ADVANCED ENZYMES TECHNOLOGIES LIMITED

First Indian Enzyme Company

Advanced Enzymes Technologies Ltd ("the Company" or "AETL") pioneered the manufacturing of enzymes in India. It is a research-driven Company and is well equipped with 7 state-of-the-art manufacturing facilities (5 in India and 2 in the USA) which comply with the FDA (Food and Drug Administration) and FSMA (Food Safety Modernization Act) standards. It further has 7 Research and Development (R&D) centres (2 in Germany, 1 in the USA and 4 in India) resulting in the total strength of more than 68 commercial enzymes and probiotics. The manufacturing of enzymes is driven by an extensive focus on R&D of various enzymes, enzyme products, and customised enzyme solutions. The R&D division of the Company is established to undertake innovative activities and manufacture new products or improve existing products.

AETL was ranked 15th amongst the top 15 global enzyme companies in terms of enzyme sales and is the largest Indian enzyme Company. AETL is engaged in providing products and solutions to various pharmaceutical and healthcare companies in the following segments.

Segments	Products and Solutions
Human Nutrition	Serratiopeptidase, Fungal lactase, Fungal lipase, and Papain
Animal Nutrition	DigeGrain X, DigeGrain XL, and DigeGrain M
Food Processing	Dairy and cheese processing, Yeast processing, Fruit and vegetable processing, Baking, Brewing and malting, Starch and grain processing, Protein modification, Specialty application, Oil and fats processing
Non-Food Processing	Textiles processing, Leather and bio-fuels, Pulp and paper, Biocatalysts, Detergents, and cleaning aids.

Key Indian Customers

Cipla · ipca A dose of life · SANOFI · ALKEM · Emcure

A Big Company that Started Small

C.L.Rathi's father, Laxminarayan Rathi, happened to be a visionary and started the first enzyme plant in
India in 1958, producing the enzyme "PAPAIN" (an enzyme used for medical and pharmaceutical purposes) from the papaya fruit. He desired his sons to take this forward and continue to give the benefit of enzymes to people. This directed C.L.Rathi and V.L. Rathi to continue this business and make it a huge success. C.L. Rathi started working for it in the year 1986. It was a difficult task considering the challenge of producing the right enzyme at the right price and of the best quality. However, after extensive research for nearly 3 years, "Advanced Biochemicals Ltd" was formed in 1989 and was renamed as Advanced Enzyme Technologies Ltd in 2005.
It all started with the production, research, marketing, branding of enzymes, and gradually led to the addition of probiotics.

Mr. Laxminarayan Rathi

Indian Enzyme and Biotechnology Industry

- The world enzyme demand is expected to grow to $9,500 million (Rs.7,11,343 million approximately) by 2022 as people realize the importance of improved food quality and need for dietary products (which are considered to be the key drivers of growth for the enzyme market), out of which total Indian enzyme demand is expected to grow to $279 million (Rs.20,891 million approximately) by 2022.
- In FY19, the Indian Enzyme Industry was valued at Rs.23,600 million with a growth rate of 7% on a YoY basis. The enzyme market is expected to grow at a 5-year CAGR of 6.5% after 2017 and reach a size of $14,700 million (Rs.11,00,597 million approximately) by 2022.
- The Indian Enzyme Industry is still in the growth phase. However, the awareness about the advantages of enzymes, the advancement in pharmaceutical and chemical sectors, the growing need for nutrition and biological products, will enable the industry to develop in the coming years.
- In FY20, the Indian manufacturers exported enzymes worth Rs.785 million per quarter on an average as compared to a total of Rs.2,870 million in FY19 to the US, Japan, Germany, and Denmark.
- In the year 1986, India was the first nation to set up a division solely dedicated to biotechnology and is among the top 12 destinations for biotechnology in the world.
- The Indian Government recognises the potential of the biotechnology industry to improve India's socio-economic growth. Therefore, the Indian government undertakes more than 60% of the overall R&D expenditure of the country to support growing industries like the biotechnology industry.

Impact of COVID-19

Nearly every sector of the economy has been severely hit by the coronavirus outbreak. However, high demand for medicinal drugs and innovative enzyme formulation for human welfare will likely foster the demand for enzymes. Moreover, with the entire world clamouring for natural substitutes to boost human immunity, numerous opportunities are anticipated to emerge in the areas of biocatalysis and probiotics. However, the growth of the enzymes market is slightly hampered at present due to the lockdown of industries such as cosmetics, agriculture, pharmaceutical, that are dependent on the consumption of enzymes. In April 2020, AETL witnessed a slowdown in the activities due to a lack of clarity on operational directives and the disrupted supply chain because of very less operation of transportation across the globe. AETL has lost its big customer from the US which the management believes is because of the current pandemic situation. However, the production facilities of the Company are now operational. AETL has been receiving a good number of orders on the human nutrition side, though it is not clear whether it is a real growth in demand or the companies are building their inventories because of the existing uncertainties. The

