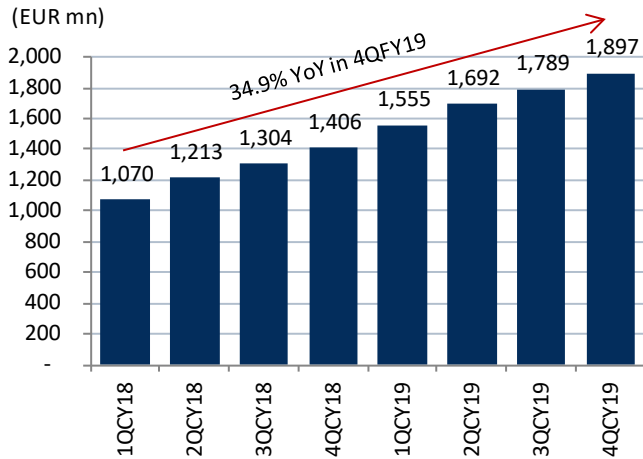
Source: Company, HDFC sec Inst Research

Trends in Deal Wins (Book-to-bill)



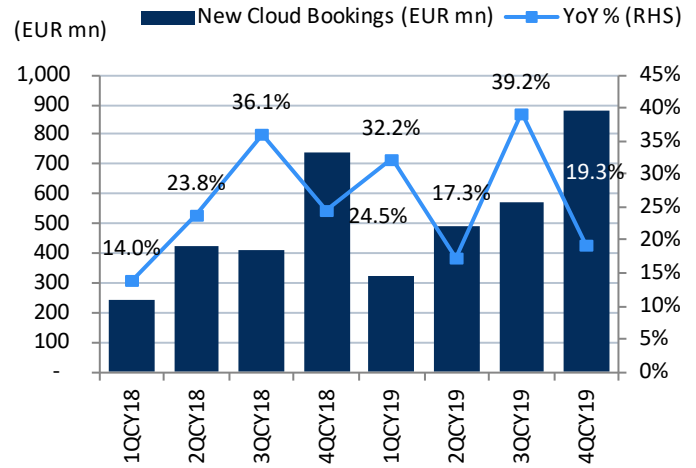
Source: Company, HDFC sec Inst Research

Strong growth in cloud revenue (SAP)



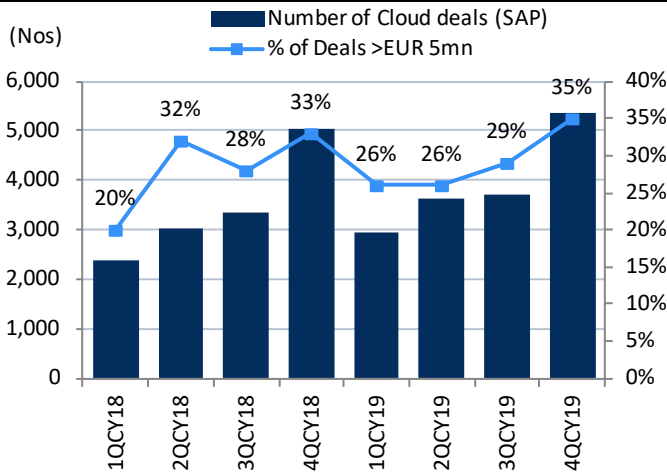
Source: Company, HDFC sec Inst Research

while New cloud bookings (SAP) moderated in 4Q



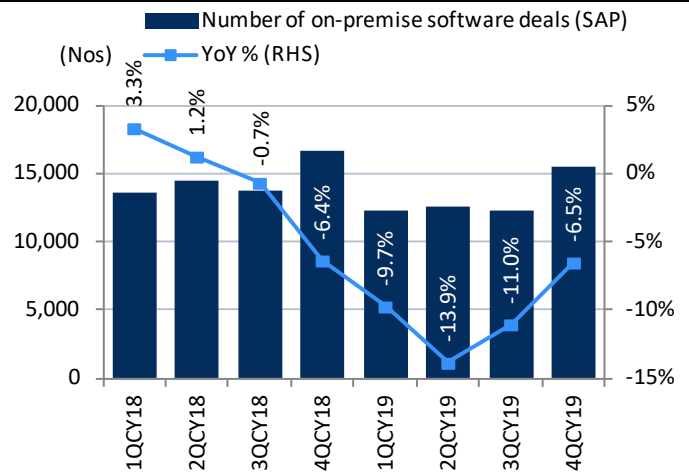
Source: Company, HDFC sec Inst Research

Increasing size of digital deals



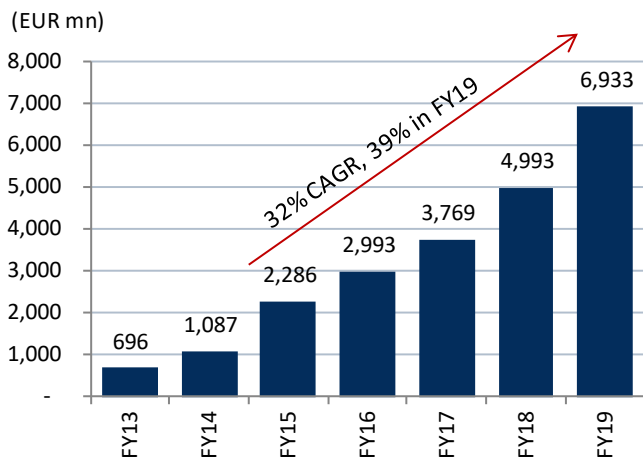
Source: Company, HDFC sec Inst Research

On-premise rate of decline lowered



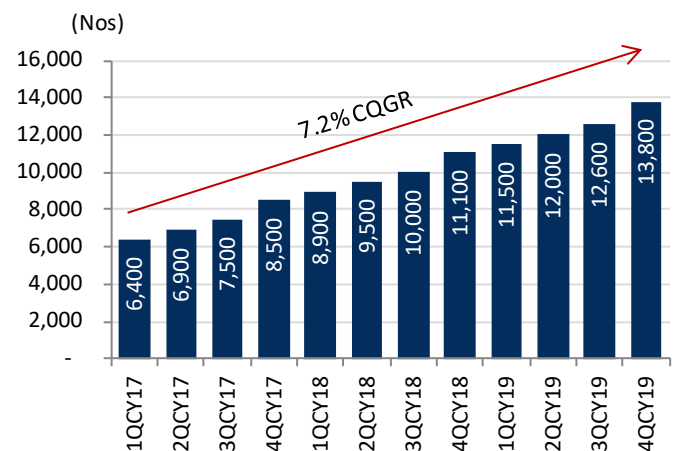
Source: Company, HDFC sec Inst Research

SAP's cloud revenue trend



Source: Company, HDFC sec Inst Research

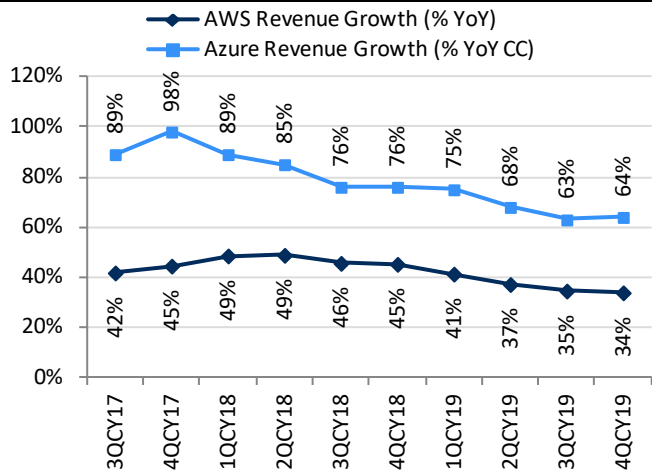
Growth in SAP S/4 HANA customers



Source: Company, HDFC sec Inst Research

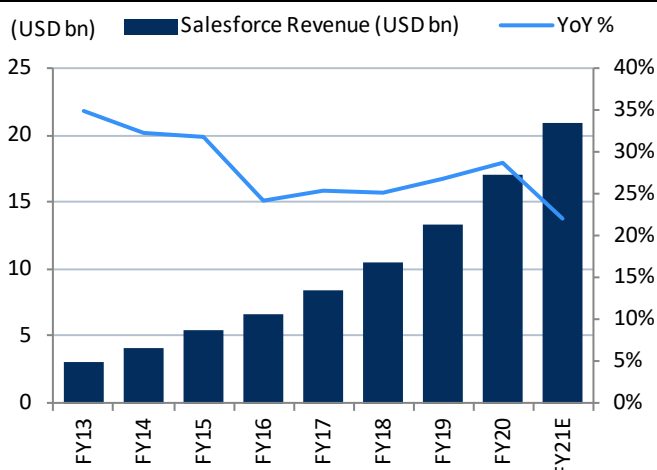
Digital Growth Metrics Intact

Strong momentum in shift to cloud continues



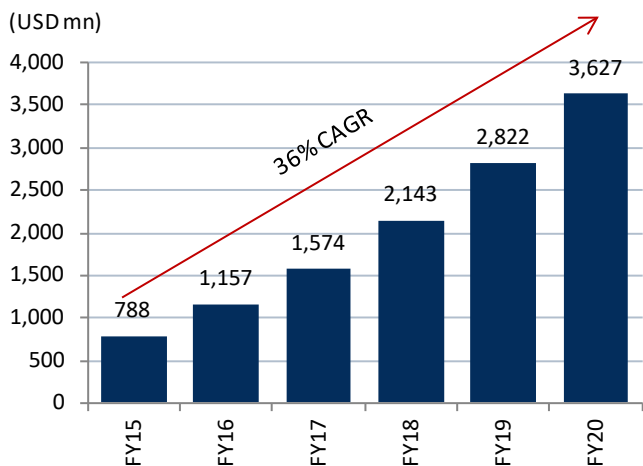
Source: Company, HDFC sec Inst Research

with strong growth in cloud native applications



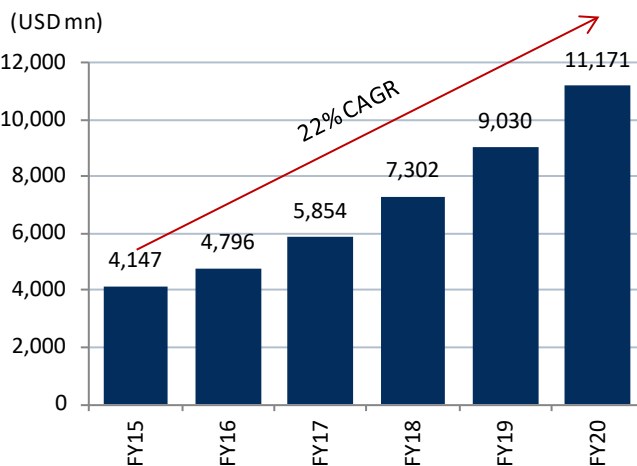
Source: Company, HDFC sec Inst Research

Workday growth trend



Source: Company, HDFC sec Inst Research

Adobe growth trend



Source: Company, HDFC sec Inst Research

Expanding Partner ecosystem

- **SAP:** TCS has 16,500 SAP practice consultants globally with over 450 ongoing engagements. For Infosys, some of the key engagements on SAP across S/4 HANA, SuccessFactors, Hybris, Ariba includes Hersheys, Bristow Group (Oil & Gas), Energizer Holdings, Pepsi Co, ABInBev, Borg Warner Seneca and FTS International.
- Wipro's engagement and implementations include McLaren, National Grid, British American Tobacco, Bahrain Steel, Orient Cement, Kellogg's and Coop. Wipro also has 4 SAP co-innovation labs in India, USA, Germany and Australia. HCLT's large practice in SAP (10,000 employees est.) is predominantly in Aerospace in Defense, Utilities, Retail & CPG and Lifesciences & Healthcare verticals.

SAP Global Strategic Partners (Services)

Accenture	EY
PwC	Atos
HCL Tech	TCS
Capgemini	IBM
T-Systems	Cognizant
Infosys	Wipro
Deloitte	LTI
DXC Technology	

Source: Company, HDFC sec Inst Research

- **Salesforce:** Infosys' acquisition of Fluido was to strengthen its Salesforce capabilities in the Nordic region and some of Infosys' key engagements on Salesforce ecosystem includes with clients such as Dupont, Marvell Technology Group. It has also partnered with Salesforce's ISV partners including Apttus, CloudSense, CloudCraze, FinancialForce, ServiceMax, and Vlocity.
- Wipro's Salesforce practice is supported largely by Appirio. Within tier-2 IT, LTI (enhanced by Lymbyc acquisition) and Persistent Systems have relatively stronger Salesforce capabilities.

