

A blurred background image showing a stack of books with various colored spines (yellow, green, blue, red) and pages, creating a sense of depth and knowledge.

Valuepickr Chintan Baithak June 2019

Tata Elxsi

By Kumar Saurabh

Business Model – SBUs and Sectors

The larger business segment – Software Development & Services - can be further categorized into Embedded Product Design (EPD) and Industrial Design & Visualization (IDV) divisions.

Embedded Product Design: Provides technology consulting, new product design, development and testing services for the automotive, broadcast, consumer electronics, healthcare, telecom and transportation industries

Engineering Research & Development continues to be the fastest growing segment at over 12%, driven by global OEMs increasingly embedding software & services into their products.

Industrial design and visualization: Develop brands and products by using design as a strategic tool for consumer insight, branding, industrial design, visual design & merchandising, design engineering and manufacturing support

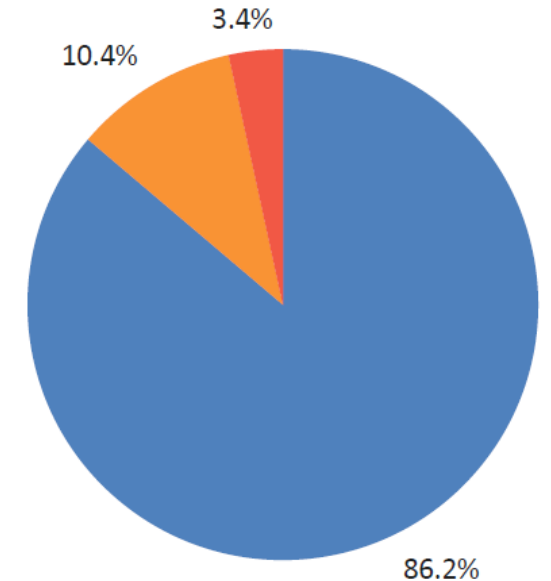
- 5000+ Engineers and 500+ designers

<https://www.youtube.com/watch?v=V6UImTSbMEI>

<https://www.youtube.com/watch?v=Ngs6xC93PV4>

Helps enterprises re-imagine their products and services – from strategy, consumer research and insights, to service and experience design, technology implementation, integration, launch and beyond

FY19 Revenue Composition

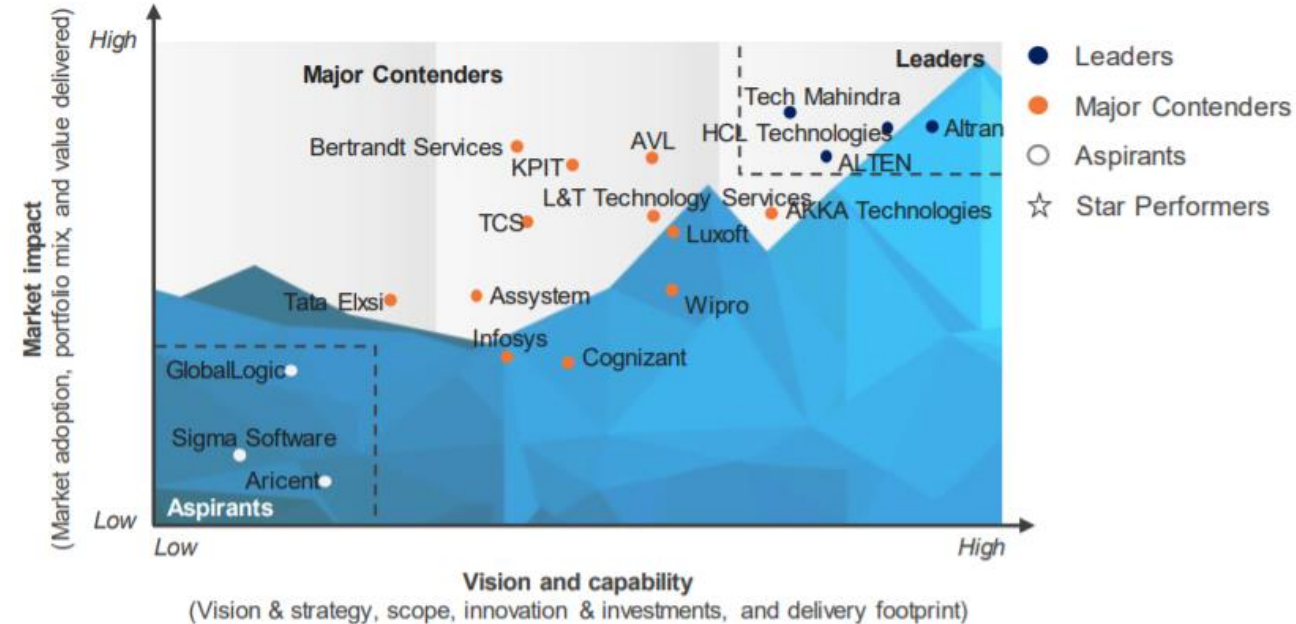


Business Model – SBUs and Sectors

Transportation

- Design and product engineering services from architecture to launch and beyond accredited with Automotive SPICE Level 5 certification
- Licensed our advanced autonomous vehicle middleware platform “AUTONOMAI” to one of the world’s top five automotive OEMs for their driverless car R&D.
- Automotive contributes 60% of revenue
- Works with 14 of the top 20 global OEMs and 35 of the top 50 suppliers including BMW, Daimler, and Jaguar Land Rover.
- Investing in developing products and solutions that leverage digital technologies for key industry verticals - such as AUTONOMAI, Tata Elxsi’s software platform for driverless cars. GAC motor and Great wall motors currently signed in China for platform