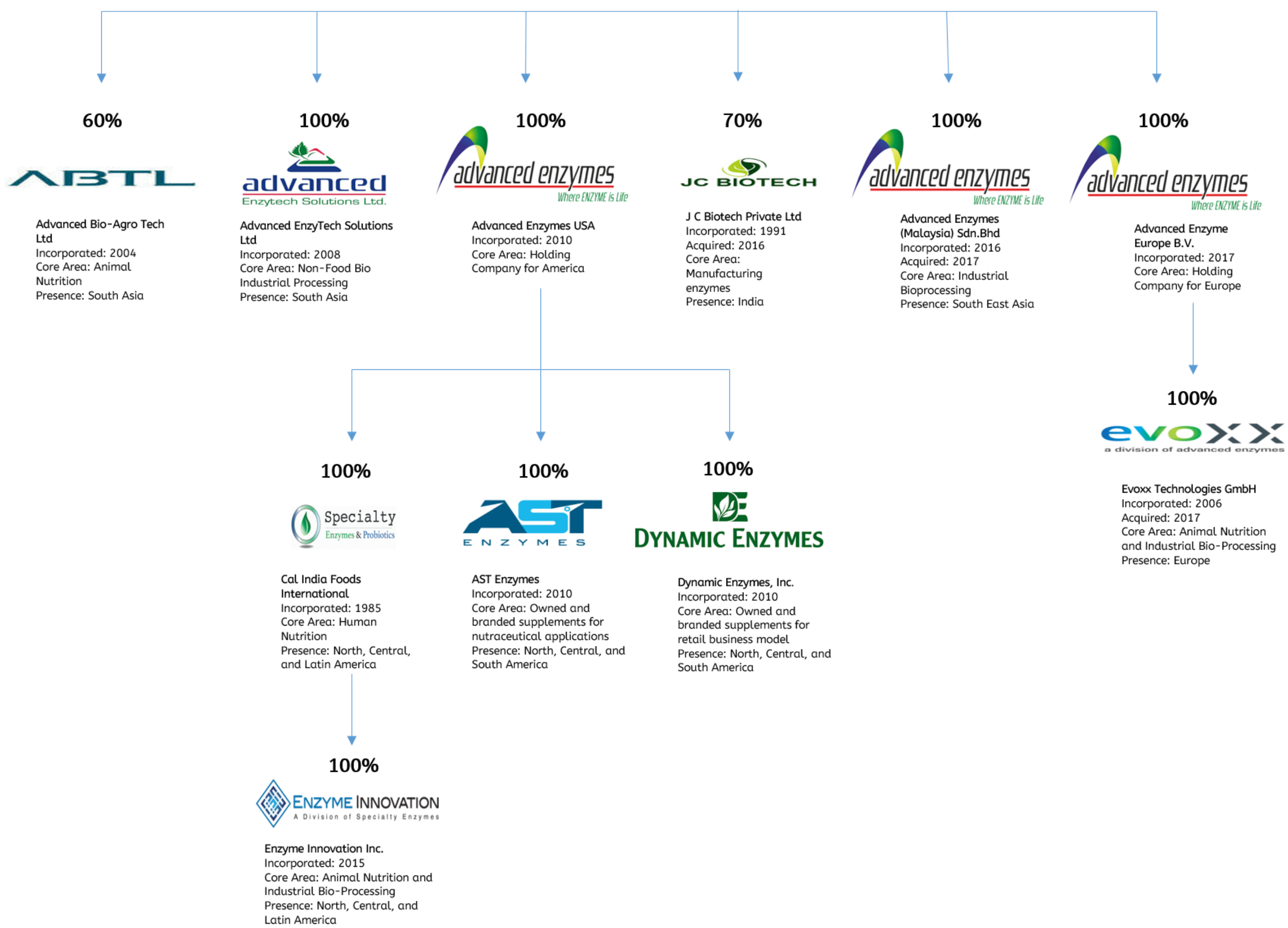
Company expects to grow from pharma, animal, and food verticals as the impact of COVID-19 has not been profoundly felt by these verticals. If lockdowns continue or there is a second wave of the pandemic, the margins are expected to slip, the launch of new bakery products will be delayed by 6 months, sales and other related activities will also be delayed by 3-6 months, and the Capex of around Rs.100 crores which were supposed to be incurred for R&D facility in FY20 will likely be deferred by 6-8 months since R&Ds are not functional. However, with the Company's products being classified as essential commodities, the impact of COVID – 19 is not expected to be significant.

