

# Merger and Acquisition: An effective ANALYSIS to UNDERSTAND the PROCESS in MODERN CORPORATE WORLD

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**Abstract** - The analysis of mergers and acquisitions started in the twentieth century. Currently it is observed that more research is done to understand the long-term performance of the operations of corporations involved in mergers and acquisition. The key principle behind M&A is that two companies together are more valuable than two separate companies. The terms merger and acquisition are defined negligibly different but they are often used conversely. If there is an affable financial transaction between two companies then it is called as merger whereas the unfriendly transaction is known as acquisition. M&A is term basically defining the unification of different assets or companies which is done by various financial transactions. The article attempts to answer the process of Merger and Acquisition which can be complicated. It also presents the use of Machine learning in Mergers and Acquisition in modern world.

**Key Words:** Merger, Acquisition, Negotiation, Due-Diligence, Letter of Intent (LOI), Assets

## 1. INTRODUCTION

The long-term analysis of merger and acquisition (M&A) is a new avenue of research that started in the last decade of twentieth century. Currently, we can often find more researches devoted to this issue in order to understand the long-term corporate performance of these operations. The key principle behind M&A is that two companies together are more valuable than two separate companies. This rationale is particularly alluring to companies when times are tough. Strong companies will act to buy other companies to create a more competitive, cost-efficient company and, theoretically, more shareholder value.

Meanwhile, target companies will often agree to be purchased when they know they cannot survive alone. The terms merger and acquisition mean slightly different things, though they are often used interchangeably. For example, both Daimler-Benz and Chrysler ceased to exist when the two firms merged, and a new company, Daimler Chrysler, was created. A purchase deal will also be called a merger but when the deal is unfriendly i.e. when the target company does not want to be purchased then it is an acquisition. Whether a purchase is considered a merger or an acquisition really depends on whether the purchase is

friendly or hostile and how it is announced. In other words, the real difference lies in how the purchase is communicated to and received by the target company's board of directors, employees and shareholders.

### 1.1 Definition

According to Gaughan (2007), DePamphilis (2003), Scott (2003) a merger is a combination of two corporations in which only one corporation survives and the merged corporation goes out of existence. In a merger, the acquiring company assumes the assets and liabilities of the merged company. Moreover, although the buying firm may be a considerably different organization after the merger, it retains its original identity. An acquisition occurs when one company takes a controlling ownership interest in another firm, a legal subsidiary of another firm, or selected assets of another firm such as a manufacturing facility (DePamphilis, 2003). In other words, an acquisition is the purchase of an asset such as a plant, a division, or even an entire company (Scott, 2003).

### 1.2 Types of company mergers and acquisition

**Conglomerate:** Conglomerate is when two companies of completely unrelated businesses are merged. They are in different industries and different geographical markets and they aim to gain major share when put together to get a product or market expansion. It was very popular strategy in 1970s the argument was that expert management could run any sort of business and the more businesses you gave to highly performing management higher the value you create for your Entity as they were better than the other managers. Combining offices also meant lowering the central Overhead. This argument has been largely discredited in the last few decades.

**Congeneric:** Congeneric merger is where both companies operate in the same market and they are selling complementary products and want to extend their product range by combining. This often involves overlapping technologies, market, marketing production, research and development. A product line can be added to the other company. example: If a company sells washing machine and they buy a company that sells detergents, then by combining they can create a company which sells

washing machine and detergent to the same customer. By doing so, it can arguably grow revenues and sales and also increase its markets share.

**Market Extension:** Market Extension is all about two businesses which sell the same products but they sell them in different geographical locations or market and then by combining they increase their reach of their market.

**Horizontal:** Horizontal merger is a deal where businesses operating in the same industry and sell the same products. By putting them together side by side they can lower costs and become more competitive. Horizontal mergers are usually seen in the banking sector where we see larger Banks combining and basically selling the same groups of businesses and services they have and they combine them for economies of scale and market share and it is a Horizontal combination.

**Vertical:** Vertical merger is where companies provide similar levels of services or component parts within an industry but at different levels in the supply chain. for example, we may have an oil refining business and also as oil sales or distribution business and if you combine both we may have a single entity offering refining as well as sales or distribution. This often provides opportunities for cost and operational synergies and the margin between the two businesses as the Refinery business will want to sell its products and services to the distribution business and if you combine them together the profit is removed and they can arguably sell their services more profitably.