Everest Group PEAK Matrix™ for automotive ES



Business Model – SBUs and Sectors

Broadcast & Security

- Supports product development lifecycle from R&D, new product development and testing to maintenance engineering for Broadcast, Consumer Electronics and Communications
- Converging with Broadcasters & Telecom operators both vying for share of consumer wallet for voice, data, and content services with increasingly preferring over-the-top (OTT) content consumption via devices such as Smart TVs and mobiles
- Tata Elxsi's OTT services helps customers launch multi-platform OTT services, supported by tools for content analytics, content discovery, Ad integration and 24x7 monitoring support. Chosen by Airtel as a technology partner for system integration for their Internet TV. Partnered with ZEE5 for multi-platform front-end application development of its new digital entertainment platform including multilingual user experience and next generation voice-based GUI.
- FalconEye. It's a test automation solution that we've now been successfully licensed to over six operators
- Panasonic Appliances has selected your company as their strategic global R&D partner. Established an Offshore Development Center (ODC) to enable Panasonic to bring in advanced technologies such as robotics and AI to create smart and futuristic products for global markets

Industrial Design and Visualization

- Design services span digital and physical aspects to humanize complexity of underlined technologies and make them intuitive and easy to use, driving customer delight, loyalty and growth
- Selected by the Airports Authority of India (AAI) to improve passenger experience for all AAI managed airports. primarily responsible to set the wayfinding and information design guidelines for all AAI airports coming up in the future

How Business has performed

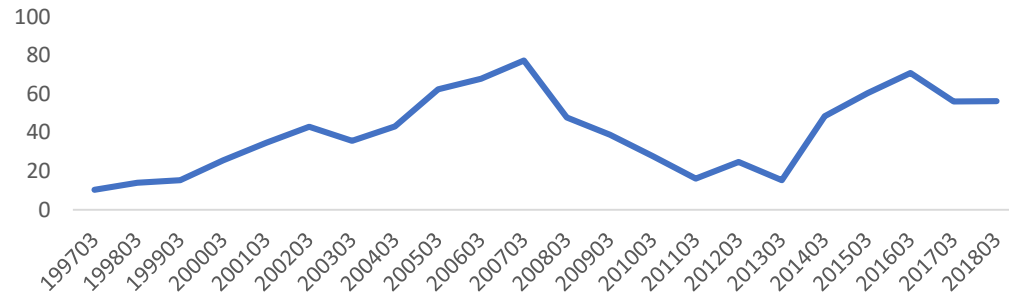
	P/E	EV/EBITDA	DIVIDEND YIELD	PEG	Earnings Yield	EBITDA	PAT	TAX	DEBT/EQUITY	ROA	ROE	ROCE
MIN	18.17	10.74	0.73%	-0.76	2.58%	9.93%	3.47%	33.86%	0.0	6%	11%	14%
MAX	38.79	22.43	2.57%	2.13	5.50%	28.14%	17.32%	34.68%	0.3	26%	40%	61%
AVERAGE	30.57	16.06	1.31%		3.27%	21.15%	11.86%	34.17%	0.1	20%	31%	46%
CURRENT	18.17	10.63	1.00%	0.87	5.50%	28.14%	18.16%	34.04%	0.0	25%	33%	49%
DISCOUNT TO AVG.	40.6%	33.8%		-5.3%	40.6%	6.99%	6.30%	0.13%		5.0%	2.0%	3.0%

	CFO	PAT	CFO/PAT	CAPEX	Dividend	FCF without Div.	FCF	FCF/CFO	SALES GROWTH	EPS GROWTH
10/9 YR	998.9	940.3	1.06	210.7	327.0	788.3	461.3	0.79	16.1%	19.4%
5 YR	732.0	747.6	0.98	110.6	224.2	621.4	397.2	0.85	23.0%	83.9%
3 YR	462.5	569.6	0.81	70.2	161.9	392.3	230.3	0.85	27.8%	52.7%
1 YR	197.1	240.0	0.82	12.9	68.5	184.1	115.6	0.93	12.0%	37.3%
COMPANY NAME	SALES	GROSS PROFIT	EBIT	PAT	DIVIDEND	ROIC	ROIIC	EPA	EPA/Sales	EPA
10 YR CAGR	14.2%	14.6%	21.0%	17.1%	13.6%	27.7%	31.1%	15.5%	8.3%	15.5%
5 YR CAGR	18.0%	18.3%	58.6%	62.8%	34.5%	34.7%	44.4%	-375.4%	10.0%	-375.4%
3 YR CAGR	17.7%	18.4%	32.5%	32.6%	26.0%	34.8%		30.5%	10.9%	30.5%
1 YR GROWTH	12.0%	12.6%	37.6%	37.3%	37.52%	32.6%		39.5%	12.0%	39.5%