Business Model

AETL has developed a de-risked business model through diversification of client base with more than 700 customers. The Company procures raw materials from reputed manufacturers to ensure consistency in quality and delivery timelines. It offers a wide range of proprietary enzyme products, customized enzyme solutions, and probiotics to various pharmaceutical and nutraceutical companies. Apart from 480 cubic meters of fermentation facility, the Company's R&D capabilities comprise of applied microbiology, proteomics, and application development. The application-based laboratories of the Company focus on innovating enzymes to enhance the product quality and process efficiency for its partners and customers by working closely with them. Moreover, the Company's manufacturing facilities are flexible and can be customised to develop quality enzyme products and solutions with different batch sizes, according to the clients' unique needs. The product development platform of the Company is established on broad knowledge and expertise about enzymes and microorganisms. The Company sells in key target geographies like North America, Europe, and Asia. Both domestic, as well as international markets, are well served by the Company's dedicated sales and marketing team. Therefore, things working in favour of this Company are its strong management, well-established presence, and R&D capability.

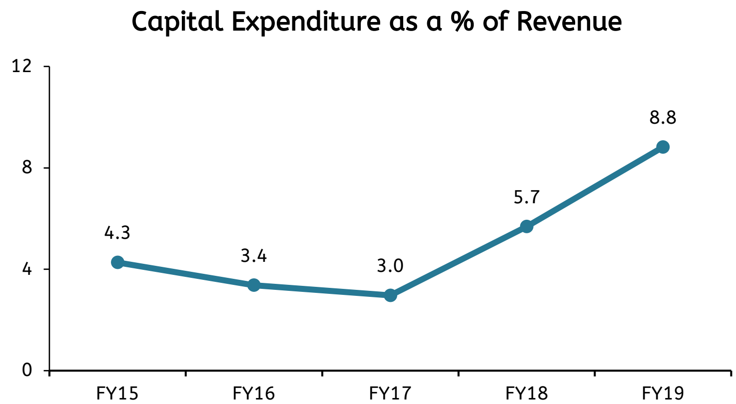
AETL with 11 subsidiaries is able to service 700 customers across 45 countries worldwide. The Company builds enduring relationships with customers, providing customized and effective enzyme solutions coupled with the best technical advice and superior service.

Corporate structure (Percentage Holding)



Differentiating Strategies

1. **Research-driven approach**
   AETL re-invests more than 6% of its revenue in R&D and has capitalized Rs.57 million R&D expenses in the last couple of years. The Company firmly believes that this is their lifeline and plans to make this the moat of their Company. With promoters having an experience of more than 70 years in the global enzyme industry and qualified professionals having significant experience in the enzyme and biotechnology industry, the Company's in-house ability to develop new products keeps the Company in good stead.



Source: Company, Leveraged Growth

2. **Inorganic Expansion**

   AETL strategically acquires target companies that offer strong strategic fit to the existing business, increase technology expertise, have a good client base, and wide sales and marketing network. The Company's recent acquisition was Evoxx Technologies and it intends to continue to actively seek and evaluate potential acquisitions to expand global footprints if the targets provide a strong strategic fit at reasonable prices.

   Also, in the USA, different companies sell on Amazon. A good foothold in the US, therefore, gives the Company the chance to shift from B2B to B2C and manufacture supplements of prebiotics and probiotics and sell on Amazon which will lead to a significant increase in sales of the Company's products.

3. **Consolidate and Grow Existing Business Verticals**

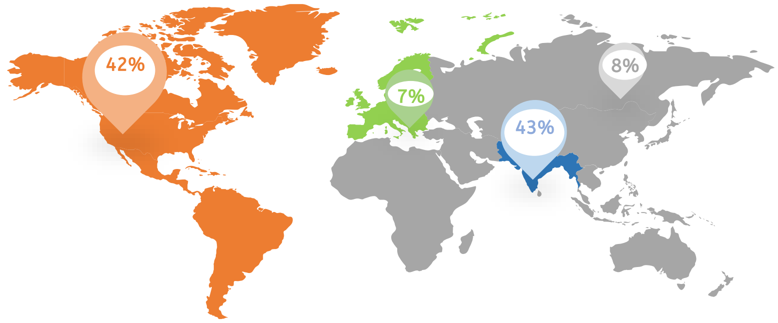
   The Company intends to consolidate market position in key business verticals of human nutrition, healthcare, animal nutrition, etc, and grow through various initiatives, including increasing product and market penetration, investing in training and effectiveness of the marketing and sales force, and continue to operate with a market-oriented structure.

4. **Broadening Presence across the Globe**

   AETL has three wholly-owned subsidiaries, three joint ventures, and five step-down subsidiaries which enables them to cater to more than 700 customers worldwide. The 100% stake in Evoxx Technologies GmbH gives AETL a stronger foothold in Germany and Europe, enhancing its product portfolio and offerings for the pharma biocatalysts and food-bioprocessing industries. The management has made great progress in integrating Evoxx and AETL that has helped Evoxx grow on a standalone basis in FY20 in terms of revenue (this has happened for the first time since acquisitions).

   The Company will also continue to enhance presence in the branded enzyme supplements business in the US by increasing distribution reach and by leveraging multiple delivery channels thereby increasing US focus.