Recent Acquisitions In Salesforce Capabilities

Company	Acquisition Target	Consideration	Employees
Infosys	Simplus	\$ 250mn	600
	Fluido	\$ 76mn	350
Cognizant	Code Zero	NA	75
	EI Technologies	NA	350
	Advanced Technology Group (ATG)	NA	50-100
	SaaSfocus	NA	350
Accenture	Sierra-Cedar	NA	1,000
DXC Technology	System Partners	NA	15
Persistent	Youperience	\$ 8mn	170
L&T Infotech	Lymbyc	\$ 5mn	53

Source: Company, HDFC sec Inst Research

- Azure and Dynamics 365 continued to post robust growth of 64% and 45% respectively and continues to remain strong opportunities for the SIs. Growth in Azure continues to be led by workload migration & optimisation and supported by platform such as Azure Synapse (analytics platform). TCS has setup a new Microsoft Business Unit and the company has ~50,000 engineers trained on Microsoft technologies. Mindtree has further deepened its Azure partnership and achieved preferred partner status within Microsoft Azure Kubernetes Service.
- VMware's subscription and SaaS revenue accelerated to 51% in 4Q and grew 44% in FY20 and the company is seeing share gains within customers from managing the complete portfolio including network and storage and large contracts included customers like JPMorgan, BofA, Wells Fargo and Comcast.

Mindtree's Microsoft revenue and Sonata's AX revenue have grown at 7/9% CQGR over the past 3 yrs

Deal Tracker

Deal announcements in last 2 quarters

Client Name	Vertical	Geography	Description
TCS			
Jurassic Fibre	Communication	Europe	TCS HOBS
Pandora Partners	Manufacturing	Europe	ADM services - ignio. Strategic IT partnership
Legal & General (L&G)	BFSI	UK	Infra services - digital workplace solutions
Vodafone Idea	Communications	India	Application integration, AI/analytics
Phoenix Group	BFSI	UK	Application transformation of L&A
Cardinal Health	Life science & Healthcare	US	Digital transformation – ignio
Virgin Atlantic	Travel & Hospitality	UK	CX solutions
Ayala Land Inc	Others	APAC	SAP S/4 HANA migration
Givaudan Partners	Manufacturing	Europe	Infra services modernisation
Petco	Retail & CPG	US	TCS Optmera solution – AI
Viavi	Technology & services	UK	Product engineering
Bajaj Allianz General Insurance	BFSI	India	Cloud migration BaNCS to AWS
Vipps	BFSI	Europe	Cloud services, automation
ABN AMRO	BFSI	Europe	Core systems transformation
Walgreen Boots Alliance	Retail	US	USD 1.5bn-10 yrs; AMS, IMS, Security + system transformation
Coop	Retail & CPG	Europe	S/4 HANA, Automation
Infosys			
Volvo	Manufacturing	Europe	Application services & consulting
Siemens	Manufacturing	UK	Infrastructure services
Movement Mortgage	BFSI	US	Digital transformation service
Arlanxeo	Manufacturing	UK	ADM services - S/4 HANA, SAP
Services Australia	Public Services	Australia	Application modernisation services – Pega
G Bank	BFSI	APAC	Finacle - Digital Banking
Telenet	Communication	Europe	Application modernisation services
ABN AMRO	BFSI	Europe	Cloud & DevOps
GEFCO	Logistics	Europe	Application Management services, DX
Australian Open	Retail	Australia	Digital Application services
GE Appliances	Manufacturing	US	Digital and Workplace Transformation
K+S AG	Manufacturing (Salt)	Europe	Agile & IT Infrastructure services
HCL Tech			
NA	Manufacturing (Auto)	Europe	Service-desk services, Automation, analytics
NA	Life science & Healthcare	US	ERS
NA	BFSI	APAC	IMS & AMS
NA	Public Services	Australia	Managed IT services end-to-end
NA	Technology & services (Hi-	US	Technology operations support (cloud)
NA	Retail	Australia	ADM
NA	Manufacturing	Europe	IMS - service desk management
NA	Manufacturing	APAC	Business operations
NA	Manufacturing	Europe	Cloud transformation, workplace services modernisation
NA	Life science & Healthcare	US	ERS Regulatory & compliance
NA	Public services	Europe	ERS, ADS
NA	BFSI	APAC	Application development (CRM)
NA	Retail	US	RPA, SCM
NA	BFSI	US	Mortgage processing services
NA	BFSI	US	IMS modernisation
NA	BFSI	US	Application modernisation - policy admin
NA	Aerospace	US	Workflow system
NA	BFSI	Europe	UX - wealth management platform
Equinor	Public Services	Europe	IMS and cloud services
Fonterra Co-operative	Retail & CPG	New Zealand	Infrastructure service
Stanley Black & Decker	Manufacturing	US	Application and Infra services
UPM	Manufacturing	Europe	Cloud and Application Services
Tech Mahindra			
Pimpri Chinchwad Municipal Co	Government	India	Technology transformation
U.S. Short Line Railroad	Manufacturing	US	Digital training
InMOBI	Telecom	US	Tech transformation
Department of Urban Planning	Government	Middle East	Blockchain Solutions
Pimpri Chinchwad Municipal Co	Government	India	Technology transformation

Source: Company, HDFC sec Inst Research

Client	Vertical	Geography	Description
HCL Tech			
NA	Telecom, Media & Publishing	UK	Application transformation
NA	BFSI	APAC	Mobile app development
NA	Retail & CPG	APAC	AWS migration
NA	Life science & Healthcare	Europe	ERS - IoT based solution
NA	Retail & CPG	US	IMS end to end
NA	Life science & Healthcare	US	ERS
NA	Aerospace	US	ERS
NA	Manufacturing (Auto)	US	HCL Commerce & Digital Experience
NA	BFSI	South America	Unica, AppScan
NA	BFSI	US	DRYICE
NA	BFSI	US	DRYICE Lucy RPA
NA	Public Services	Australia	DRYICE Gold BluePrint
Volvo	Manufacturing (Auto)	Europe	end-to-end IT services (scope increase)
Equinor	Public Services	Europe	IMS and cloud services
Wipro			
Olympus	Manufacturing	Japan	Cloud infra services transformation, cyber governance
Sydney Water	ENU	US	SAP S/4HANA
Marelli	Manufacturing	Europe	Wipro HOLMES, Transformational
L&T Infotech			
NA	Energy & Utilities	NA	Application transformation
NA	Others	NA	Data management
NA	BFSI	NA	DX - products, infra, Guidewire implementation
NA	Others	NA	Platform implementation
NA	Energy & Utilities	NA	Data transformation
NA	NA	NA	Cloud hosting and data storage solution
Hoist Finance AB	BFSI	Europe	IT operations
OKQ8	Oil & Gas	Europe	IaaS, ADM, IT Ops
Mindtree			
NA	Manufacturing, CPG & Retail	NA	SAP, Salesforce AMS
NA	Technology, Media & services	NA	Datacenter support AWS
NA	Manufacturing, CPG & Retail	US	Digital consulting
NA	Manufacturing, CPG & Retail	UK	Package solutions
NA	Technology, Media & services	NA	Digital Interactive and operations
Realogy	Real estate	US	Digital Transformation
L&T Tech			
Airbus	Transportation	Europe	Avionics software development, Testing & Validation
NA	Plant engineering	NA	IoT platform development
NA	Telecom & Hitech	NA	VLSI engineering services
NA	Telecom & Hitech	NA	Engineering analytics
NA	Plant engineering	Europe	EPC management services
NA	Transportation	NA	Engine Control Unit development
NA	Plant engineering	Europe	Design center setup
NA	Telecom & Hitech	NA	Broadband & video security chipset design & development
NA	Medical devices	NA	IoT platform development
NA	Plant engineering	NA	EPC management services
NA	Industrial	Europe	Product engineering services
Hexaware			
NA	Professional services	APAC	Application upgrade
NA	BFSI (Insurance)	Europe	Guidewire consulting
NA	Healthcare	Europe	IMS transformation
NA	Travel & Tourism	Europe	BPM
NA	BFSI	US	IMS automation

Source: Company, HDFC sec Inst Research

Company	Management Commentary post 3QFY20
TCS	<p>BFSI: 1) Continue to see tightening of spend among the large banks in North America and UK. 2) Insurance sub-vertical continues to grow well across regions. 3) Year to date, added 20 new logos in BFSI. 4) After some initial softness, BFS in Continental Europe has recovered quite strongly and in 3Q, grown double digits on a year-on-year basis powered by transformational deal wins. 5) BFS revenues in Australia and other regional markets are also growing well, and so are revenues from smaller banks and market infrastructure providers in North America. 6) Aggregate budgets are not shrinking, mostly it is still project led and specific area-led, rather than as an integrated transformation.</p> <p>Retail & CPG: 1) Growing very strongly in UK and in Europe. 2) Sub-verticals like CPG, consumer products, and travel, transportation, hospitality etc. are growing extremely well. 3) Retailers in the US, some of which is going through financial stress, these will bottom out soon if they have not already done so. 4) There are many more enterprise-wide operating model transformation engagements that are currently ongoing.</p> <p>Geographies: 1) UK on the other hand decelerated sharply to 7.5% due to Brexit anxieties. Weakness in UK should improve in a few quarters. 2) Eastern European Delivery Center, Hungary is an important lever in strategy and that continues to grow. 3) Other growth markets Japan continues to do well.</p> <p>Margins: 1) Headwind in currency, tailwinds include pyramid and growth</p>
Infosys	<p>BFSI: 1) While the headwinds persist in Financial Services, sequential growth in North America aided by stable customer spends and new deal wins. 2) Commercial & Corporate banks, Consumer, Cards and Payments, Wealth Management & Custody, Mortgage portfolios of business are seeing good traction across geographies. 3) Pressure to continue in the near-term driven by market volatility and pressure in spending in run the business segment.</p> <p>Manufacturing: 1) Mfg has continued momentum from existing clients, but weakening economic outlook and the effects of trade war have led to increasing scrutiny on spending plans. 2) Deal pipeline is strong with a good share of large deals and new account openings across geographies. Communication: 1) Clients are prioritizing funding in their customer reach out and transformation initiatives through digital channels, Self-services, Omnichannel, AI and Chatbots. 2) 5G ticket sizes are still small, most are in the pilot phase. Retail & CPG: Expect some degree of volatility to continue in this space.</p> <p>Geographies: Significant impact of furloughs in Europe and Rest of the World regions</p> <p>Digital: Digital portfolio is growing bigger and stronger. Demand towards data and analytics, Cloud, SaaS, user experience, security and IoT supported by new digital innovation center (Germany).</p> <p>Margin: Continue to focus on improving operational parameters like rationalizing pyramid both onshore and offshore, improving onsite-offshore mix, lean & automation and other costs optimization measures. 2) Innovation hubs in US helps in building full-stack pyramid in US unlike a top-heavy pyramid.</p>
HCL Tech	<p>1) Qualified pipeline is at an all-time high in the recent past and expecting a higher conversion of pipeline to booking this quarter. 2) Furlough impact has been a little bit more in, both Mode 1 and Mode 2 business across IT&BS and ER&D.</p> <p>HCL Software: 1) Good progress in terms of the transactional momentum. 2) It's going to take at least two more quarters to sign up with possibly 90% plus of the customers. 3) At the four quarters starting October to September, number of much better than \$625 million.</p> <p>BFSI: 1) Furlough was larger this year as compared to previous year. 2) Seeing spends happening in the Capital Market side on the regulatory and compliance digitization</p>
Wipro	<p>Guidance: Q4FY20 revenue is expected in the range of 0% to 2% sequentially in the constant currency terms.</p> <p>BFSI: 1) BFSI delivered industry leading growth but last two quarters were challenging because of stress in capital markets and large Europe BFS clients. Deal funnel in BFSI is strong and large deals wins will improve growth trajectory. Relatively better outlook in Consumer (ecommerce), Healthcare (HPS revival) and Manufacturing (healthy deal pipeline).</p> <p>Margin: IT services margin to sustain in the near-term, focus on increasing localisation (currently 70% locals) and enhancing on-site delivery locations. Gains from efficiencies will be invested back in the business.</p>
Tech Mahindra	<p>Telecom: Telecom pipeline remains strong as large services providers are driving efficiencies and modernising their existing networks. Digital, Networks and BPS is going to be the focus area of growth. The synergies between Telecom and Enterprise are now visible and can lead to large multi year transformational deal wins</p> <p>Enterprise: Manufacturing will stabilise led by growth in process industry and Auto sector pain is behind. Enterprise TCV of USD 1.1bn is the highest ever. High TCV was due to USD 0.9bn multiyear multi services Insurance deal. Overall Enterprise recovery looks sustainable.</p> <p>Margin: Margin will be impacted in the near term due to transition cost of large deal win in BFSI. Margin trajectory will improve gradually in FY21E. AT&T transition impact on margins is almost over. Attrition has also dropped to 20% after five quarters.</p>
L&T Infotech	<p>Deal wins: 1) \$60 mn TCV deal win with a global smart energy storage solution provider to transform application operations (ERP, CRM, CX platform) globally. 2) 2nd large win in an apex government body, to create a conceptual framework on data management, integrating and harmonizing the available data sets in various key sectors through single window system.</p> <p>BFSI: 1) Growth revival driven by top customers and on track ramp up of large deals announced earlier. 2) Investments in Regtech solutions and accelerators has helped positioning LTI as a strong analytics partner and a key differentiator. 3) Optimistic about BFS in the coming times as well. 4) LTI is on the positive side of vendor consolidation within its top client.</p> <p>Manufacturing: H2 is stronger for this vertical due to presence of higher pass through in one of our India engagements. E&U: 2 large deals announced last quarter and the ramp up of those wins remains on track and support 4Q growth.</p>

Source: Company, HDFC sec Inst Research

COVID-19 risks increasing

- The rapid spread of COVID-19 and the subsequent impact on (1) Enterprise performance (clients), (2) Risk of service delivery and (3) Travel shutdown can amplify the impact on the downside. We've reviewed the commentary from leading global enterprises and key clients of IT vendors to assess the quantum and probability of impact on IT spend.
- Our checks with IT companies suggest non-clarity on COVID-19 impact, while measures to ensure minimal disruption in delivery are underway. While the second order impact (client impact) can have a larger bearing than the first order impact (disruption in delivery, travel suspension) for the sector, we reckon that increase in outsourcing intensity can be an offset. We expect revenue in Jun-qtr and Sep-qtr to be largely impacted by delay in pipeline conversion and pricing impact on core business, while margin tailwind will be in the form of FX and lower travel cost. We have cut revenue est. by 2 to 7% with avg. cut in EPS at ~7%, largely factoring the impact in 1Q/2QFY21.