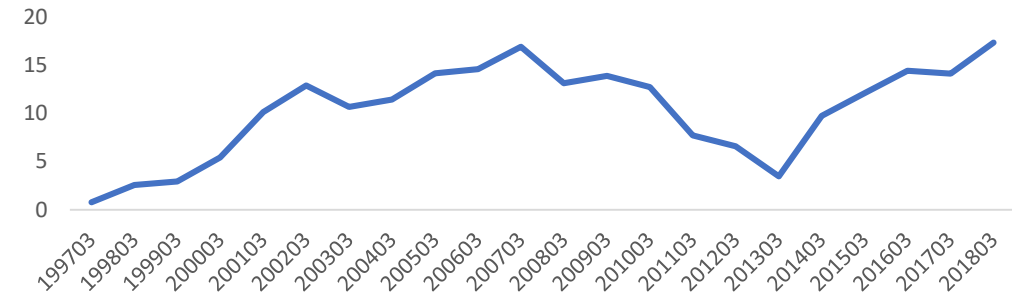
Gross Margin	PAT/NPM Margin	Tax Rate	Receivable as a % of Sales	Inventory as a % of Sales	Interest Coverage	Debt/Equity	Current Ratio	CFO 3 Year Average	CFO/PAT 5 Year Average	FCF/CFO 5 Year Average	Promoter Share
25.1%	17.3%	34.0%	22.1%	0.0%	455.9	0.0	4.0	154	1.0	0.85	45.0%

How Business has performed

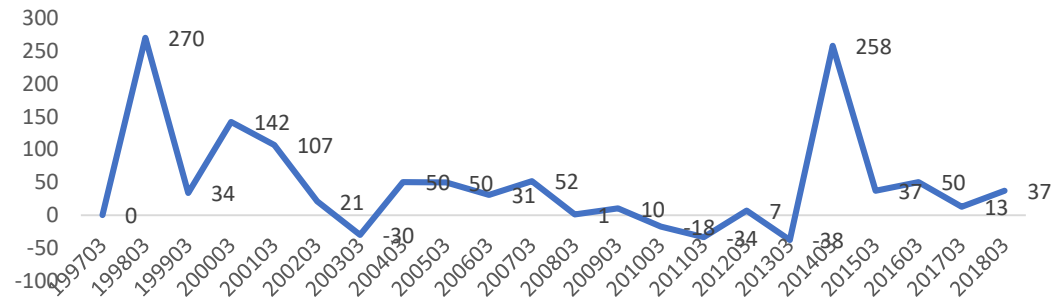
ROCE



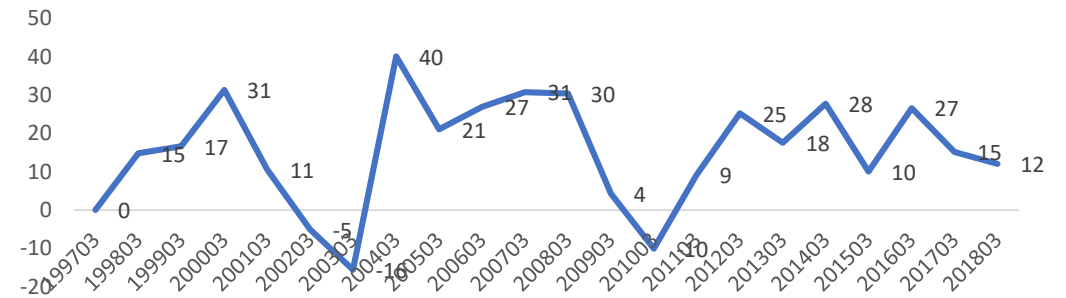
PAT Margin



Adjusted EPS Growth Rate YoY



Sales Growth Rate YoY



Profitability Growth Levers

- Per unit employee count or cost has not led to much improvement in topline
- Profitability growth has come from:
 - Topline growth
 - OP growth per unit OE & SGE
- Company has been spending ~2% of R&D expenses
- Latest hired employees are yet to significantly contribute to topline growth

Parameter	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Revenue	402	419	376	411	514	605	772	849	1075	1237	1237	1386
Operating Profit (Exc. OI)	75	82	67	47	56	70	112	171	248	274	274	345
Employee Expense	213	226	198	217	278	351	403	461	576	666	666	749
Operating Expense	47	52	54	74	96	122	133	143	169	193	193	208
SGA Expense	24	28	24	29	33	35	41	34	41	45	45	50
R&D Expense						17.45	16.31	23.37	21.74	23.34	21.84	
Employee Count								4156	4452	5205	5287	6000
Rev/Emp Cost	1.89	1.85	1.90	1.90	1.85	1.72	1.92	1.84	1.87	1.86	1.86	1.85
Rev/OE	8.53	8.03	7.02	5.56	5.33	4.96	5.79	5.95	6.35	6.40	6.40	6.68
Rev/SGA E	16.95	14.92	15.67	14.33	15.76	17.12	18.71	25.05	26.43	27.76	27.76	27.78
Revenue/Employee								0.204	0.242	0.238	0.234	0.231
OP/Emp Cost	0.35	0.36	0.34	0.22	0.20	0.20	0.28	0.37	0.43	0.41	0.41	0.46
OP/OE	1.59	1.57	1.26	0.63	0.58	0.57	0.84	1.20	1.46	1.41	1.41	1.66
OP/SGA E	3.17	2.91	2.80	1.63	1.70	1.97	2.73	5.04	6.09	6.14	6.14	6.92
OP/R&D E												
OP/Employee								0.04	0.06	0.05	0.05	0.06
R&D/Revenue						2.9%	2.1%	2.8%	2.0%	1.9%	1.8%	
OP/R&D Cost						4.0	6.9	7.3	11.4	11.7	12.5	