AETL's Presence Map as of FY20



Source: Company, Leveraged Growth

SWOT Analysis

Strengths

1. **Strong Research and Development couple with a Substantial Production Capacity:** Being a research-driven Company, AETL has significant investments in R&D of various enzymes, proprietary enzyme products as well as customized enzyme solutions. The substantial production capacities paired with a globally competitive cost-basis have facilitated AETL to develop new enzymes, enzyme products, and customized solutions across different business verticals for domestic as well as international markets.
2. **Presence across the Enzyme Value Chain:** AETL has its presence across the enzyme value chain, encompassing the complete range of activities which include R&D, commercial-scale manufacturing, customized enzyme solutions, and marketing of enzyme products. The integration of operations enables the Company to be cost-effective and helps AETL to ensure end-to-end quality control resulting in improved products. Moreover, presence across the value chain enables the Company to cater to its clients' unique and specific needs, and provide them customized value-added solutions, which further enhances AETL's business profile and strengthens its client relationships.
3. **Diversified Product Portfolio and Wide Customer Base:** AETL has a diversified product portfolio catering to different verticals and various end-user industries with more than 400 proprietary enzyme products. AETL enjoys a highly diversified client base with a global clientele of more than 700 customers. With a steady track record and an extensive product portfolio, AETL has been able to obtain repeat orders from several customers, apart from attracting several new customers.
4. **Environment-friendly Biotechnology Processes:** AETL is backed by strong fermentation process capability which enables the production of enzymes using microorganisms such as yeast and bacteria. The Company is entering its 25th year of fermentation experience and has set up a fermentation-based enzyme manufacturing plant with the help of foreign collaboration and makes enzymes using all four existing natural origins-plant, fungal, bacterial, and animal sources thereby replacing harsh drugs and chemicals.

Weaknesses

1. **High customer concentration:** The Company's top 10 customers contribute around 35% of total revenue on a consolidated basis. This creates a problem for the Company if the demand from these customers declines and hampers the Company's business prospects.
2. **Weak external competitiveness:** Some of the competitors have better financial, marketing, and other resources which enables them to undertake better marketing and expansion activities. This hampers the Company's brand value.
3. **High dependence on revenue from exports:** For the fiscal year ended March 31, 2020, 57% of the Company's revenue from operations was from international markets, while 43% was contributed

by the Indian market. The effect of economic and political conditions in India and abroad, volatility in interest rates and securities market, and new regulations and government policies, hampers the implementation of its strategies, hence, impacting the Company's business adversely.

Opportunities

1. **Tapping New Developments:** The Company looks at the development of a mutant bacterial enzyme by a French Company 'Carbios' that breaks down plastic in a few hours for reusing, as an opportunity to diversify and grow. The Company plans to bring this enzyme to India by adapting the technology used to manufacture this enzyme.
2. **To become a Global research centre:** Investing substantial capital into growth in R&D in animal nutrition, food processing, etc will allow the Company to grasp the opportunity to work, expedite research areas and continuous efforts will make this R&D a global research centre. The Company spent over 4.95% of its revenues on R&D in FY20.
3. **Growing healthcare demand across the world:** AETL will benefit from two demand drivers; growing population and people seeking immunity boosters due to COVID-19 pandemic to safeguard their health, mainly in India and the USA. The USA has the highest healthcare spend in the world.
4. **The growing pet industry in the USA:** According to the American Pet Products Association (APPA), the overall pet industry spending by the consumers in the USA has increased. AETL's subsidiaries in the USA will benefit due to this growing demand. The rising demand for dairy products, meat, and poultry products will also drive the demand for animal healthcare enzymes in the market. Therefore, the animal nutrition market is expected to reach $2,300 million (Rs.1,72,217 million approximately) by 2026 from $1,300 million (Rs.97,340 million approximately) in 2018.

Threats

1. **Fluctuations in the Biotech Industry:** The biotech industry is cyclical, making it difficult to predict how the future will look like. The industry responds to stock market fluctuations resulting in a sudden increase or decrease in the stock prices of biotech companies. Therefore, sometimes it is positive, and sometimes it is progressing very slowly.
2. **Tough competition:** Everybody in the market is looking for solutions to manufacture enzymes in the most cost-effective manner, hence, this can pose a lot of challenges for AETL, impacting adversely on the Company's operations. Some of the key factors driving competition are product quality, functionality, innovation, and pricing.

Michael Porter's 5-Force Analysis

Barriers to Entry

The barrier to entry is moderately low as there are few players globally at present, due to the high amount of capital required to set up R&D units. Also, the number of players in the Indian Enzyme Market is nearly 25. However, these players are extremely well-established and pose a threat of tough competition for AETL. However, the potential for AETL's growth is high as it uses completely different and expensive technology to manufacture enzymes, namely submerged technology, and solid technology.