### 1.3 Commonly used term referring to the combination of companies or corporate assets

Transactions include:

**Mergers:** When two mostly equal companies come together and combine.

**Acquisitions:** When one company takes control of another.

**Consolidations:** It happens when a company goes out and it starts to Hoover up lots of little companies and it is consolidating a fragmented market so it ends up being with one major player that hopes to dominate that market.

**Tender offers:** The public or private company will offer the shares of a public company and they will make a tender for the shareholders. sometimes, it is hostile bypassing the management of the target company and offer them cash or indeed they're on shares in order to take control and acquire the target company.

**Asset purchases:** Assets of a company are acquired and the company is not acquired. There's an important difference because if company's assets are required then

all the liabilities can be left behind in the company which is the target of the acquisition.

**Management acquisition/Buyout:** Often backed by a financial investor a group of senior management will go on and take control of the target company.

### 1.4 Lifecycle of a company

- **Lifecycle**

- Startup-Inventing a product and designing it along with all the research and development.
- Product
- Customer-If one customer buys it's not a proof, if multiple customers buys the product then there is a market
- Market
- Growth- The company is now growing. So, it needs a capital. It is very difficult to bootstrap a company from scratch with no external capital.
- Scale- Once the company is established and it has the customers it needs to grow and scale the business. If you grow a business then what happens before you get the cash is it actually sucks the cash in because you to buy materials and pay people money and you have to do all these before selling a product.
- Exit-At some point company would want to achieve an exit and that can be through:
  - Sale
  - IPO
  - Buyout

- **Market players:**

- Companies: They are at the core of the ecosystems
- Investment banks: It may or may not have stockbroking functions inside them
- Accounting and audit: handle's the financial due diligence on the accounting side of the deals.
- Lawyers: They handle the legal due diligence on the documentation of the deals
- Consulting firms: It may or may not be involved. Larger the client company more likely they will be involved. They are very useful from the strategic point of view, due diligence point of view and also from international point of view.

### 1.5. Why do companies merge?

We understand that a merger is a mutual agreement to combine two businesses into a corporate entity.

What is the rationale for doing this?

- Expand into new product or geographical markets
- Gain market share
- Eliminate duplicate costs-synergies
- Grow revenues and profits
- Create a value for the shareholders

### 1.6. Why do companies make an acquisition?

Acquisitions happen when one company takes control of another company. This is normally done by acquiring more than 50% shares of the target company. Normally, larger companies acquire the smaller companies. Essentially it is the financial control of the equity of the target business which defines the takeover.

- **Larger company buying smaller company**
- **Smaller company buying larger company (Reverse Takeover):** Often happens when the small company is a public company and large company is private company and this enables the larger company to effectively go public and get its share listed on the stock exchange without having to go through full IPO process.
- **Economies of scale:** By combining, the two entities bigger and therefore, they get economies of the scale. This enables cost reduction in the costs to be made across the two combined business although very often the costs affect the buyer very little.
- **Market share:** the deal can give the buyer increased market share. If they acquire the company which is also the part of same market, they end up adding their market share
- **Synergy benefits:** costs, products and services: synergy benefits are often talked about as good reasons to do the deal and it is a broad description of cost savings across the business that can be gained along with the growth benefits. Synergies need to be looked at with care and not taken for granted.
- **Market Entry:** An acquisition can give a buyer an opportunity into enter new market. This can be a new product or new geographical market
- **Product/Technology Acquisition:** Acquisition is also an opportunity for product or technology of IP or technical expertise to be acquired. It can be acquiring the companies or buying them either for their tech, R&D, IP and Patents or for a team of expert engineers. Example: Facebook buying WhatsApp.

## 2. The M&A Process

It is important when pitching to clients that the process is explained to them as they may be new to the process and equally expectations needs to be managed about the time the process is going to take.