Company vs Industry

- Per unit employee count or cost has not led to much improvement in topline
- Profitability growth has come from:
 - Topline growth
 - OP growth per unit OE & SGE
- Company has been spending ~2% of R&D expenses
- Latest hired employees are yet to significantly contribute to topline growth

Margin Ratios	Company	Industry
EBIT Margin(%)	23.3	24.4
PAT Margin (%)	15.3	18.3
Performance Ratios		
ROA(%)	24.8	21.1
ROE(%)	40.1	23.0
Asset Turnover(x)	1.6	1.2
Sales/Fixed Asset(x)	7.0	3.5
Growth Ratio		
Net Sales Growth(%)	17.9	9.9
PAT Growth(%)	33.6	8.7
Financial Stability Ratios		
Total Debt/Equity(%)	0	0.07

Company vs Industry

Company	R&D/Sales	Headcount	Mean Salary	SGA Efficiency - Rev	Revenue/Employee cost	OP/Employee cost	Employee Profitability CAGR
Tata Elxsi	2.10%	10.50%	Low & Constant	High	No change, High	Increase	8%
TCS	1.10%	5.60%	Low to Medium	Exception	Dec, High	Decrease	2%
Infosys	0.50%	2.50%	Medium to High	Medium	No change, Med	Decrease	3%
Cyient	0.30%	-5.60%	Low to High	Low	Inc, Medium	Decrease	8%
Persistent	0.70%	7.70%	Medium to High	Low	No change, Med	Decrease	-1%
LTTS	NA	13%	High & Constant	Medium	Dec, Low	Decrease	-7%

- **TATA Elxsi USP**

- Spends highest on R&D as % of sales
- Double digit headcount growth
- Highest sales efficiency in terms of per rupee sales cost spent converted to topline
- Only company which has improved operating profit per unit employee cost

- **Tata Elxsi Concerns**

- One of lowest payer as per employee mean salary

- **Other Key point**

- TCS started spending heavily on SGA from 2017
- Though TCS has highest revenue per employee cost, it is decreasing due to increase in mean salary
- Others have higher mean salary compared to Tata companies
- LTTS has best headcount growth and good sales efficiency
- Cyient has cut down workforce and has led to profitability improvement per unit employee cost spent

SWOT Analysis – Company/Investor

Strengths	Weaknesses	Opportunity	Threats/Risks
<ul style="list-style-type: none">• Not a pure play body shop IT model. Ability to shift from a system integrator to EPD company• Strong historical record of on P&L , balance sheet, cashflows and return ratios• No baggage of replacing old IT business with new IT business, huge reskilling requirement etc• Revenue well distributed between Euro, GBP and US dollar currencies	<ul style="list-style-type: none">• Playing in niche area with global competitors• Management has not been very aggressive given the opportunity size• Lower pay structure for higher skill sets• No order book business for TCV visibility	<ul style="list-style-type: none">• From ELECTRINIZATION of auto, CME to IoT, AI and Automation driven opportunity – IoT, Healthcare devices Connected vehicle, Smarthomes, VR,AR• Double digit growth opportunity size• Looking to grow topline and bottom line from licensing of solution/ platform• Looking from 6-9 month projects to longer duration engagement	<ul style="list-style-type: none">• Higher revenue dependency on group company though decreasing (25% to 16% in 3 years)• Recession leading to R&D budget cuts by OEMs• Currency fluctuation• New CEO to take charge• Mid Level attritions• Competition and disruption



Other Key Factors

Other Key Data Points

Rs 500 Cr of cash on books

Management compensation : 3.9% of PAT

Promoter share : 44.52%

Name	201903 - % of Shares	201803 - % of Shares
AVENDUS ENHANCED RETURN FUND	1.10	
J P MORGAN FUNDS	1.29	2.86
LIFE INSURANCE CORPORATION OF INDIA		1.24
MOTILAL OSWAL MOST FOCUSED DYNAMIC EQUITY FUND		1.10

201803	Revenue from Operations	0.44
201803	Revenue from Operations	9.00
201803	Dividend Paid	21.04
201803	Dividend Paid	1.17
201803	Purchase of Goods Services (Including Reimbursement)	7.81
201803	Receiving of Services - Brand Fee & Other Services	4.17
201803	Remuneration & Commission	
201803	Contribution to Employees Post Employment Plan	
201803	Closing Balance - Trade Receivable	0.67
201803	Closing Balance - Trade Payable	3.39
201803	Closing Balance - Other Payable	
201803	Closing Balance - Trade Receivable	2.50
201803	Closing Balance - Trade Payable	0.01

Year End	Dividend per Share(Rs)
31/Mar/2018	11.00
31/Mar/2017	16.00
31/Mar/2016	14.00
31/Mar/2015	11.00
31/Mar/2014	9.00
31/Mar/2013	5.00

Tata Elxsi Reviews

3.6 ★★★★★ Rating Trends



Recommend to a friend



Approve of CEO

Madhukar Dev
328 Ratings

Pros

- "Job security and **work life balance**" (in 75 reviews)
- "Good **Work environment**, learned a lot" (in 51 reviews)

Cons

- "**less salary** and hectic office timing" (in 49 reviews)
- "**HR policies** are not employees friendly" (in 38 reviews)