Bargaining Power of Suppliers

The bargaining power of suppliers is low since the Company itself manufactures enzymes that are used for food and feed products, industrial and specialty enzymes, and thus reducing their dependency on suppliers. AETL had imported close to just 1-2% of raw materials from China in FY19. Additionally, the Company also takes raw materials domestically but in huge quantities therefore, suppliers have less ability to put pressure on AETL by increasing prices as this will hamper their business.

Bargaining Power of Buyers

The bargaining power of buyers is low since there are very few players globally, the customers do not have the option to switch to other alternatives in the enzyme sector easily, thereby reducing the bargaining power of buyers. Moreover, the prices of the products are carefully decided, most of the companies provide enzymes and other products at reasonable prices.

Rivalry among Competitors

The rivalry among competitors is moderately high since the enzyme market as a whole has well-established players but there are minimal competitors in each segment the Company operates in. There is good competition overall due to the nature of market share which does not allow price hikes.

Threat of Substitutes

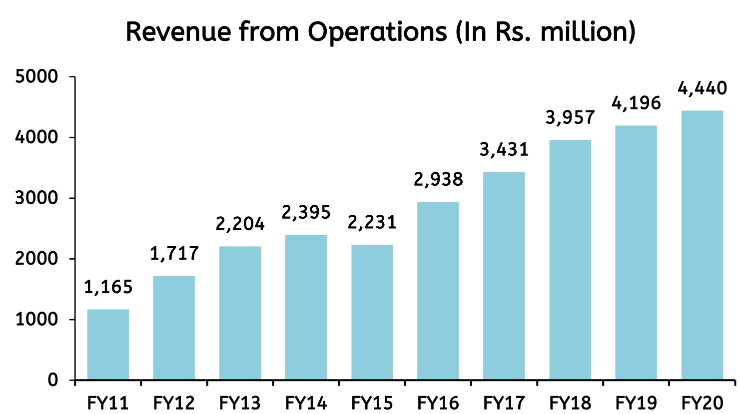
The threat of substitutes is low due to the requirement of rare and expensive elements to manufacture enzymes. To ensure healthy competition, AETL uses product differentiation and enzymatic green technologies that are replacing polluting chemical processes.

Branding and Other Initiatives

1. The Company has two subsidiaries solely for promotion, development, marketing and selling products of the Company in Animal Health and Nutrition segment and in bioprocessing non-food segments such as textile, pulp and paper.
2. As a part of its CSR activity, the Company contributed towards their project 'Advanced Shiksha Yogdan' which aims at promoting education and taking measures for reducing the inequalities faced by the socially and economically backward groups.
3. The Company made contributions by funding necessary equipments (computer labs, science lab equipments, sound systems, sports equipments and cycles) required for promotion of education at Gopal Vidhyalaya.

Financial Analysis

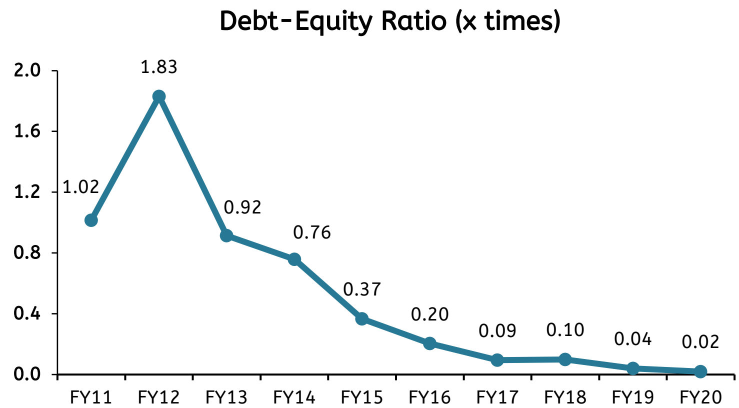
1. **Increasing revenue and stable cash flow**
   AETL has a 5.8% growth in profitability in FY20 compared to FY19, because of its product mix and effective administrative and cost management protocols. The strong financial position and results of operations have enabled the Company to invest in R&D.



Source: Company, Leveraged Growth

2. **Declining debt-to-equity ratio**

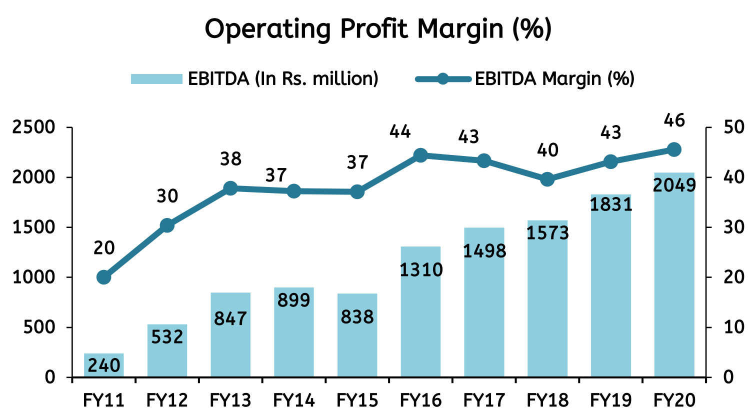
The Company's balance sheet has witnessed a declining debt-to-equity ratio, thereby financing most of the obligations through equity. In FY20, the Company's total debt reduced by 50% and stood at Rs.168.9 million as compared to Rs.283.9 million in FY19.