Enterprise Commentary on COVID-19

Verticals	Companies	Commentary	Key Vendors	View
BFSI	Citigroup	Net Interest revenue to decline modestly YoY in Q1	TCS, INFY, LTI	●
BFSI	Fidelity	No material impact throughout the Asia region	INFY, Capgemini	●
BFSI	HSBC	Significant disruptions for staff, suppliers and customers, particularly in mainland China and Hong Kong. Expects credit loss of \$ 200-500mn in Q1	Capgemini	●
BFSI	Standard Chartered	CY20 income growth to be lower than medium term guidance of 5-7%	NA	●
Hitech & Telecom	Apple	Demand for products within China is affected & worldwide iPhone supply will be temporary constrained, hence will not meet guidance provided in March quarter	INFY, TCS, Cognizant	●
Hitech & Telecom	Visa	2.5-3.5% lower revenue growth in Q2	INFY	●
Hitech & Telecom	Paypal	Q1CY20 revenue at the lower end of its \$4.78-\$4.84bn guidance range	IBM, HCLT	●
Hitech & Telecom	Mastercard	Negative impact on cross border travel and e-commerce	TechM	●
Hitech & Telecom	Cisco	Hopefully customers pick up again in near term	INFY, TCS, TechM	●
Hitech & Telecom	Hewlett Packard	Component manufacturing impacted, resulting in higher quarter-end backlogs but have specific mitigation and recovery plans with each suppliers	Mphasis, Wipro	●
Hitech & Telecom	Applied Material	Coronavirus risk is temporary and won't impact full year, revenue recovery in Q3 & Q4	TechM, TCS	●
Hitech & Telecom	NXP Semiconductors	Negative revenue impact of \$50-150mn in Q1CY20	LTI	●
Hitech & Telecom	Analog Devices	Negative revenue impact of \$70mn in Q2CY20	INFY	●
Hitech & Telecom	Nvidia	Revenue loss of \$ 100mn in Q1CY20	HCLT	●
Manufacturing	Merck	Expect growth going forward in China and nothing has changed in the mid-to-long term	HCLT, Cognizant	●
Manufacturing	Boeing	Impact in near-term traffic growth is clearly a watch item this year	Accenture, Cyient	●
Manufacturing	Reckitt Benckiser	Increased demand for Dettol & Lysol while there is some disruption to offline retailers, distributors and suppliers in China	IBM	●
Manufacturing	BASF	Expect EUR 400-500mn negative earnings impact (4.7-6%) for CY20	TechM	●
Manufacturing	Becton Dickinson	Sufficient inventory of the few products to meet current demand	HCLT, Capgemini	●
Manufacturing	Ford Motor	Modest impact from the virus within guidance range and expect nominal growth in Auto	Cognizant, TechM, HCLT	●
Manufacturing	Navistar	Monitoring the supply chain to mitigate minor disruptions, optimistic to achieve the guidance	TechM	●
Manufacturing	General Electric	Too early to point to anything	TCS, TechM, Cyient	●

Source: Company, HDFC sec Inst Research

Enterprise Commentary on COVID-19

Verticals	Companies	Commentary on COVID19	Key vendors	View
Manufacturing	Conmed	Trimmed Q1 constant currency revenue growth forecast to 2-4% from 5-6%	NA	●
Manufacturing	Varian Medical	Trimmed Q3 revenue forecast to \$800-825mn. Revenue growth for fiscal 2020 now expected to be 7-9% compared to 9-12% earlier	NA	●
Manufacturing	Emerson Electric	Revenue loss of \$100-150mn in Q2CY20 vs earlier expected loss of \$75-100mn	INFY, Wipro	●
Retail & CPG	Home Depot	Situation continues to be fluid	TCS, Cognizant, Mindtree	●
Retail & CPG	Kohls	Working closely with vendors to manage any disruption to supply chain	Wipro, Cognizant	●
Retail & CPG	The Walt Disney	Temporarily closed parks in Shanghai and Hong Kong which will negatively impact second quarter and full year	Capgemini, HCLT, Accenture	●
Retail & CPG	Macys	Small impact on Q1 sales from International tourism	INFY	●
Retail & CPG	Best Buy	Expect traffic in Asia to decline substantially in 1H20, and, as the virus affects Europe and the US, global traffic could be down even further, impairing sales across the retail landscape	TCS, INFY	●
Retail & CPG	Coca Cola	1-2% negative impact to on organic revenue in Q1	Capgemini, INFY	●
Retail & CPG	Pernod Ricard	Coronavirus impact on China+Travel Retail Asia is 2% and 3% on revenue and profit respectively	NA	●
Retail & CPG	Walmart	Challenge in the retail industry in adopting a coronavirus strategy	Cognizant, INFY	●
Retail & CPG	Henkel	Revenue loss of EUR 100mn in Q1 while full guidance maintained	Accenture	●
Retail & CPG	Estee Lauder	Revenue guidance for FY20 at 6-8% vs 8-9% earlier	IBM, INFY	●
Retail & CPG	Ralph Lauren	For FQ4, sales to be negatively impacted by \$55-\$70mn and operating income to be impacted by \$35-\$45mn	INFY	●
Retail & CPG	Under Armour	Revenue to decline by \$ 50mn to 60mn in Q1	INFY	●
Retail & CPG	Danone	Revenue loss of EUR 100mn in Q1 and full year growth at 2-4%	Accenture	●
Retail & CPG	Diageo	Negative impact FY20 organic net sales by EUR 225-325 mn and by EUR 140-200mn on organic operating profit	TCS	●
Retail & CPG	AB InBev	Revenue loss of \$ 285mn for the first two months of 2020	INFY	●
Retail & CPG	Adidas	Q1 sales in greater China dropping by \$1bn, but the impact in Europe and U.S. into Q2 is still unknown	INFY, Accenture	●
Retail & CPG	Starbucks	Coronavirus hitting revenue by \$400-430mn in Q2CY20	INFY, TCS	●
Travel & Hospitality	United Airlines	Withdrawn CY20 guidance citing heightened uncertainty surrounding the coronavirus outbreak	TCS, INFY, Mphasis	●
Travel & Hospitality	Norwegian Air	Withdrawn full year guidance as Coronavirus wreaks havoc on airline industry	Capgemini	●
Travel & Hospitality	Air New Zealand	Withdrawn full year guidance due to uncertainty surrounding duration & scale of COVID-19	NA	●
Travel & Hospitality	Cathay Pacific	Will cut capacity in H1CY20 and expects recovery in H2CY20	NA	●
Travel & Hospitality	Southwest Airlines	Revenue loss \$200-300mn in Q1CY20	Mindtree, Cognizant	●
Travel & Hospitality	Air France - KLM	Negative impact of EUR 200mn on earnings in Q1CY20	NA	●
Travel & Hospitality	Booking Holdings	Withdrawn its previous Q1CY20 guidance of revenue of \$2.64-2.75bn, and EBITDA of \$560-590mn		●
Travel & Hospitality	Expedia	Negative impact of US\$30-40 mn to EBITDA in 1QFY20 and some impact beyond 1Q	Cognizant	●
Travel & Hospitality	Marriot International	Negative impact on gross fee revenue by 8% for CY20	Accenture, Mindtree	●
Travel & Hospitality	Hilton	Withdrawn previous guidance of EPS of \$0.85-0.91 and adjusted EBITDA of \$520M-540M for Q1, and EPS of \$4.08-4.21 and adjusted EBITDA \$2.42-2.47B for the full year	Accenture, Mindtree	●
Travel & Hospitality	Xenia Hotels & Resorts	Withdraws its 2020 guidance as uncertainty surrounding the spread of Covid-19 leads to a rash of group cancellations	NA	●
Travel & Hospitality	Pebblebrook Hotel Trust	Unlikely to achieve Q1 and full-year 2020 outlook due decline in net bookings YoY	NA	●

Source: Company, HDFC sec Inst Research

Revenue-mix by Verticals

VERTICALS	TCS	Infosys	HCLT	Wipro	TechM	LTI
BFSI	30.4%	31.5%	21.6%	30.9%	13.2%	45.5%
Retail & CPG	15.2%	15.3%	10.3%	16.9%	7.6%	11.2%
Hi-tech & Communications	15.4%	20.6%	24.1%	18.0%	49.8%	10.8%
Manufacturing	10.0%	10.3%	20.9%	8.2%	17.3%	20.9%
Travel & Transportation	NA	NA	NA	NA	NA	NA

	Mphasis	Mindtree	Hexaware	LTTS	Cyient	Zensar
BFSI	56.8%	21.3%	48.0%	NA	NA	28.9%
Retail & CPG	NA	20.6%	18.2%	NA	NA	13.8%
Hi-tech & Communications	15.7%	41.4%	NA	18.5%	29.3%	41.1%
Manufacturing	5.0%	NA	NA	54.9%	43.3%	13.4%
Travel & Transportation	13.9%	16.6%	10.3%	NA	NA	NA

Source: Company, HDFC sec Inst Research

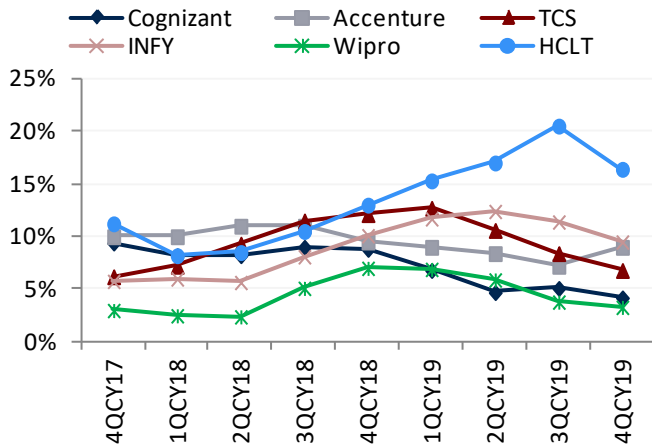
Change in Estimates

Company	Revenue USD bn (New)		Change %		EBIT % (New)		Change (bps)		EPS (Rs) New		Change (%)	
	FY21E	FY22E	FY21E	FY22E	FY21E	FY22E	FY21E	FY22E	FY21E	FY22E	FY21E	FY22E
TCS	22.60	24.32	(5.4%)	(6.5%)	24.5	24.5	(57)	(96)	88.0	95.6	(6.0%)	(8.7%)
Infosys	13.47	14.72	(5.1%)	(5.6%)	21.9	22.1	(1)	3	41.7	46.0	(4.1%)	(4.4%)
Wipro	8.49	8.90	(3.4%)	(4.5%)	16.4	16.6	(70)	(64)	17.3	18.7	(5.4%)	(6.8%)
HCL Tech	10.57	11.55	(3.7%)	(4.1%)	19.1	19.1	(20)	(15)	40.6	46.5	(2.7%)	(3.5%)
TechM	5.58	5.95	(3.1%)	(4.7%)	12.8	13.5	(48)	(66)	51.4	58.0	(5.5%)	(7.5%)
LTI	1.67	1.92	(4.9%)	(4.2%)	16.4	16.6	6	(27)	96.4	113.9	(5.1%)	(5.7%)
Mphasis	1.34	1.46	(3.7%)	(3.8%)	15.5	15.0	21	(35)	64.8	70.6	(1.3%)	(5.0%)
Mindtree	1.14	1.26	(5.6%)	(6.1%)	11.3	13.2	(75)	(52)	43.0	57.8	(10.5%)	(8.6%)
L&T Tech	0.85	0.98	(4.4%)	(4.8%)	16.6	16.9	(37)	(55)	83.1	97.6	(4.0%)	(5.9%)
Hexaware *	0.87	0.95	(4.7%)	(7.0%)	12.7	13.3	(26)	11	22.0	25.3	(6.4%)	(6.2%)
Cyient	0.64	0.68	(3.2%)	(4.7%)	11.0	11.5	(47)	(61)	37.7	41.8	(7.8%)	(9.1%)
Persistent	0.55	0.61	(2.1%)	(2.3%)	14.8	15.6	22	5	49.2	57.9	(1.7%)	(2.8%)
Zensar	0.61	0.66	(3.6%)	(4.3%)	7.8	9.2	(42)	(73)	11.5	15.0	(10.8%)	(12.4%)
Sonata	0.21	0.22	1.0%	(3.9%)	10.1	10.4	(23)	(31)	30.9	34.8	(2.2%)	(4.3%)
Majesco	0.16	0.18	(3.1%)	(3.7%)	9.9	11.2	(243)	(198)	24.0	30.7	(20.2%)	(16.9%)
Mastek	0.22	0.24	(4.9%)	(6.6%)	12.2	12.5	(57)	(73)	47.1	54.6	(10.0%)	(12.6%)