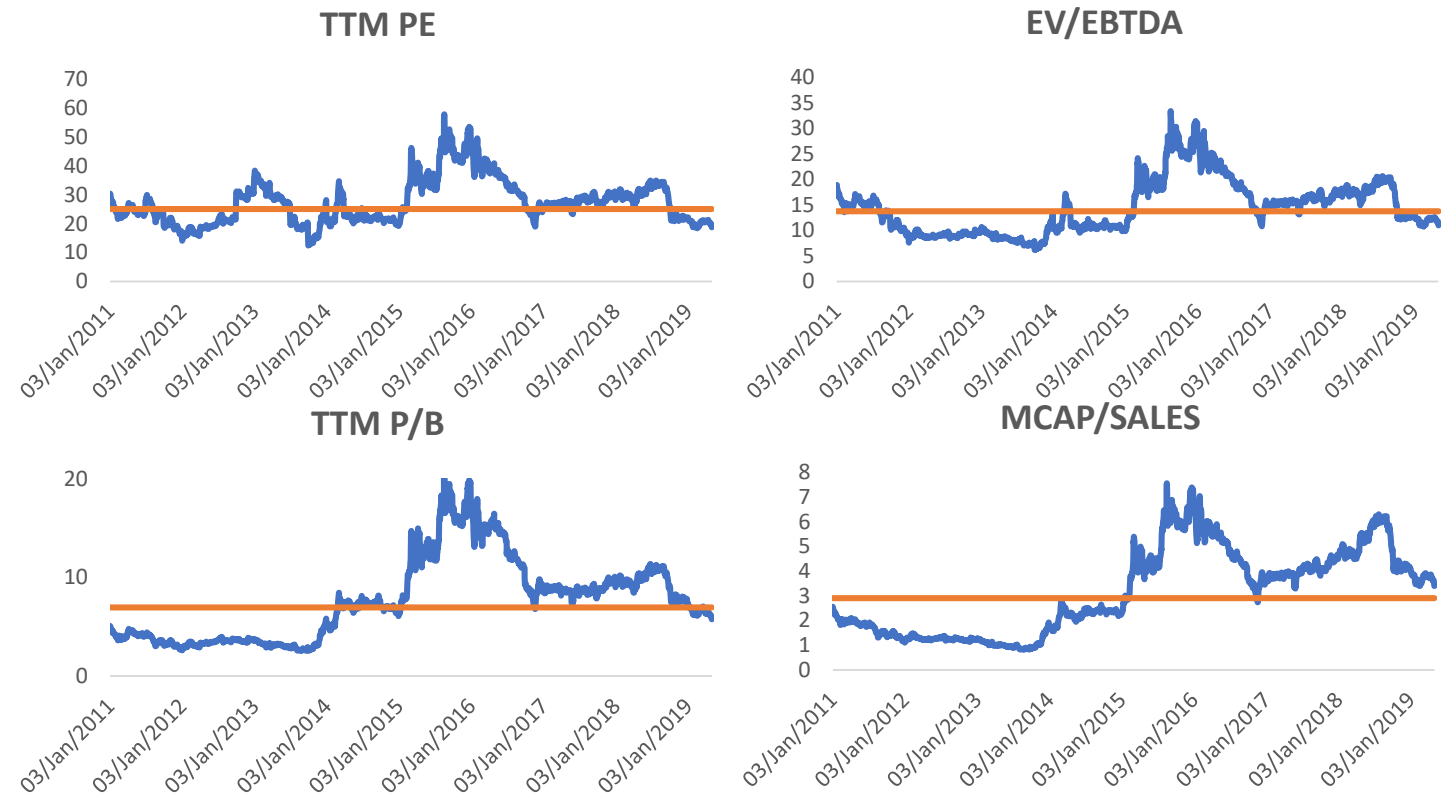


Valuation

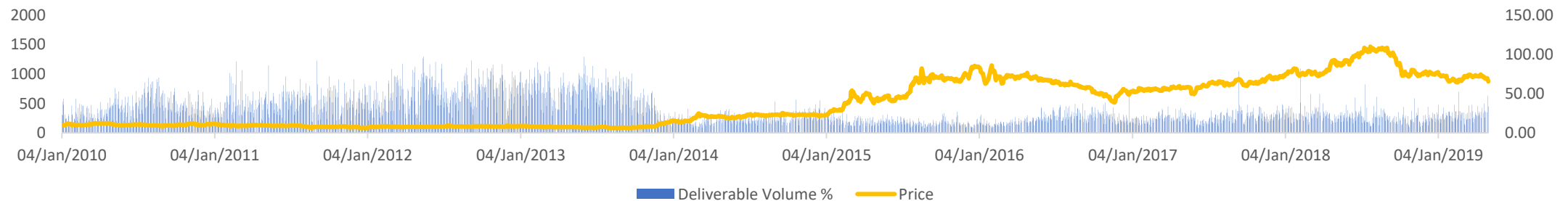
Valuation Attractiveness

Metric	Historical Average	Current	Gap
TTM P/E	25.1	18.8	25%
EV/EVITDA	13.7	11	20%
TTM P/B	7.0	5.8	17%
MCAP/SALES	2.9	3.4	-17%