### Step1-Acquisition Strategy

- What is the buyer seeking to achieve?
- What are their business goals?
- High level Strategy
  - Market/products/geography/market share/competitors

### Step2-Search Criteria

- The more detail the better the prospects.
- Business criteria: scale, location, ownership, business positioning, customers, partners/suppliers
- Financial criteria: revenues, profits cash flow, balance sheet, valuation and price

### Step3-Long list of companies after refining the factors

- Evaluation

### Step4- Initial Approach

- Initialize Discussions with Short list of potential targets-best fit to acquisition criteria
- Information
- Confidentiality if necessary
- Evaluate their interest of selling

### Step5-Valuation

- Obtain a detail current and forecast financial information
- Value on stand-alone basis (what is business worth as it is currently.
- What are the acquisition benefits(synergies)- No payment for synergies!
- Use a range of Valuation techniques - ownership/public/private/VC will influence valuation

### Step 6- Negotiate to Letter of Intent (LOI)

- Detailed Discussions (probably with only 2-3 business) to get down to real deal
- Table offer and conditions
- Establish sellers' key criteria
- Get to sign a LOI (LOI contains key appoints of the agreements and disagreements between the two parties)

### Step 7- Due Diligence

- Detail review of all aspects of the business
- Submit detailed information request
- Use specialist advisor to conduct and report back: they can be accountants/lawyers/management consultants/Environmentalists
- Confirm the value of the business and detailed terms
- Disclosure is key-Problem in the Deal
- Finance
- Assets and liabilities
- Customers and suppliers
- Contracts
- Management, staff and HR issues

### Step 8- Sale and purchase contract

- Prepared in parallel with Due Diligence process
- Asset and share purchase
- Conditions
- Detailed disclosure by the sellers
- Negotiate working capital agreement
- Always large number of other contracts and reports-shareholder agreement if seller retains a position or a financial interest

### Step 9- Acquisition finance

- Finance needs to be organized well in advance
- Payment for the deal
- Cash/shares
- Fundraising? Debt?

### Step 10- Closing and Post Deal Implementation

- Deal signed
- Consideration passes from buyers to sellers
- Post deal implementation starts

#### .1 Synergies

The benefits of combination of two businesses is called Synergies. Sometimes it is ephemeral whereas sometimes they are more imagined than real. Synergies can be achieved if there is more growth. If we put two businesses together, we would expect the combination to provide more opportunities and accelerate the growth rate of the company. This is the broadest interpretation of the Synergies

They have two sides to it either of which have beneficial impact on the profitability of the company

- Revenue enhancement
- Cost savings

#### Advantages of Synergies:

- Growth can be achieved faster than through organic Growth.
- Enables the company to grow sales, gain customers, improve profit margins, etc.

#### .2 Competition:

An Acquisition or a merger can pre-emptively prevent a competitor from gaining the benefits of the same deal. So, it strengthens the competitive position of the buyer. The scarcity of targets is also a huge competitive factor where a securing certain technology or a group of expertise can give competitive advantage to the buyer over other rivals in the market.

#### Staff reductions:

When two companies undergo merger or acquisition process, there is high possibility of overlapping in staff mostly in the central businesses such as marketing sales, accounting, H.R. etc.

This often affects the Board of the Target Company as well

#### .3 Types of Advisory

There are a number of Advisory firms who are responsible for this Process.

They have varying roles and responsibilities and expertise.

Generally, two types of Advisory Firms are involved in Every Deal:

- Advisory from the target company (Sell-side)
- Advisory from the Buyer company (Buy-side)

#### Investment Banks:

They are the first and Foremost player in this Process. They play a crucial role in the mergers and Acquisition market as mostly they have closest relationship with the companies involved in the process.

They have Several Roles:

- **Underwriting the Finance:** This gives the certainty to the buyer that capital will be available.
- **Financial Advisor:** They basically steer the whole process but particularly advising on the financial transaction.
- **Broker:** Broker is involved for handling the issue of New shares and the purchase of existing shares if any
- **Advisory:** Advisory role is primarily going to be around deals structuring and pricing although it

goes further where they help with whole investment process.

#### Functions:

- Target identification
- Valuation and Price
- Documentation
- Management Meetings
- Negotiation of Terms
- Closing documentation

#### Law Firms:

- Advice on legal documentation
- Legal Due Diligence
- Cross border jurisdictions

#### Audit and Accounting Firms:

Basically, it looks after the financial side and they are responsible for the accounting due-diligence on the target company. They generally have a say on valuation. They look after taxation and Cross border issue concerns.

#### Consulting and Advisor Firms:

They are involved in leading strategies. They might have a role or not depending on the stature of the buyer company.