Source: HDFC sec Inst Research

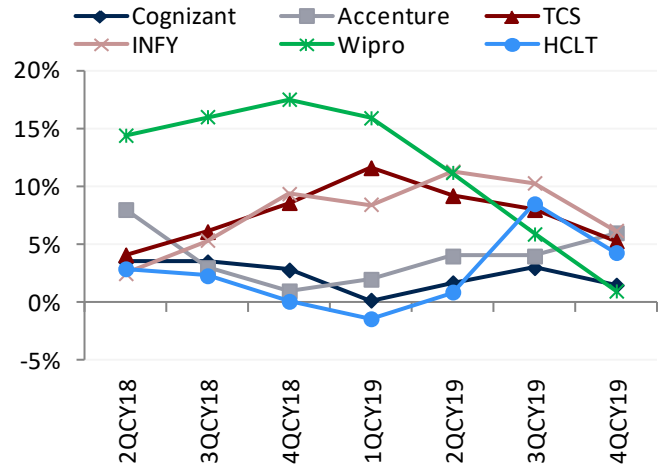
Highlights in Charts

Revenue Growth (YoY % CC)



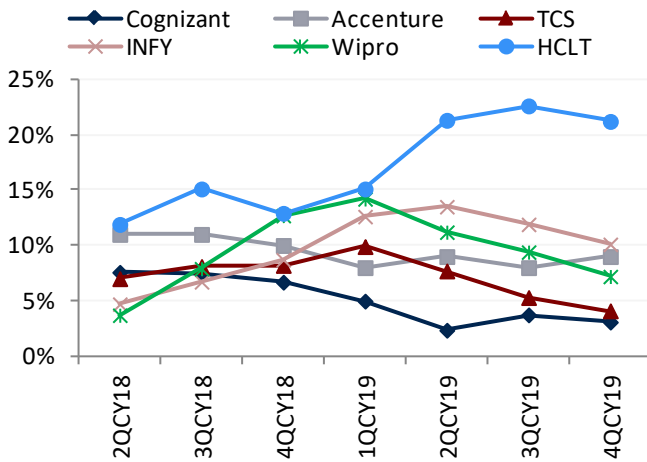
Source: Company, HDFC sec Inst Research

BFSI Revenue Growth (YoY % CC)



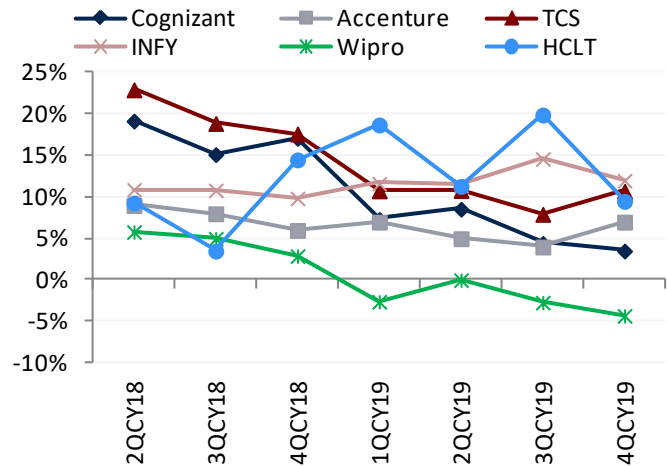
Source: Company, HDFC sec Inst Research

NorthAm Revenue Growth (YoY % CC)



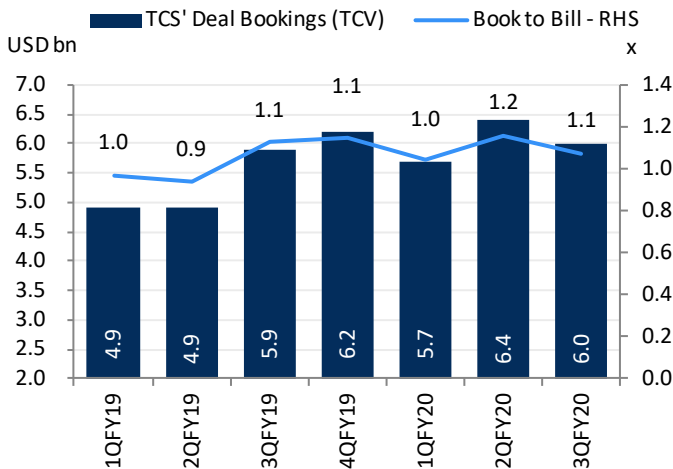
Source: Company, HDFC sec Inst Research

Europe Revenue Growth (YoY % CC)