Almost ~40% price correction with 830 as strong support technically



Price vs Deliverable Volume



Useful Links

<https://www.fortuneindia.com/technology/the-turnaround-at-tata-elxsi/100313>

https://tataelxsi.com/investors/TataElxsi_Call_Transcript_Q1FY18.pdf

<https://www.livemint.com/Politics/Vv747s5GTpDEHh8PQ1ehjM/India8217s-design-mavericks.html>

<https://www.glassdoor.co.in/Reviews/Tata-Elxsi-Reviews-E115262.htm>

<https://www.autocarpro.in/Interview/nitin-pai-we-have-readyto-deploy-adas-algorithms-for-l1--l2-and-l3-levels-of-autonomy-40929>

<https://www.indeed.co.in/cmp/Tata-Elxsi/reviews?fcountry=IN&floc=Pune%2C+Maharashtra>

<https://www.screener.in/company/TATAELXSI/>

<http://www.tataelxsi.com/>

<https://www2.everestgrp.com/Files/previews/Everest%20Group%20-%20Automotive%20ES%20PEAK%20Matrix%20Assessment%202017%20-%20CA.pdf>

<https://www.icra.in/Rationale/ShowRationaleReport/?Id=68559>

<https://www.quora.com/How-is-tata-elxsi-as-a-company-what-do-they-really-do-and-what-are-growth-prospects-from-career-and-business-growth-point-of-view>

<https://www.quora.com/After-working-for-5-years-in-Tata-Elxsi-for-embedded-domain-what-will-be-my-salary>

<https://www.youtube.com/watch?v=wB6XcjRVO10>

<https://www.youtube.com/watch?v=xdQDPVYA9zs>

<https://www.autocarpro.in/Interview/nitin-pai-we-have-readyto-deploy-adas-algorithms-for-l1--l2-and-l3-levels-of-autonomy-40929>



Thank You



Back up

Business Model

So, classically, as a technology company what we would do - we would be associated with product engineering that typically happens in new product development. Then the product goes to market and post its launch in the market, we typically get associated in terms of sustenance and maintenance of that product, because there is continued engineering and there are design changes that are made through that lifecycle. But increasingly with new technologies like digital marketing, AR, and VR, we're even associated with helping companies launch these new brands and products. And we believe, therefore, that this is what encompasses our uniqueness - the ability to think on behalf of our customer's customer; that is the end consumer and therefore be able to help them deliver that great experience to that end-consumer, automatically leading to great outcomes for the brands and the businesses itself. So, that is really our focus. On financial performance, I think we've

Going forward, of course we continue to invest in the ecosystem. So whether it's a Qualcomm or Renesas or Intel in the silicon space. Equally we work with leading software companies so whether it's Irdeto for security in the car, whether it's DiSTI for 3D graphics, whether it is Green Hills for hypervisors and operating system. So we have a whole set of partners that we're deeply embedded with and of course consortiums too. So whether it's the R-CAR consortium, whether it's AUTOSAR, we're integral parts of these ecosystems.

quickly now and like I said, we go beyond now just product development. So if you look at again public examples, we've built this wonderful virtual / mixed / augmented reality experience for Tata Motors. This was at the Geneva Motor Show where Tata Motors was participating and aiming to raise its international profile. As you know the sports car that Tata Motors unveiled as well as all the other models that they had there, including Tigor, Nexon, Hexa and so on, so you had a VR experience that allowed users to experience the cars without being in one. You had mixed reality, almost like Iron Man where you can see both the outside world, as well as a virtual world together and that would allow you to take a look at the show car, and see what goes inside the car even as you are looking at the exteriors. It was rated among the best in the show. Believe me, Geneva Motor Show is absolutely up there amongst premiere auto events in the world. So you are competing with the largest OEMs there are, and to create such an experience I believe is a wonderful thing for Tata Motors; a wonderful thing for us too. And why is it wonderful, because as I think about VR, AR and MR, it's not just technology. Yes- there is a whole lot of display technology and integration that is associated. There's a whole lot of content. So our visualization teams - as you know, we have this team that has been working earlier on movies and so on - so that entire team built the content that you need to represent absolutely realistic cars, virtual environments and so on. And then the design team came in to work out how users will experience the entire journey. So for us, it's a wonderful example of technology, design and visualization.

Business Model

other verticals. So healthcare is a little recent. We continue to invest in this business. We have already won some key customers and these are big customers. We are hoping that we will scale as we go along with them, but equally we do understand where the healthcare industry comes from because this is similar to where the automotive industry was coming from, 20 years back. These are highly mission critical industries - they demand reliability, safety and compliance to regulations that go beyond the usual. It doesn't matter if your phone stops working, but it does matter if your car stopped working on the road. It does matter if the medical device that you're using had an error, right, because these are life-and-death. So they are typically a little hesitant, a little more conservative in how they engage in terms of outsourcing. So we see the same signs as we see as automotive. So we're hoping that between ourselves where we continue to invest and how we see the industry shaping up, we will scale. So at this time that is where we are, but we have good things to show you. So, if you look at the kind of work that you're doing, we're working on interesting innovations. So this sternum saw for heart surgery was jointly developed along with Narayana Hrudayalaya. And the idea was how can you speed up the entire process of heart surgeries. The goal was how do we bring in precision, calibration and so on into the way this particular operation is done.