- Strategy advice
- Target Screening
- Due Diligence report
- Valuation

### 2.1 Steps of Merger and Acquisition

- Board of Buyer company Decides to make an Acquisition
- Evaluating Opportunities
- Target Decision
- The buyer company may acquire shares in the Open Market.
- If the target Company feels that the buyer is building a stake in its share then it has the ability to approach them and ask them to disclose the stake publicly.
- Buyer now declares the shareholding and their Intent.
- The Buyer company wanting to make an Acquisition will now work with its financial advisors and Evaluate the value of the Target Company.
- Buyer approaches the Target Company to make a Tender offer made business to the shareholders for their stock.
- Letter of Intent is then proposed with terms of Non-Binding and Binding provisions for the deal.
- The Deal is however subject to Due Diligence and Negotiations with the Target Company may or may not accept.

- The Deal can be exclusively public or Confidential Depending on consent of both Entities.
- The Target company Response
- Accepts the terms of the Offer
- Negotiate the terms, the price, the form of consideration, timing, etc.
- Consider seeking alternative offers from other buyers.
- Approach Private equity Buyers.
- If the deal is large enough, the deal might require the approval of the regulatory authorities, SECs, Stock Exchange, Takeover Panel, Monopolies and Mergers, etc.
- Closing of the deal provided Both the entities have agreed to the deal. Deal is agreed and Signed and Consideration is paid to the selling shareholders. Cash can also be paid in the form of stock or in the form of shareholder paper in the buying company.

### 2.2 Valuation Methods:

- **Balance sheet:** The Balance sheet method includes Book Value, Adjusted Book Value and the Liquidation value.
  - Book value- It is net worth of the assets and liabilities in the balance sheet
  - Adjusted Book Value- It attempts to take account of some of the potential pitfalls which may occur as a result of some of the accounting conventions. These can include: -
    - Land and property
    - Bad Debts
    - Obsolete Stock
    - Liquidation value
- **Profit and Loss:** Profit and loss method includes Profit multiples, Price-Earnings Ratio, Dividend value, Sales Multiples, EBITDA (Earnings before Interest, Tax, Depreciation and Amortization) and EBIT (Earnings before Interest and Tax)
- **Discounted Cash Flow:** Discounted Cash Flow method includes Cash flow equity and free cash flow.

#### Cash Flow Method in Valuation:

- Create a cash Flow Forecast.
- Create and Integrated model Profit and Loss, balance sheet and cash Statement of the business.
- This model should ideally calculate cashflow of at least 10 years or there is a risk that the terminal value will end being disproportionately large part of the valuation.
- Appropriate Discount rate should be prepared to discount the Cash flow back to present and the Discount Factor which used should be weighted average cost of capital (Debt and Equity) for the business.

- The future cash flow will be heavily dependent on the assumed return of the future investments

### Common Errors in Company Valuation:

- Discount rate relating to company risk
- Incorrect market risk premium
- Incorrect weighted average of cost capital (WACC) calculation
- Incorrect country risk

### 2.3 Pre-Sale Preparation

The main purpose of the pre-sale preparation is to enhance your business and its attractiveness to a potential Buyer and it is done by basically cleaning up all the loose ends in the target company making sure that the Documentation and administration of the entity has are uncomplicated. The Buyer normally sends an experienced set of Financial Advisors and lawyers for due diligence and the Seller would not want settle all its issues in pre-sale preparation. This usually is a time taking process and any issues can affect the valuation of a company.

The seller company would be expected to clear up all its Litigation if any. The company is also expected to register all its patents and Trademarks. They should reorganize and tidy up their group structure and check with the Title deeds and Leases as well. Environment is a major area of potential liability and Environmental audit should be done to prevent any downside risk. Any unused or old asset should be sold by the seller to collect more money that can be used for further investments or business.

### 2.4 Information Memorandum

It is a key selling document involved in the process which is prepared by the Advisor to the company. It can actually be regarded as a documentary sale window which emphasizes on the strength of the company. It highlights the attractions of the business which are less obvious which might be either IP, a patent, some customers or a particular market. It showcases about the growth aspects of the business and underlies the profit stream with appropriate adjustments. It also demonstrates the capacity for cost savings or synergies.

### 2.5 Sale Process:

- **Preparation:** Preparation is a phase prior to commencing the sales process when the owners of the business get involved for the sale. This involves careful research to identify a range of potential buyers who may have different strategic reasons for acquisition
- **Documentation:** Documentation involves the preparation of a sales document which may be a

Word or a PowerPoint document. This is also called Information Memorandum and should contain enough information to enable a prospective buyer to come to a view without giving any confidential information. It is usually sent to prospective buyers only.