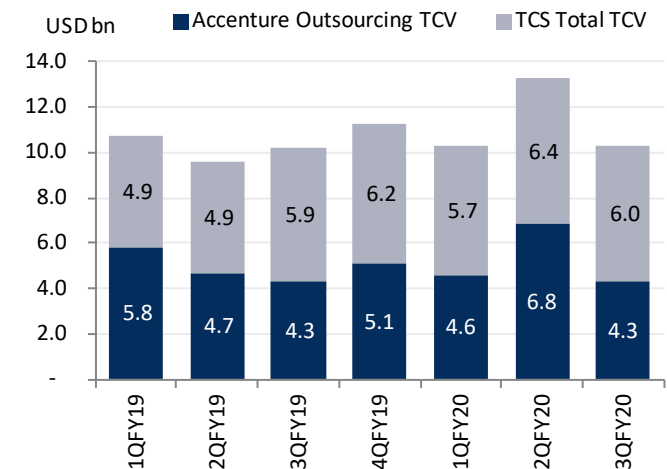
Source: Company, HDFC sec Inst Research

TCS' Deal Bookings (TCV) Trend



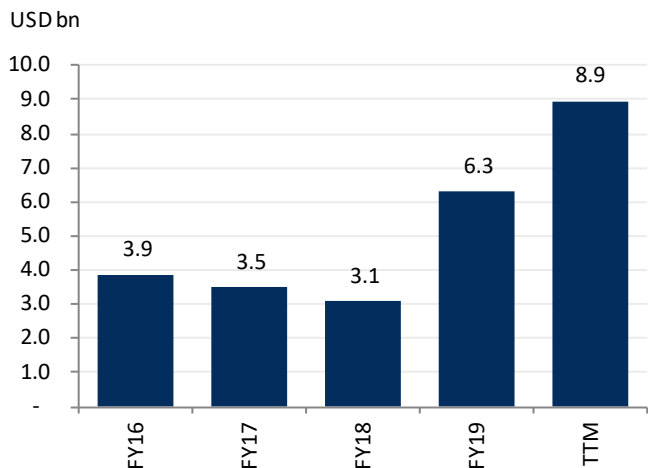
Source: Company, HDFC sec Inst Research

TCS vs. Accenture Outsourcing Deal Bookings



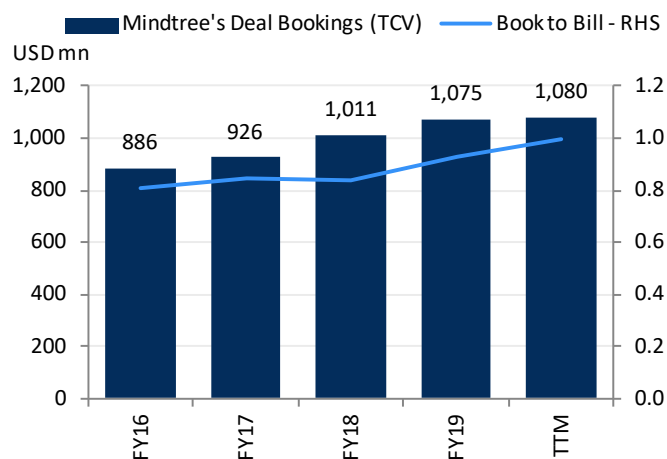
Source: Company, HDFC sec Inst Research

Significant Acceleration In Infosys' Large Deal Wins



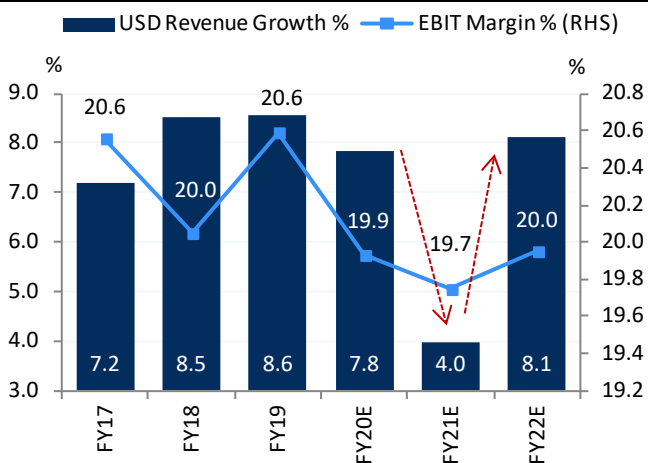
Source: Company, HDFC sec Inst Research

Mindtree Total Deal TCV Trend



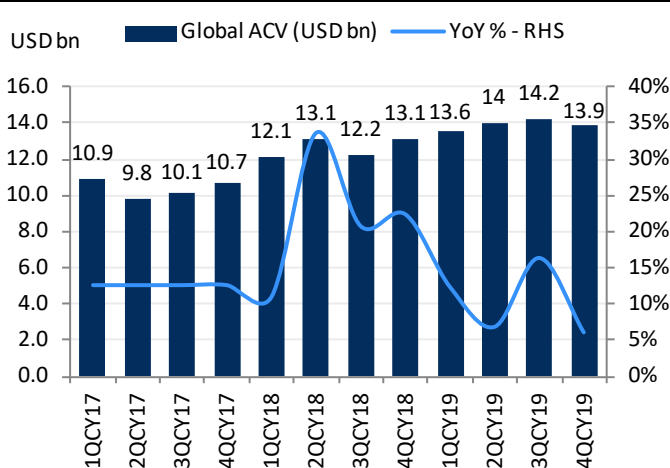
Source: Company, HDFC sec Inst Research

IT Sector USD Growth and Margin Trend



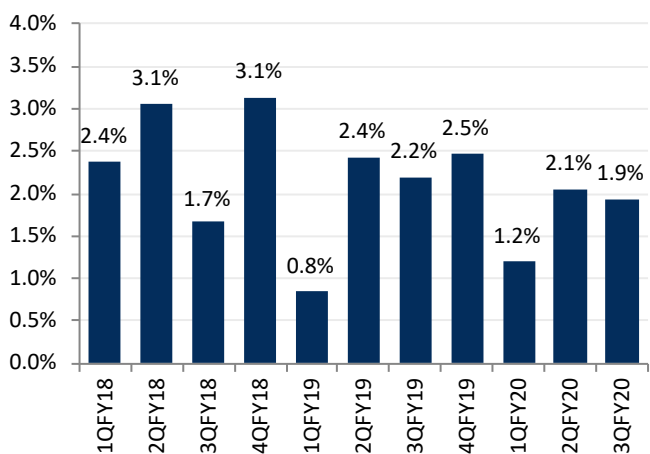
Source: Company, HDFC sec Inst Research

Global ACV Has Grown At A 8-Qtr CQGR of 3.3%



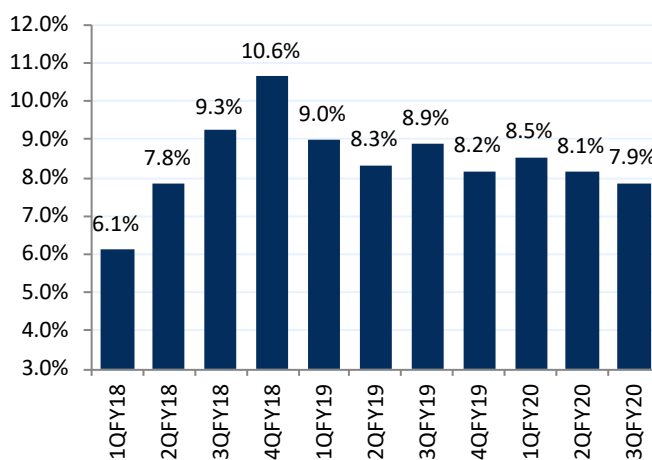
Source: ISG, HDFC sec Inst Research

IT Sector QoQ USD Revenue Growth Trend



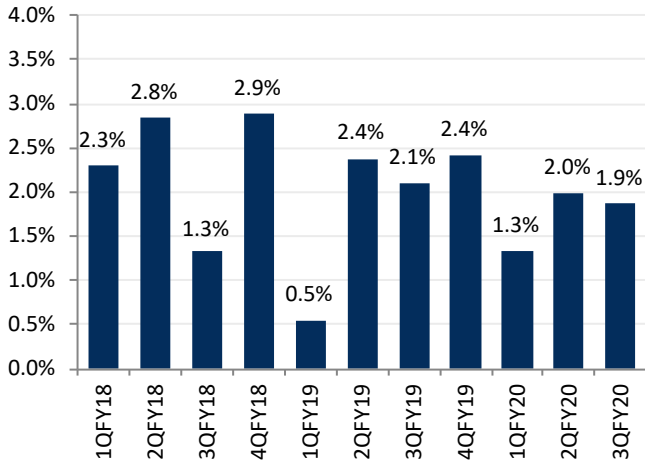
Source: Company, HDFC sec Inst Research

IT Sector YoY USD Revenue Growth Trend



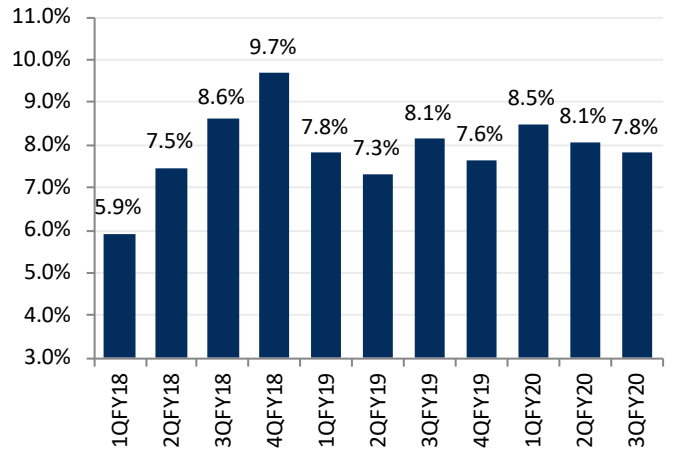
Source: Company, HDFC sec Inst Research

Tier-1 IT QoQ USD Revenue Growth Trend



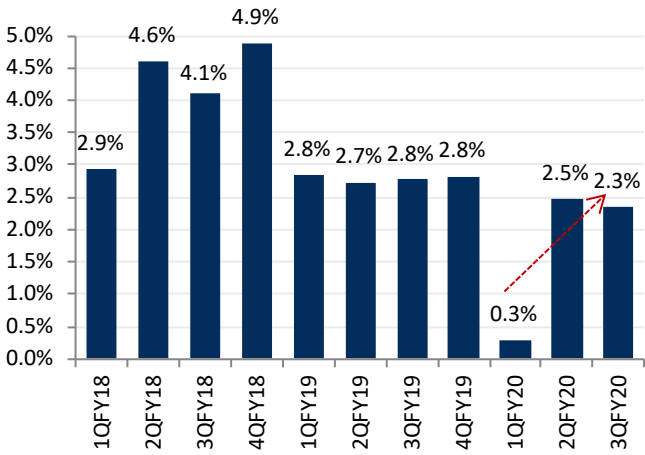
Source: Company, HDFC sec Inst Research

Tier-1 IT YoY USD Revenue Growth Trend



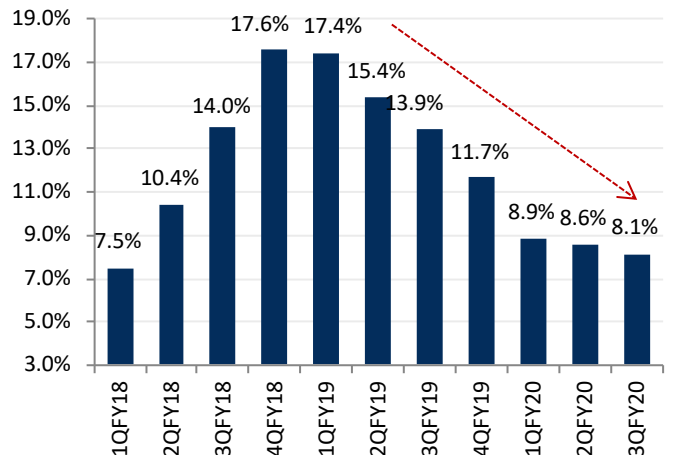
Source: Company, HDFC sec Inst Research

Tier-2 IT QoQ USD Revenue Growth Trend



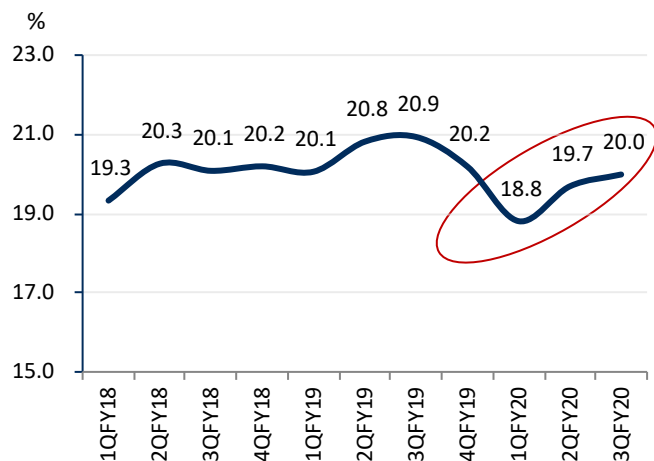
Source: Company, HDFC sec Inst Research

Tier-2 IT YoY USD Revenue Growth Trend



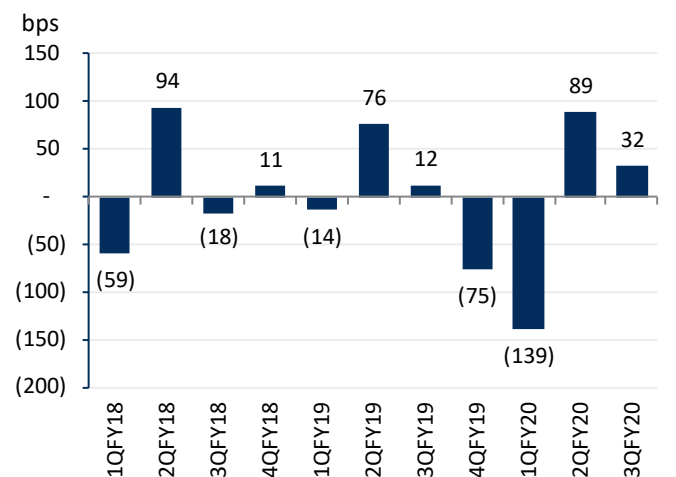
Source: Company, HDFC sec Inst Research

IT Sector Margin Trend (%)



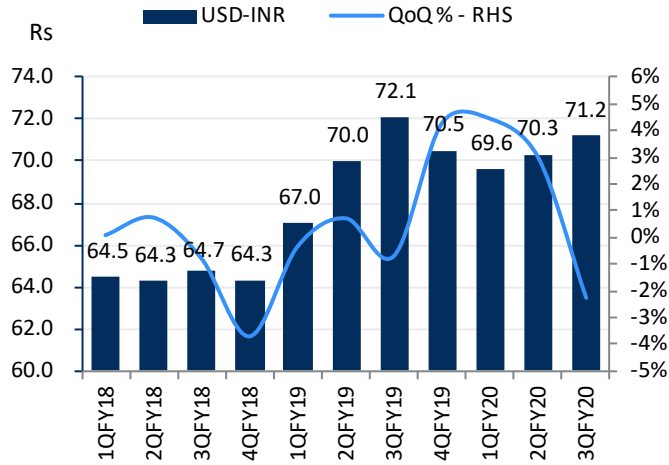
Source: Company, HDFC sec Inst Research

IT Sector Margin Performance Trend (QoQ bps)



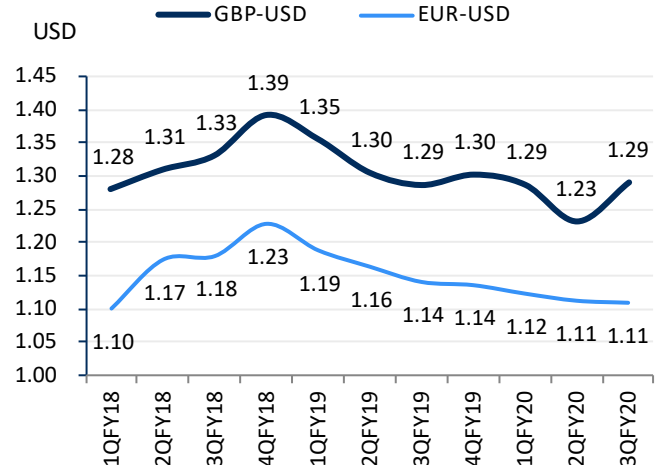
Source: Company, HDFC sec Inst Research

INR Depreciation In Last two Quarters Has Supported Margins



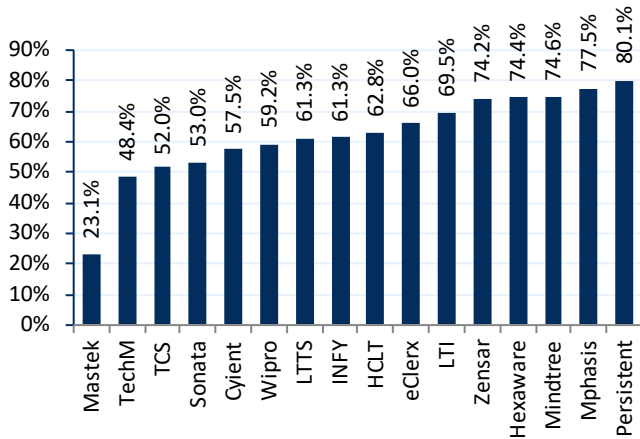
Source: Company, HDFC sec Inst Research

Appreciation of GBP against USD Due to Brexit Clarity



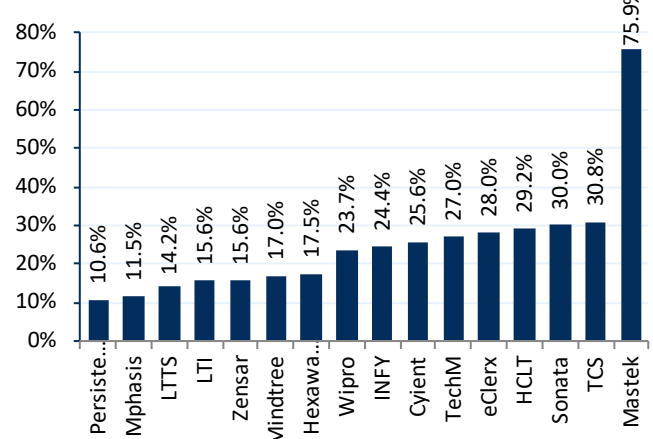
Source: Company, HDFC sec Inst Research

NorthAm Revenue Mix (%)



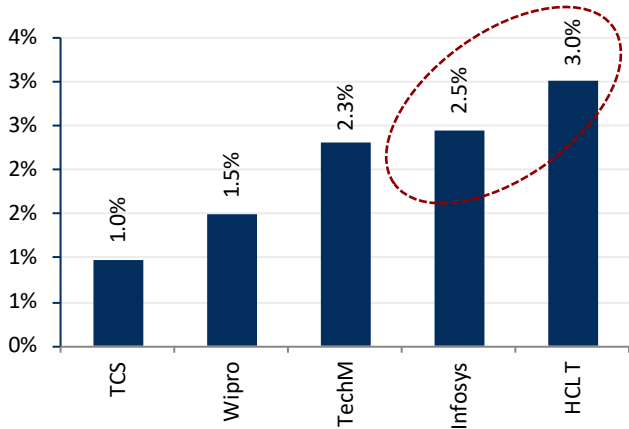
Source: Company, HDFC sec Inst Research, 3QFY20

Europe Revenue Mix (% of Rev)



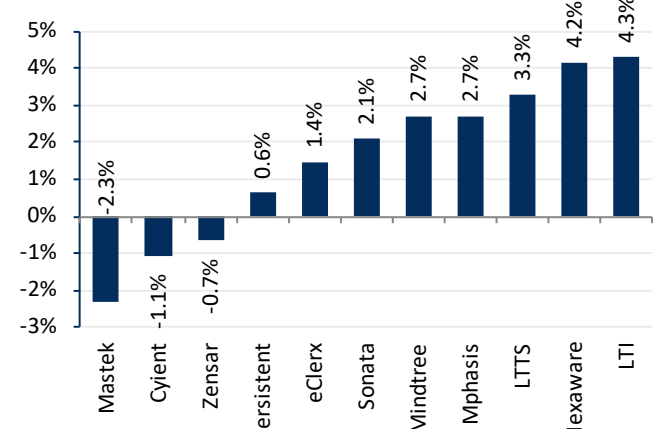
Source: Company, HDFC sec Inst Research, 3QFY20

Tier-1 IT NorthAm Performance 4-Qtr CQGR (%)



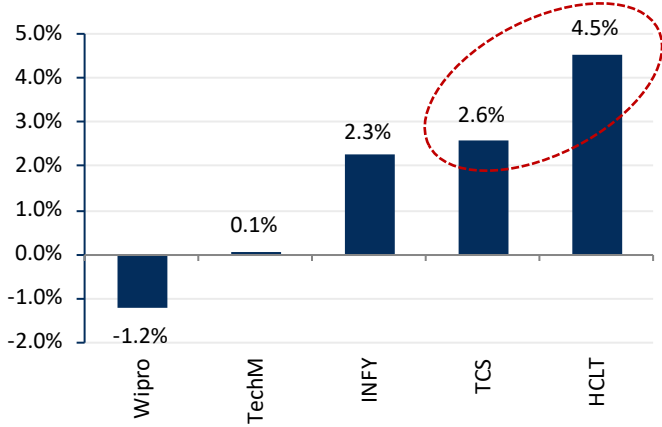
Source: Company, HDFC sec Inst Research, 3QFY20