Enabling seamless
adoption of Next-gen
Android TV STB platform

Smart TV Application

Video Surveillance
Webcam Systems

Multi-Domain Controller
ECU

Design & development of
infusion system

ROHS2 compliance for
drug delivery device

Next-gen wireless
stethoscope

Video test automation

Connected TV &
multiscreen

Packaging - Clinic Plus
Strong & Long Health
Shampoo

Service Design - Mumbai
Monorail

Branding & Graphics -
Dhara Oil

Business Model

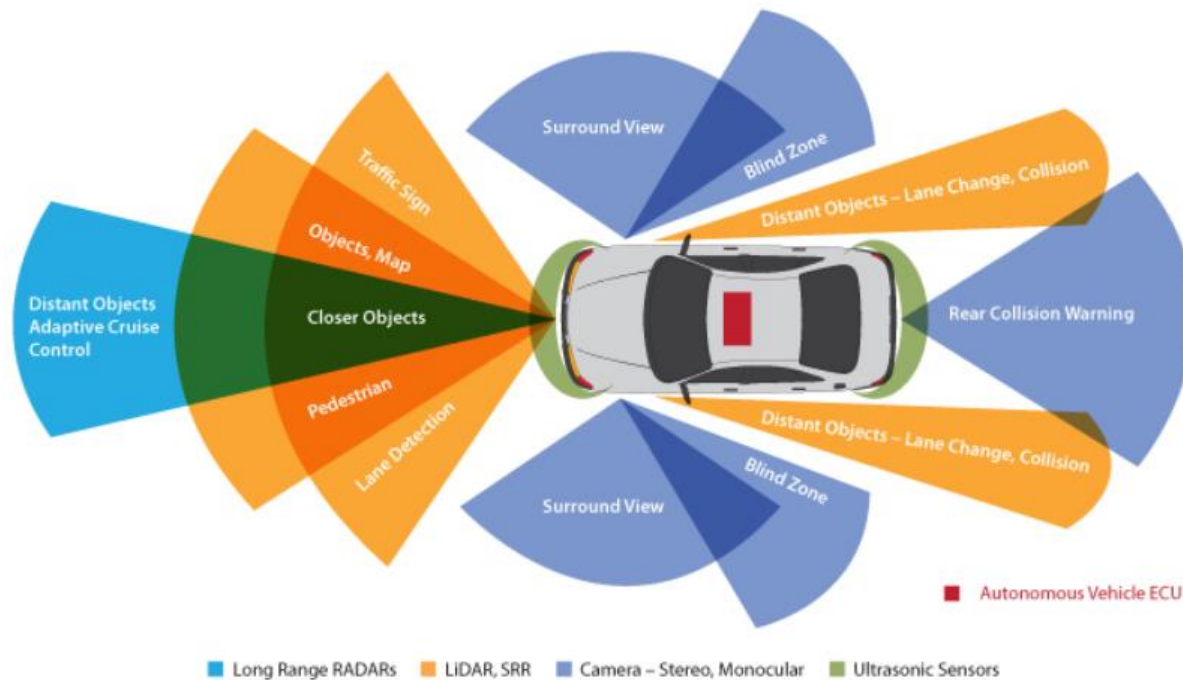
shampoos, soaps, conditioners and so on, many of the products are you see there would have been designed by us. So whether it's P&G, whether it's HLL, whether it's L'Oreal, whether it is Emami, we have a global roster of customers in the FMCG space. So we've worked with all these FMGC companies to help design the way the packaging looks, the branding and so on, so forth, and the way it dispenses and so on. So that's one aspect of what we do and what you would see directly publicly in the supermarket shelf, but equally our work extends to service design, user experience, visualization and beyond.

So again some interesting examples which you would not know, so we work with Tata Automation Ltd that has built this Make in India robot. It is a pick-and-place robot, comes at a cost that is far less what it would cost you to buy a comparable robot anywhere else. So we've worked on the design of that robot for them. It's a wonderful piece of work working with fellow Tata Company. Equally you would find other products and I've just picked up what we did in the last three months - ProteinX and their entire new product launch. As you're aware, Blue Star has launched a whole range of water and air purifiers, again we have been partnering with Blue Star, with Mother Dairy, with Anchor and so on and so forth. So a whole set of work on the packaging side, and some wonderful work that we're doing on service and experience design. So as you're aware the experience design at T2 has won multiple awards. It's a wonderful experience inside T2 where we have designed the entire passenger experience - which is how do you design that space for people to move, how do you make sure that you're putting services in the right place, how do you make sure there are appropriate customer touch points. For example, you'll find an emerging need of passengers in airports are charging points and that's the one thing that are lacking in Bangalore - we don't have enough charging points

So Kochi Metro is truly a wonderful experience for us too. Why? Because we worked on Kochi Metro right from the brand and brand logo, down to the passenger experience inside the train, outside the train, in the station, the mobility app, the HMI that you use at the kiosk. Equally the branding of the tickets, but most importantly the integrated transportation system because we worked with them to design the experience right up to the last mile. So how you would integrate rickshaws, taxis, buses and water taxis because Kochi allows that, how do you build a system that provides for the last mile whether you're reaching the metro station or getting off and reaching your last point. So your card just like your Suichi card in Japan or your pass in Singapore or the Oyster card in UK allows you to use that same card across services. It allows you to integrate that entire experience. So we believe that Kochi Metro has been a very defining moment for how metros can be built in India, built with design in mind, built with passengers in mind and we are quite happy to see that the Airports Authority of India has also commissioned 10 airports under its care for way finding and signage now by us. So we've just started on that exercise, which covers 10 major airports that are under AAI care, and what we're also doing is that we're setting the standard now and setting the guidelines for any airport that'll be built in India in the future. So there is science there, there's technology there and there will be design there.