- **Marketing:** The Marketing phase involves approach to potential buyers, exchange of information and confirmation of their perspective with advisors and management team
- **Letter of Intent/Heads of terms:** The key terms of a deal are summarized in a non-binding agreement called Letter of Intent. Once, LOI is agreed the buyer has the opportunity to conduct a detailed review of the business including all the confidential and commercially sensitive information held until now. This is called Due-Diligence.
- **Closing:** Provided due diligence is completed satisfactorily including the negotiation of the normalized level of the working capital, the deal can be closed and money exchanges can hand.

### 2.6 Letter of Intent

This letter indicates both the sides that they are seriously interested in doing a deal and wish to explore further discussions. The LOI sets out the principal deal to ensure that there is a genuine agreement on key issues. It is considered as foundation on which deal is constructed and on which relationships and trust are built which leads to successful transactions. A LOI may be a Binding or Non-Binding agreement subjected to Contract and Due-diligence. It is generally assumed that LOI is a Binding agreement. In most LOIs, there are very few binding obligations with two key exceptions namely Confidentiality and Exclusivity.

There are two types of approach for a Letter of Intent:

1. **Short LOI:** It covers the important points of the deal which provides the negotiations with the direction and momentum. These include-
  - a. Introduction
  - b. Transaction overview and structure
  - c. Illustrative timetable
  - d. Due diligence process
  - e. Exclusivity and Confidentiality
  - f. Non-Binding commitment
2. **Long LOI:** It covers all the major details and issues can be used to form the basis for drafting the sale and purchase agreement. LOI is intended to set the criteria for the following points-
  - a. Operational
  - b. Personnel
  - c. Financial
  - d. Legal

**Advantages of LOI:**

1. It sets the ground rules for subsequent negotiations.
2. It provides a framework for negotiating and drafting a final agreement.
3. It saves time and money.
4. It can be used as a negotiating tool by both buyers and seller.
5. It can be used to support an application for financing from a third party (with an appropriate disclosure to the seller).
6. It may provide the basis for the buyer to commence their due diligence (which normally has costs associated)
7. It can serve to develop trust between the parties to the agreement.
8. It can be used to lock the seller in a period of exclusivity. The main advantage is that the buyer can gain exclusivity and have a reasonable confidence that a deal can be reached on acceptable terms before investing further time and money particularly in due diligence of advisors.

**Disadvantages of LOI:**

1. They may trigger notification obligations to customers, creditors, suppliers, government entities, etc.
2. Even if the intent of LOI is non-binding it can be a binding agreement.
3. It can be waste of time and money.
4. There must be clarity in transaction to enter into an LOI otherwise an unsigned Term sheet may be as effective.

**2.7 Due Diligence-Introduction and Importance**

Due diligence is fundamentally about discovery and verification. It is about finding the issues within the target companies and being aware of lies that can be told by the seller companies to raise its valuation. Buyers actually needs to check and verify every aspect of the target company. It is also important that the buyer understand all the risks before signing the deal.

It is a phrase that is often used but seldom understood. In essence, it is the responsibility of the buyer to thoroughly check what s/he is buying. In this process assistance of the seller can be expected but not trusted. Due diligence can take anywhere between 6-12 weeks or longer especially in major corporations.

The purpose of due diligence is to make sure the buyer knows exactly what he is buying. The seller knows is business inside out and the buyer has to find out as much as he can in the limited time available to identify any unknown risks as well as to verify what he has already been told about the business. This will enable the buyer to finesse the key terms of the deal, or re-negotiate if necessary.

It also provides the evidence and context for the representations and warranties in the sale and the purchase agreement. Advisors of the buyer request for all the material information regarding business including memorandum and articles of associations, recent audited financial statements and current business plans ad forecasts, all taxations returns and employment contracts, personnel records, details of employee benefits and pension schemes, material sale contracts, supplier contracts and distribution agreements, licensing agreements, intellectual property matters and all real estate agreements and deeds.

There is no standard document as every business is unique and preliminary enquiries should be prepared focusing on the areas of focus for each deal situation. For example, a real estate company is likely to be very different to a software company.