Tier-2 IT NorthAm Performance 4-Qtr CQGR (%)



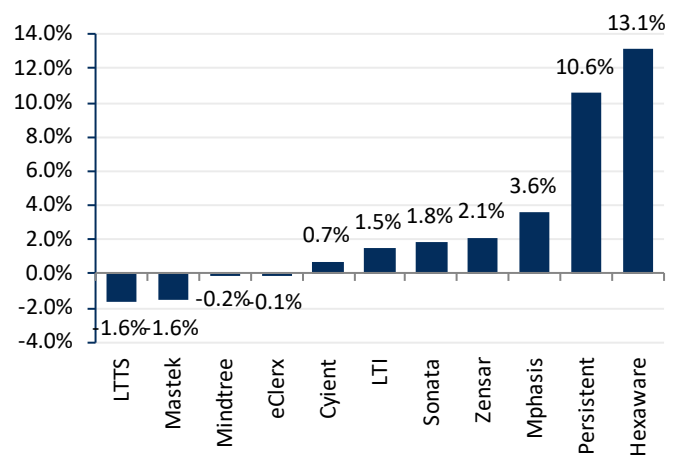
Source: Company, HDFC sec Inst Research, 3QFY20

Tier-1 IT Europe Performance 4-Qtr CQGR (%)



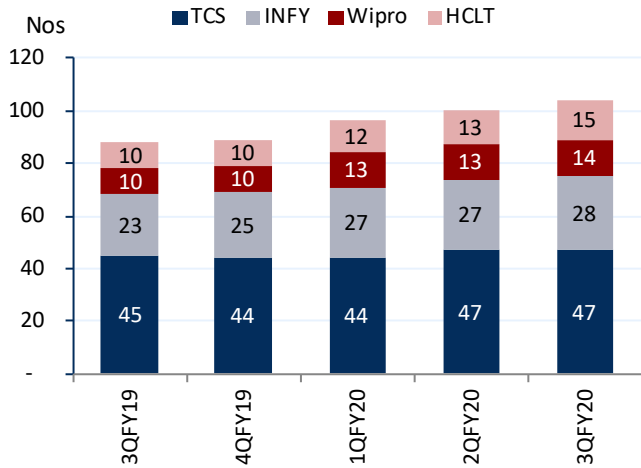
Source: Company, HDFC sec Inst Research, 3QFY20

Tier-2 IT Europe Performance 4-Qtr CQGR (%)



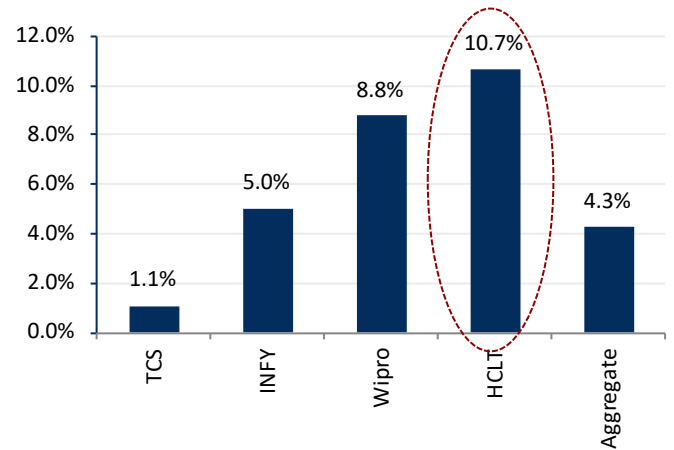
Source: Company, HDFC sec Inst Research, 3QFY20

USD 100mn+ Client Metrics



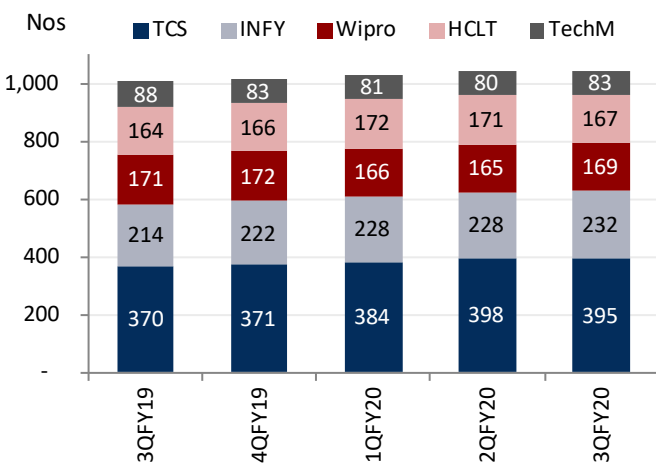
Source: Company, HDFC sec Inst Research

USD 100mn+ Client Nos. Growth (4-Qtr CQGR %)



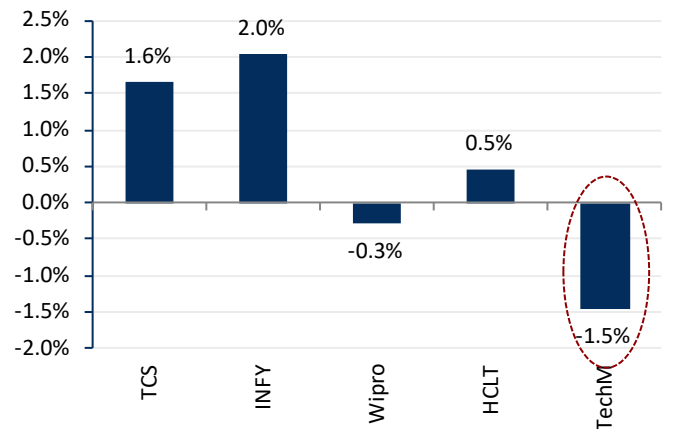
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USD 10mn+ Client Metrics



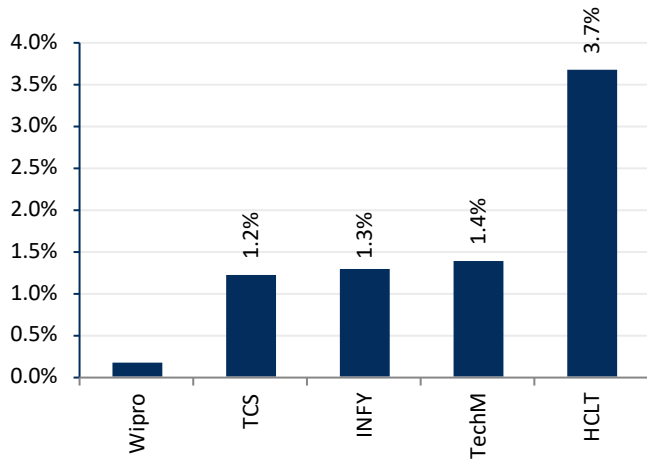
Source: Company, HDFC sec Inst Research

USD 10mn+ Client Nos. Growth (4-Qtr CQGR %)



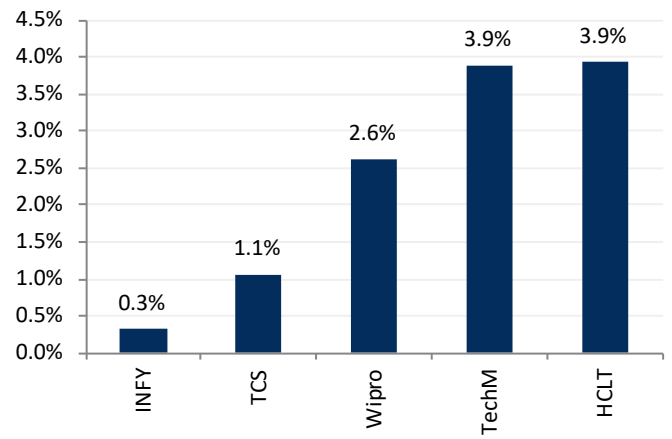
Source: Company, HDFC sec Inst Research, 1QFY20

BFSI 4-Qtr CQGR (%)



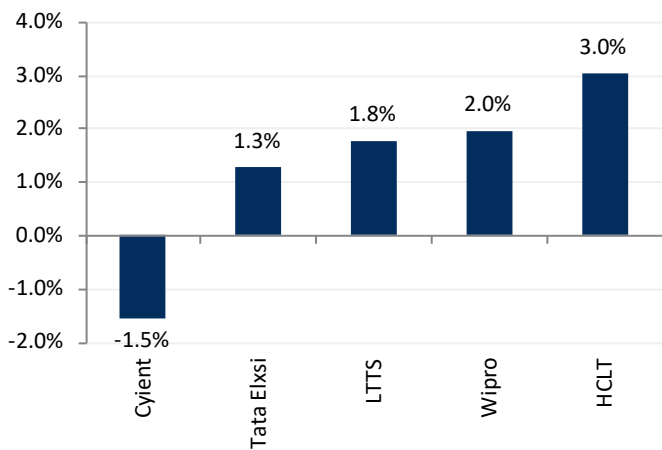
Source: Company, HDFC sec Inst Research, 3QFY20

Retail & CPG Vertical 4-Qtr CQGR (%)



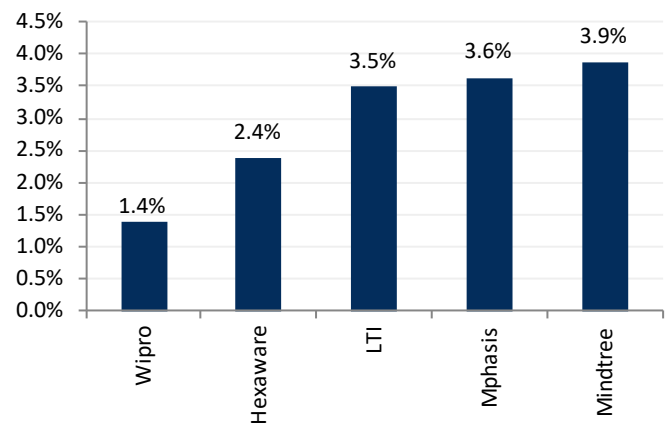
Source: Company, HDFC sec Inst Research, 3QFY20

ER&D 4-Qtr CQGR Performance (%)



Source: Company, HDFC sec Inst Research, 3QFY20

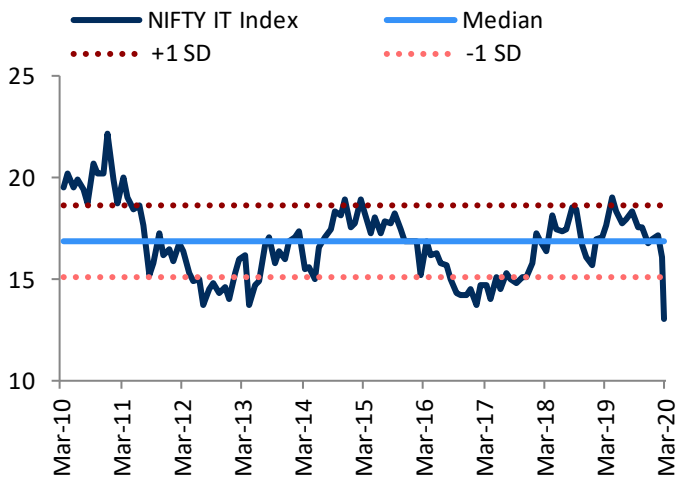
IMS 4-Qtr CQGR Performance (%)



Source: Company, HDFC sec Inst Research, 3QFY20

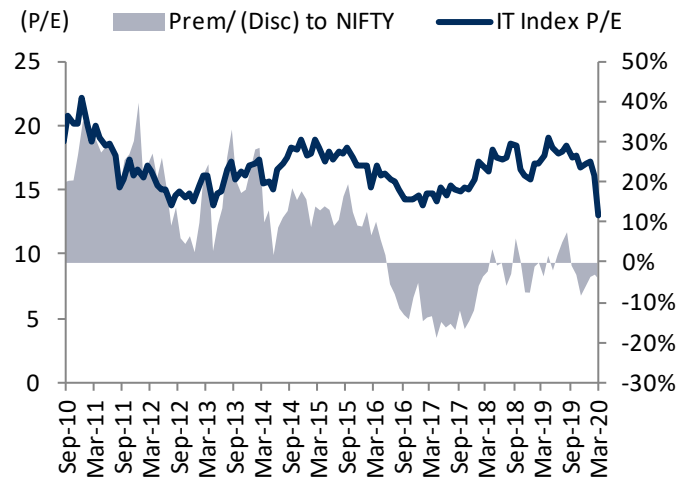
Valuation Charts

NIFTY IT Index Valuation 10Y-Trend (P/E 1-yr fwd)