Autonomai

Tata Elxsi's advanced autonomous vehicle middleware platform 'Autonomai', with deep learning and AI capabilities, is designed to help OEMs and system suppliers build, test and deploy customizable autonomous vehicle applications.



This solution supports sensor fusion with a variety of sensors from cameras to Radar and Lidar, and leverages sophisticated artificial intelligence (AI) and deep learning based algorithms to deliver the complex use-case scenarios expected of driverless cars.

Autonomai also allows rapid region specific adaptation through its pre-integrated validation datasets and AI & deep learning capabilities.

Key features of Autonomai:

- Modular Architecture to suit customer needs for Full Middleware / Systems / Subsystems / Specific advanced ADAS applications
- Plug and Play architecture for easy porting, optimization, integration & testing of customer systems, subsystems, and algorithms
- Supports combination of multiple sensors to suit customer requirements such as LiDAR, RADAR, Ultrasonic sensors and Mono/Stereo cameras
- Enables Rapid Region specific adaptation through pre-integrated validation datasets and AI & deep learning capabilities

<https://www.tataelxsi.com/ip-solution/automotive/Autonomai.html>

Competitive Analysis

Employee Mean Salary	2015	2016	2017	2018	2019
Tata Elxsi	11.1	12.9	12.8	12.6	12.5
TCS	12.1	15.6	15.9	16.8	
Infosys	16.9	17.7	18.8	19.1	
Cyient	13.0	13.8	14.9	18.7	
Persistent	15.4	18.2	18.7	20.4	
LTTS		20.9	20.2	20.5	

Revenue/Employee	2015	2016	2017	2018	2019
Tata Elxsi	0.20	0.24	0.24	0.23	
TCS	0.30	0.31	0.30	0.31	
Infosys	0.30	0.32	0.34	0.35	
Cyient	0.21	0.24	0.26	0.34	
Persistent	0.26	0.30	0.30	0.34	
LTTS		0.33	0.31	0.31	

Revenue/Employee cost	2015	2016	2017	2018	2019
Tata Elxsi	1.84	1.87	1.86	1.86	
TCS	2.45	1.96	1.91	1.85	
Infosys	1.79	1.81	1.82	1.81	
Cyient	1.63	1.71	1.75	1.79	
Persistent	1.70	1.64	1.63	1.66	
LTTS	1.76	1.56	1.55	1.52	

OP/Employee Cost	2015	2016	2017	2018	2019
Tata Elxsi	0.37	0.43	0.41	0.41	0.46
TCS	0.63	0.55	0.52	0.49	0.50
Infosys	0.50	0.50	0.49	0.48	0.45
Cyient	0.26	0.23	0.22	0.23	
Persistent	0.38	0.30	0.29	0.28	
LTTS	0.27	0.26	0.28	0.23	

Revenue/SGA Cost	2015	2016	2017	2018	2019
Tata Elxsi	25.0	26.4	27.8	27.8	27.8
TCS	19.5	7.0	7.2	7.3	7.2
Infosys	15.7	14.0	14.9	15.4	14.9
Cyient	9.9	9.9	10.6	10.7	
Persistent	11.6	11.5	11.2	12.6	
LTTS	5.90	12.62	16.15	15.70	

OP/SGA Cost	2015	2016	2017	2018	2019
Tata Elxsi	5.0	6.1	6.1	6.1	6.9
TCS	5.1	2.0	2.0	1.9	1.9
Infosys	4.4	3.8	4.0	4.1	3.6
Cyient	1.6	1.3	1.3	1.3	
Persistent	2.6	2.1	2.0	2.1	
LTTS	0.90	2.14	2.92	2.41	

OP/Employee	2015	2016	2017	2018	2019
Tata Elxsi	0.041	0.056	0.053	0.052	
TCS	0.077	0.087	0.083	0.082	
Infosys	0.084	0.088	0.093	0.092	
Cyient	0.034	0.031	0.033	0.042	
Persistent	0.058	0.055	0.054	0.056	
LTTS		0.055	0.057	0.048	

Other Highlights

Attrition is down from 18% to 12% in last 4 years though higher in 3-7 year band
Dependence on Tata motors is down from 25%+ to 16% (tied to Engineering & Design budget)
Not much onsite offshore risk as 40% of employees are at online
Top 5 clients 44% of revenue and top 10 clients 57% of revenue
KPIT, Cyient are competitors
In APJ, India and China big clients but China recently had 2 autonomy deals
Trying to move from product design to service and experience design with HMI

Predictive maintenance of auto
these platforms solve

Sanjay Sathapaty: And is this business more profitable for you? I am sure it would be.

Platform revenues have grown

One is the move towards electric
ultimate destination there is a

Madhukar Dev: Not yet, currently it is not as profitable as services, because for every successful IP chances are that there is at least one other IP initiative which has not had that kind of success in the market, so that effort has not yielded results. But it is an art that we have to keep improving and improving the hit rate, potentially IP is very, very important for us not just for augmenting our margins but for survival itself. In the future we will not be winning business by demonstrating past experience and capability. In future we will win business demonstrating our IP which can be integrated into customer solutions and that is why the IP programs of the company are very important.