Source: Company, Leveraged Growth

3. **Strong operating profit margin**

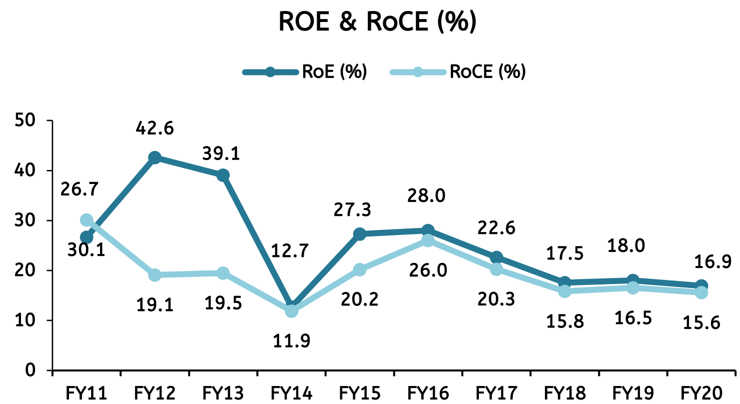
The Company, since its IPO, has always enjoyed growing demand. The COVID-19 pandemic did not have a significant impact on the demand, mainly due to continuing demand in the Human Nutrition sector and the Pharma sector of the Company which revealed an upward sloping graph of positive cash flows and minimal profitability problems on a YoY basis. The EBITDA margin of the Company is increasing due to better performance of all their subsidiaries, especially Evoxx and also due to FX gains. The cost competitiveness of the Company is excellent due to the efficient management of production costs.



Source: Company, Leveraged Growth

4. **RoE and RoCE**

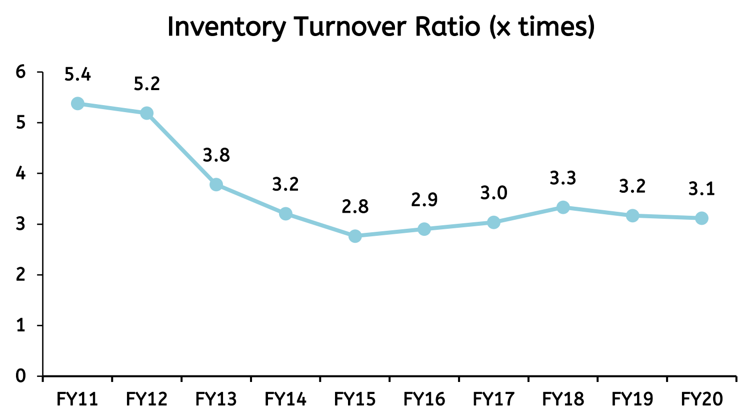
RoE and RoCE have always been positive and considerably stable during the last 3 years. Since the past few years, the company has its RoE and RoCE at nearly the same levels. This is a positive indication as it implies that the company has been able to take care of both the long-term stakeholders in the form of shareholders and its lenders.



Source: Company, Leveraged Growth

5. Inventory Turnover Ratio (ITR)

While analysing the inventory turnover ratio, one can see that during FY11-FY20, the ratio had been in a range of 3x to 5x. There were periods in between (FY15 and FY16) when the ITR declined to 2 due to a reduction in the net sales which increased AETL's inventory. However, after FY16, the ITR seems to have improved and remained constant which indicates that inventory utilization efficiency has remained largely the same over this period.

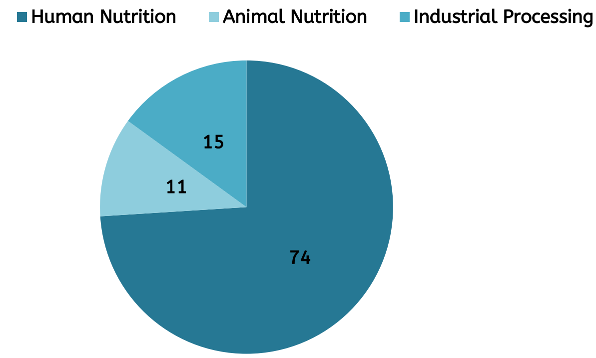


Source: Company, Leveraged Growth

6. Segmental Revenue Analysis

AETL has 4 key segments – human nutrition, animal nutrition, food processing, and industrial processing which operates in India as well as in foreign countries. Each of the businesses is controlled and overseen by a dedicated team.