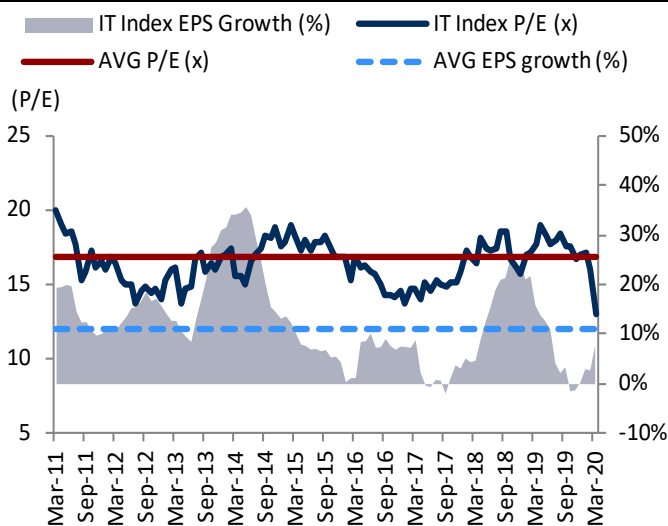
Source: Bloomberg, HDFC sec Inst Research

IT Index 10Y Valuation Trend vs NIFTY



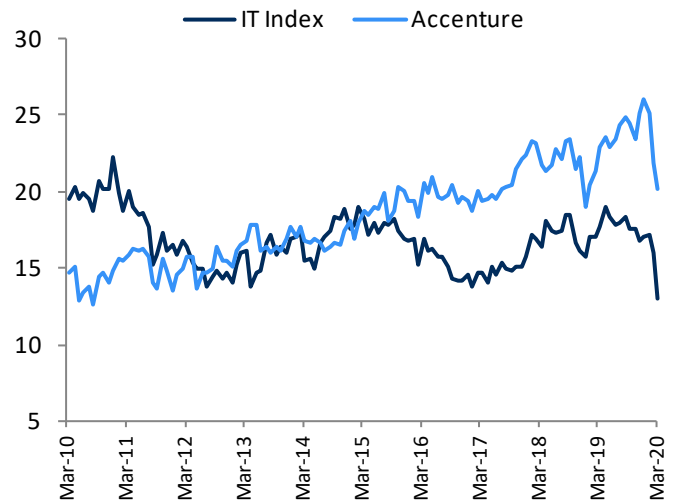
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IT Index 10Y Valuation and Earnings Growth Trend



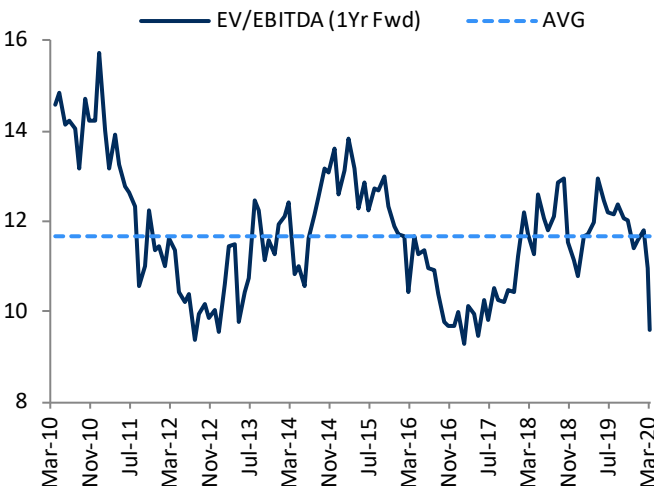
Source: Bloomberg, HDFC sec Inst Research

Indian IT 10Y Valuations Trend vs. Accenture (P/E 1-yr fwd)



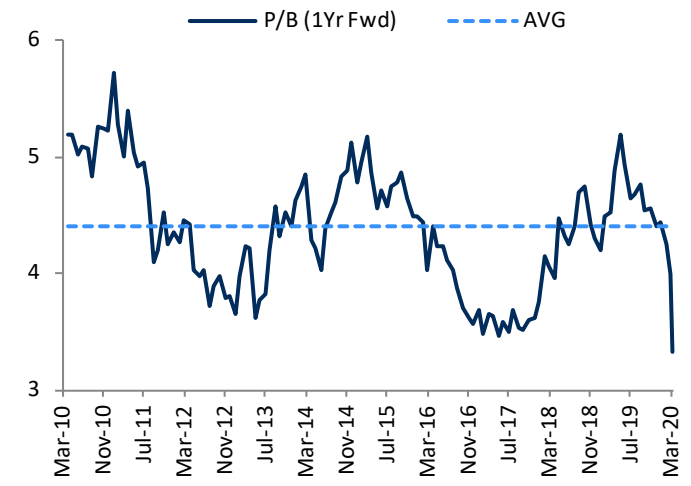
Source: Bloomberg, HDFC sec Inst Research

IT Sector EV/EBITDA (x) Trend



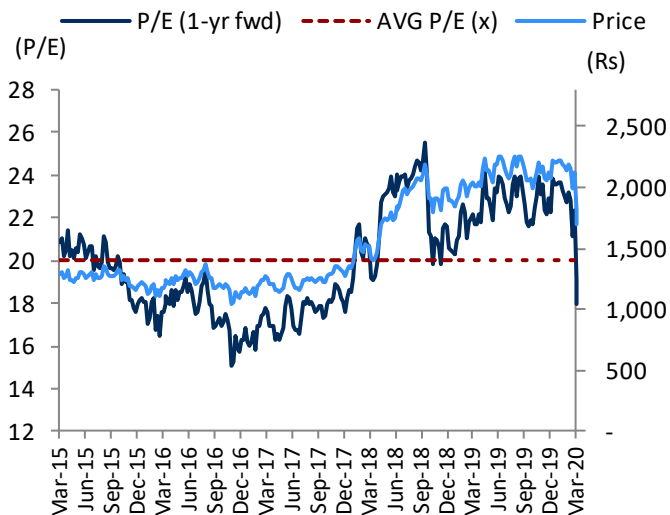
Source: Bloomberg, HDFC sec Inst Research

IT Sector P/B (x) Trend



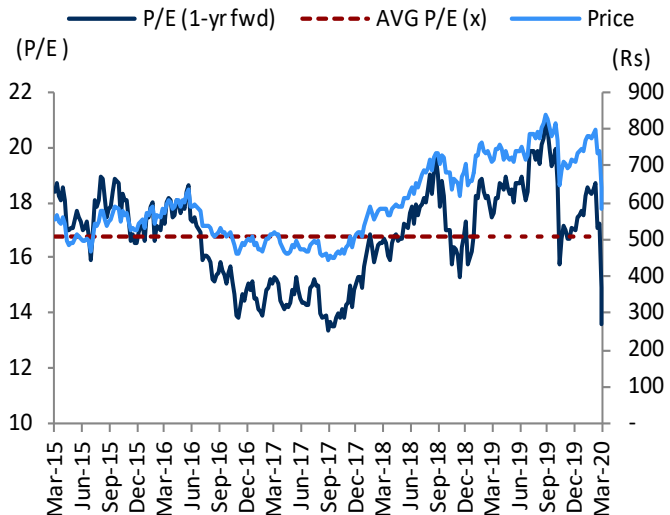
Source: Bloomberg, HDFC sec Inst Research

TCS P/E (1-yr fwd) Trend



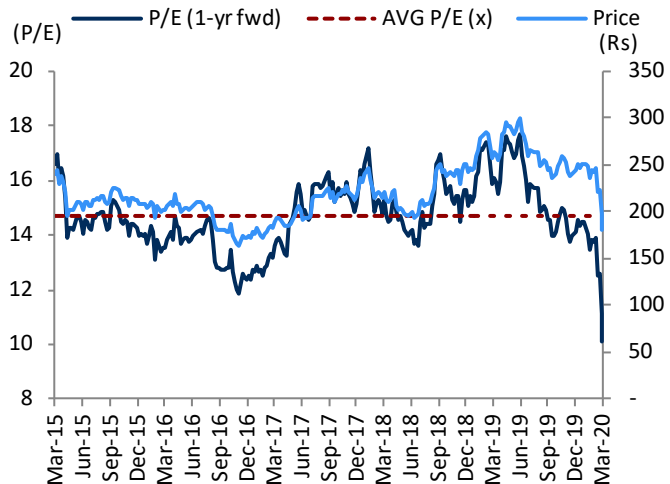
Source: Bloomberg, HDFC sec Inst Research

Infosys P/E (1-yr fwd) Trend



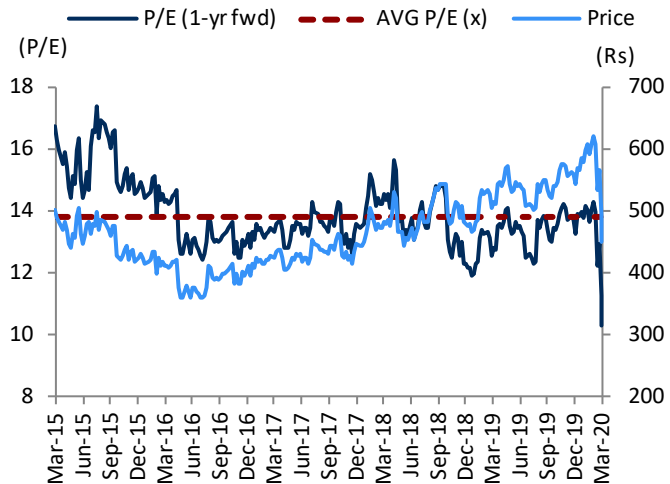
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Wipro P/E (1-yr fwd) Trend



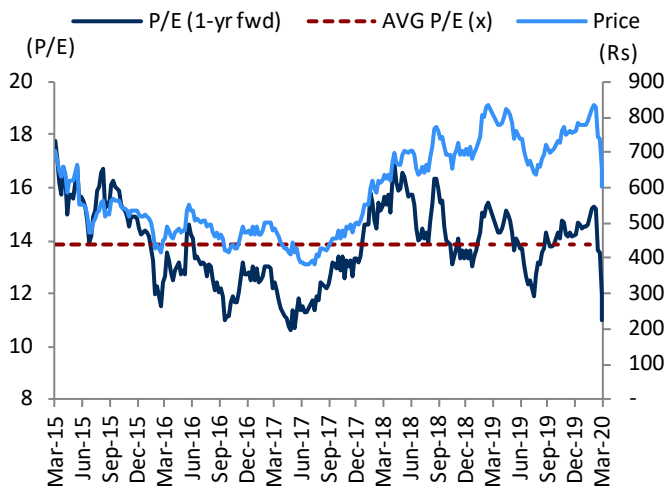
Source: Bloomberg, HDFC sec Inst Research

HCL Tech P/E (1-yr fwd) Trend



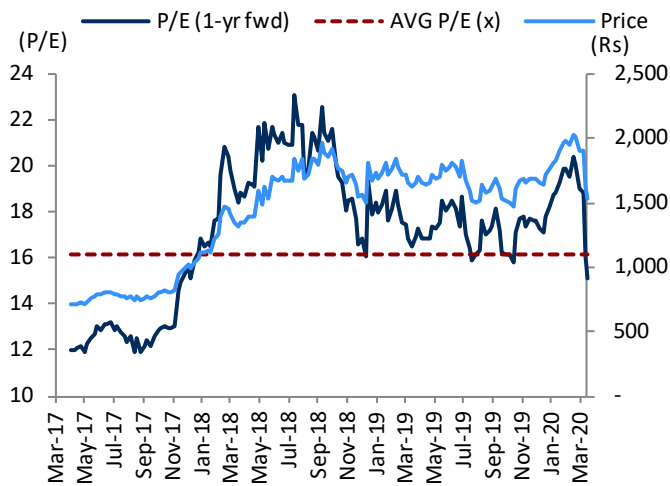
Source: Bloomberg, HDFC sec Inst Research

Tech Mahindra P/E (1-yr fwd) Trend



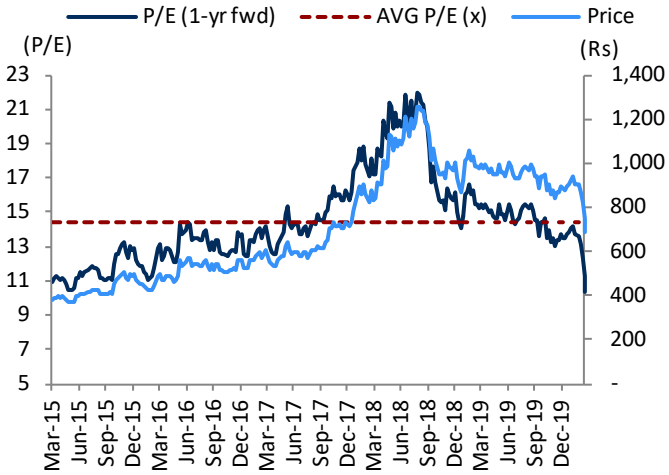
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L&T Infotech P/E (1-yr fwd) Trend