Segment-wise Revenue Contribution for Q2FY21 (in %)

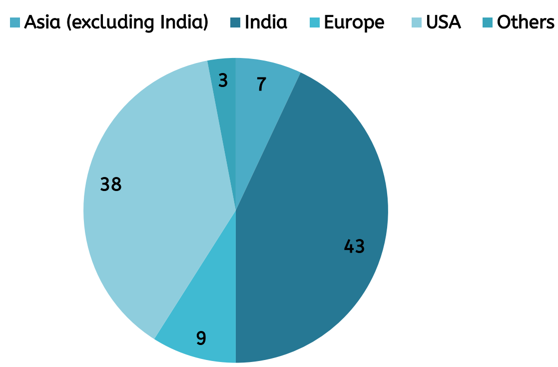


Source: Company, Leveraged Growth

7. Geographical Revenue Analysis

AETL reaches out to customers in North American, Latin American, European, and Asian markets, has built strategic partnerships with these markets and established a diversified client base worldwide.

Geographical Revenue Split (in %)



Source: Company, Leveraged Growth

Risk Analysis

1. Unintended consequences

The biotechnology industry possesses huge risks in terms of what needs to be manufactured and what is being manufactured. It has low chances of predictability making the industry unlikely to prepare itself in advance.

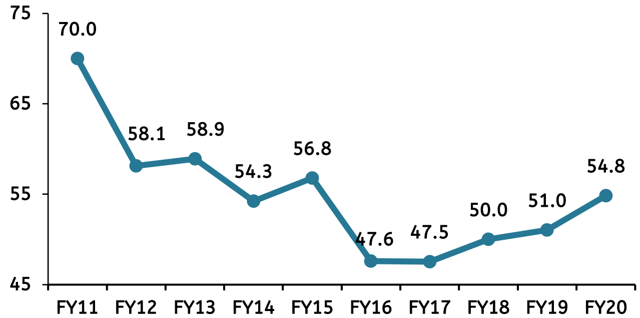
2. Dependency on Foreign Subsidiaries

The Company completely depends on foreign subsidiaries for the sale and marketing of their enzymes in those regions. Any severe disruption of operations in those foreign subsidiaries could harm the Company's financial condition.

3. Working Capital Management

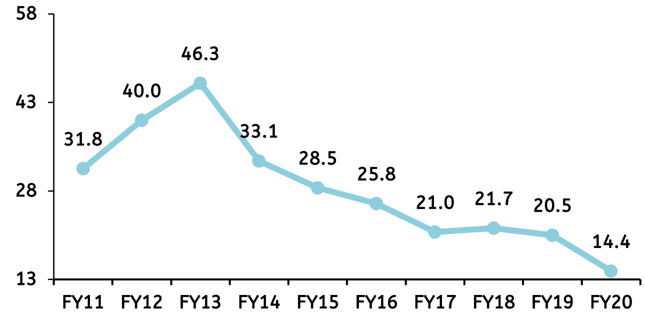
This in itself is a very big challenge. The Company's working capital cycle is such that the receivable days have been increasing for the past 4 years while the payable days have shown a downward trend over the same period which indicates that the Company can face a shortage of cash at times which can pose a threat to the Company's overall growth.

Debtors Period (Days)



Source: Company, Leveraged Growth

Creditors Period (Days)



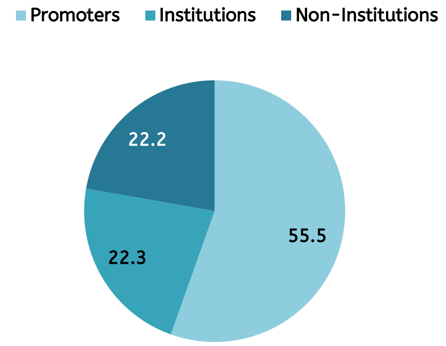
Source: Company, Leveraged Growth

4. **Regulatory and Compliance Risk**
   The Company has to comply with various statutes, laws, and regulations. Non-compliance may result in huge financial losses. However, the Company has internal auditors who check the Company's compliance periodically.
5. **The Company's measures to control risk**
   AETL has a formal program to control risks because it understands the importance of the well-being of the Company. The Company divides risks into Strategic, Operational, Cyber Compliance, and Financial risk to make monitoring of risks effective.

Corporate Governance

- The Company's board consists of 10 Directors out of which 7 are Independent Directors along with 1 whole-time Director and 2 women Directors. This composition complies with the SEBI (Listing Obligations and Disclosure Requirements) regulations.
- The Company was incorporated on 15th March 1989 and is 31 years old. Each member of the board has more than 15 years of experience in their fields.
- On March 28, 2020, it was intimated that the Board approved the appointment of Ms. Rajshree Patel as an additional director (independent) subject to the approval of the shareholders at the ensuing Annual General Meeting (AGM) of the Company.
- The Board has mainly five committees, namely; the audit committee, the nomination and the remuneration committee, the CSR committee, the stakeholders' relationship committee, and the transfer committee.
- One of the board members V.L.Rathi is the brother of C.L.Rathi, besides this, there are no inter-se relationships amongst the board members.
- The Directors having directorships in other companies are Kedar Jagdish Desai, Pramod Kasat and Sunny Sharma. None of the directors hold directorships in more than 10 companies.
- Four board meetings were held in 2019 and two in 2020 so far wherein quarterly, audited results and final dividend were reviewed and decided upon.
- A familiarisation program for independent directors has been put in place wherein an orientation program is conducted that includes familiarization with the Company, their roles, and the industry in which the Company operates.
- After September 2020, the promoters have had total holdings of 55.45% and have 0% pledged holdings.

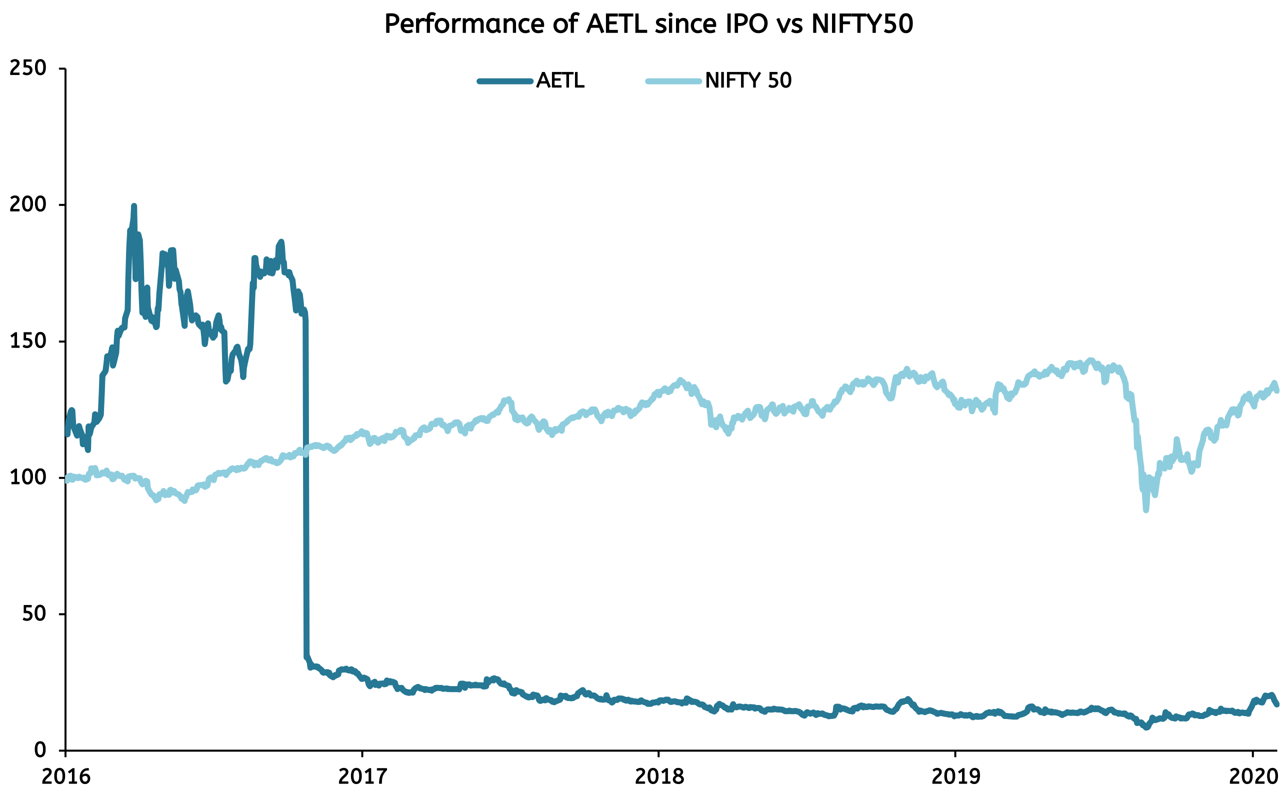
Shareholding Pattern as of Q2FY21 (in %)



Source: Company, Leveraged Growth

The End-Note

- The outlook for FY21 is difficult to predict due to the outbreak of the COVID-19 pandemic. The Company has seen the destruction of the supply chain and value stabilization. The pandemic has also delayed the Company's future plans but AETL has the capital and human resource in place to cope with the same. Being a debt-free Company, AETL ensures increased efficiency of revenue-generating processes.
- AETL will continue to develop new enzymes and probiotics and identify the difference between the actual production and potential production known as product gaps if any. Expanding competencies in enzyme discovery and genetic engineering is also one major target. In Q3FY20, the Company acquired land of 15 acres in Nasik to build a large R&D centre which will contribute to the Company's growth in the future for which the Company looks forward to a Rs.100 crore investment.
- The Company targets to utilize 100% of its capacity three years from now as compared to roughly 50% utilization in Q2FY20.



Source: BSE, Leveraged Growth

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