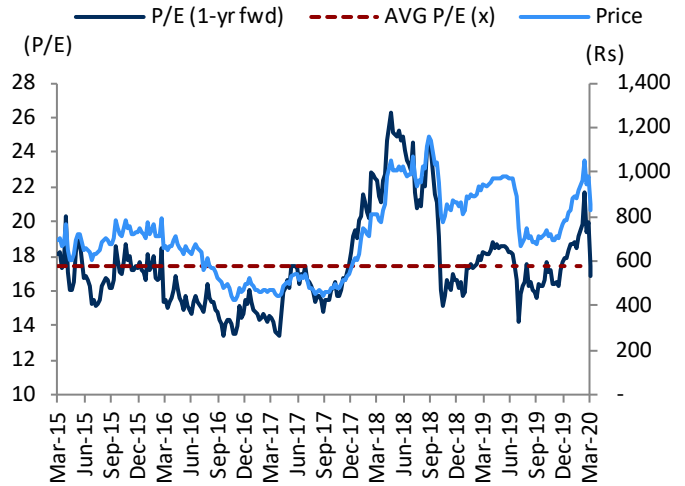
Source: Bloomberg, HDFC sec Inst Research

Mphasis P/E (1-yr fwd) Trend



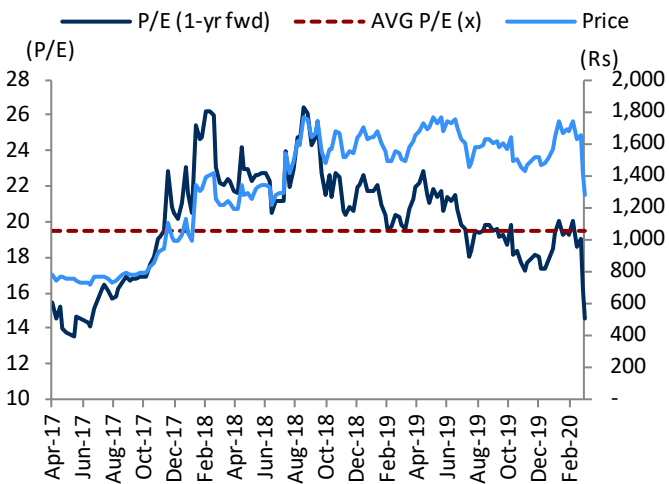
Source: Bloomberg, HDFC sec Inst Research

Mindtree P/E (1-yr fwd) Trend



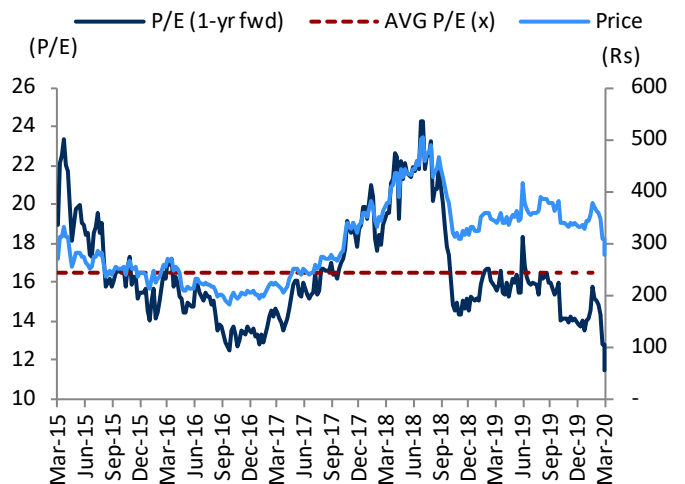
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L&T Technology P/E (1-yr fwd) Trend



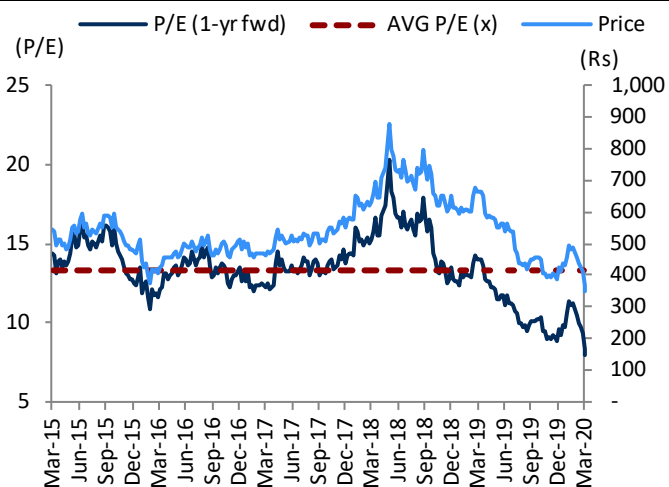
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Hexaware P/E (1-yr fwd) Trend



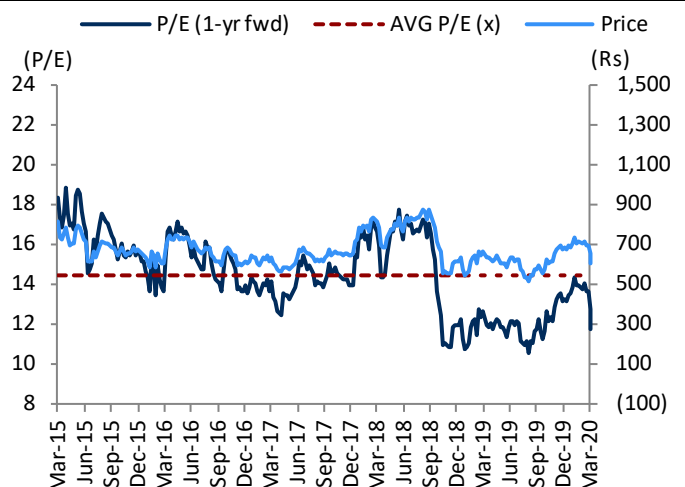
Source: Bloomberg, HDFC sec Inst Research

Cyient P/E (1-yr fwd) Trend



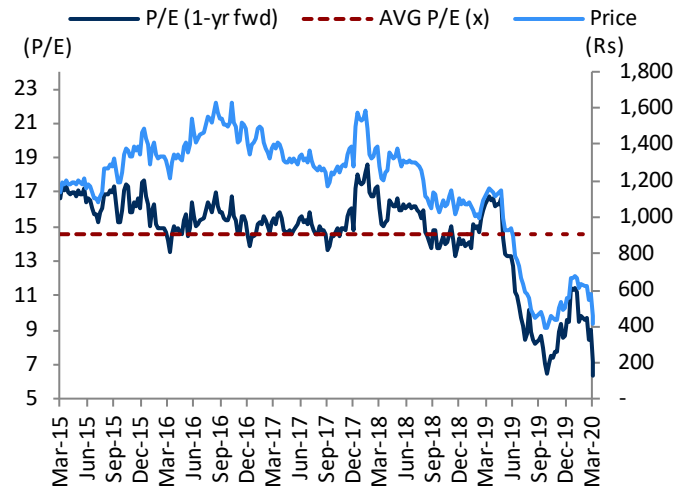
Source: Bloomberg, HDFC sec Inst Research

Persistent P/E (1-yr fwd) Trend



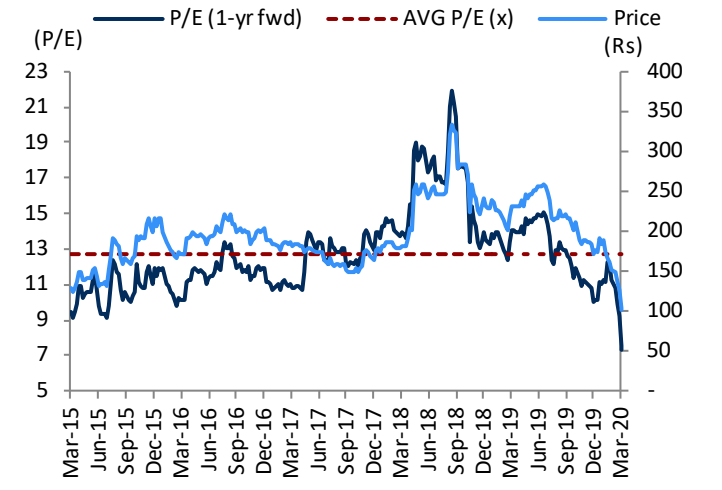
Source: Bloomberg, HDFC sec Inst Research

eClerx P/E (1-yr fwd) Trend



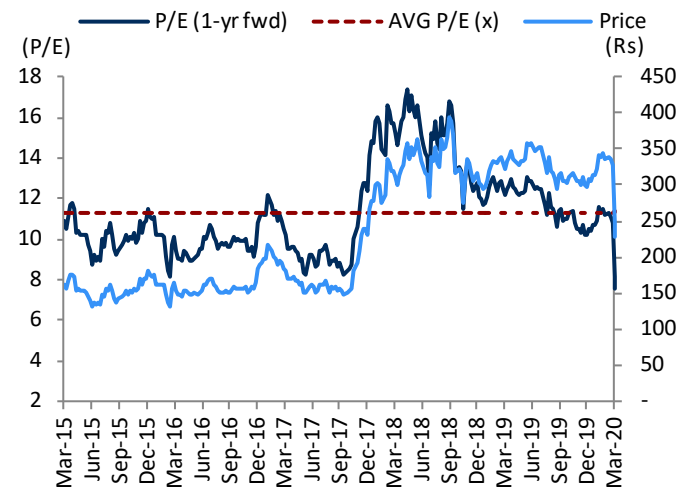
Source: Bloomberg, HDFC sec Inst Research

Zensar P/E (1-yr fwd) Trend



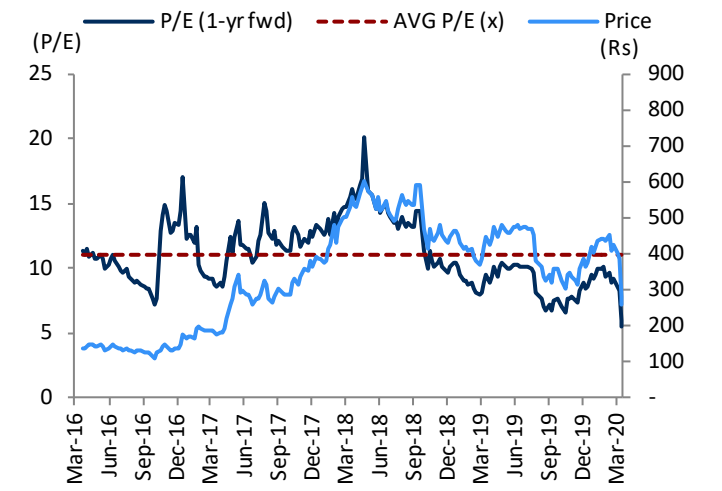
Source: Bloomberg, HDFC sec Inst Research

Sonata P/E (1-yr fwd) Trend



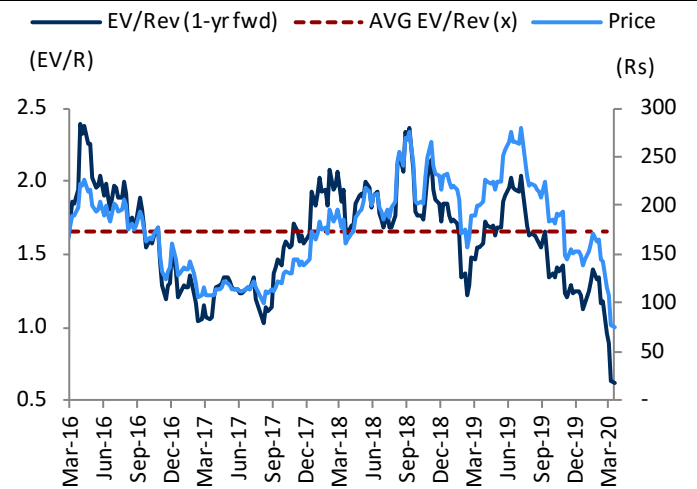
Source: Bloomberg, HDFC sec Inst Research

Mastek P/E (1-yr fwd) Trend



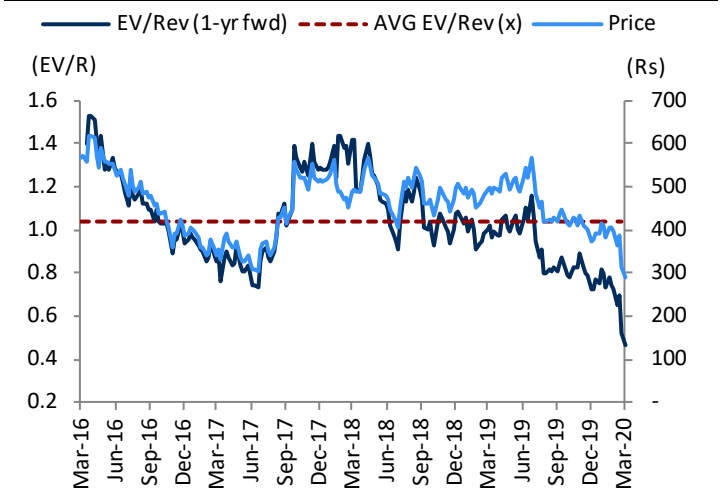
Source: Bloomberg, HDFC sec Inst Research

Intellect EV/Revenue (1-yr fwd) Trend



Source: Bloomberg, HDFC sec Inst Research

Majesco EV/Revenue (1-yr fwd) Trend



Source: Bloomberg, HDFC sec Inst Research

Disclosure:

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