**2.8 Negotiation**

Negotiation theory was initially established as a concept by Roger Fisher and William Ury in their book called "Getting to yes". Th principle they argue is that a rational argument can be set out to overcome an emotion driven mindset and that therefore, every deal can be negotiated between rational human beings. Their system has four basic components:

- Separate the basic impulses of the person from the problem.
- Focus on the other side's interest rather than their position.
- Work co-operatively to find win-win options.
- Establish agreed standards to evaluate these possible options.

Negotiation involves two or more parties both of which have something which the other wants. In order to exchange they need to come to an agreement and the process of bargaining and to and fro is termed as Negotiation.

Negotiation process can be defined into following steps:

- Preparation
- Proposal
- Debate
- Bargaining

➤ Closing

M&A negotiations involves six P's- "Prior Planning and Preparation Prevents Poor Performance". Before entering a negotiation, it is advised to carry out a SWOT (Strengths, Weakness, Opportunities, Threats) analysis on both Entities. Extensive valuation exercises on the company (buyer and seller both included). Different methodologies should be used to underpin the analysis and from that a clear idea of the value drivers in the business should be developed.

### 2.9 Sale and Purchase agreement

The Sale and Purchase agreement is the document that both corporations go to and refer in case of a dispute or issue after closing. It is defined by the quality of Due diligence process and not just by LOI which is considered the starting point of Sales and purchase agreement. The whole purpose of the document is to manage risk which is essentially done representations and warranties. It is important to draft the sales and purchase agreement with the due diligence process and any issues arising are handled promptly. This document defines the relationship between the two parties not only after close but in the run up between deal signing and closing. In case of any issues, companies can turn to the letter of the agreement to resolve the matter. Litigation is the next process if the issue remains unresolved.

### 2.10 Deal Closing

The deal is not completed with an agreement of Letter of Intent. In fact, it is just started with approximately 10-12 weeks more to steer the deal through due diligence and documentation phases to closing. The letter of intent is only basis for the deal and chunk is in the detail with negotiations still under process. As LOI is a non-binding agreement and the only things binding are confidentiality and exclusivity clauses, there is always an open opportunity to switch to other buyers if a better deal is disclosed. This stage of the process is generally competitive and aggressive. Any negotiation is a process of building trust. Actions are more important than words when it comes to commitment. A key step to getting deal over the line is to agree early on that any deal point that has been agreed cannot be reopened. Ideally, a simultaneous signing and closing should be aimed for as it reduces risk complexity and cost and provides certainty for both sides. Once the post-LOI process starts, there is a definite need of clear timetable for deal signing and close. In order to achieve this, it is important to make sure that the principals in the deal remain actively involved so that decisions can be taken in an informed and timely manner which means that the people involved have to take responsibility for the content of the sales and processing, on both sides. Closing normally involves a complex series of events and there is always a large number of inter-

related documents which need to be finalized. Once, a deal is agreed the due diligence process and the deal documentation require a huge effort and commitment from everyone on both sides to make sure that the deal is closed.

### 3. Predicting Merger and Acquisition in Modern world

Merger and Acquisition can be very complex process. The amount of information and data passed around in the deal can be in huge numbers So, it is crucial that the calculations are done with accurate precisions. In last decades of 20<sup>th</sup> century, merger and acquisition were done involving calculations of various algorithms manually which was a hectic and often, produced inaccurate precision. However, Artificial intelligence in 21<sup>st</sup> century has made the process uncomplicated. Machine learning and AI has played a vital role in creating prediction models to predict various factors like success rate, differences and similarities of the two companies involved in the deal.

Various software like Jupyter, Spyder, Google Collaboratory, etc. can be used to create a prediction model on basis of datasets of the previous statistics of the two Entities.

#### 3.1 Python

Python is an integrated, high-level, general purpose programming language. Created by Guido van Rossum and first released in 1991, Python is preferred over most of the other language due to its code readability and maintenance.

The language constructs and the no braces interpreting give it a match with the pseudo-code which is lacked by any other language

#### Why Python?

Implementing ML algorithms can create a huge mess if not it gets sophisticated with any other low-level language. With python there are already build libraries and python environments to create robust and maintainable ML codes



Fig- 1: Python



Python Modules and libraries are pre-written python codes by experts and developed parallelly meeting the needs of today. These libraries help in creating a software in lesser time.

Here are some of the python libraries that are made for Machine Learning and data science:

- Keras, TensorFlow, and Scikit-learn for machine learning
- NumPy for high performance scientific computing and data analysis
- SciPy for advanced computing
- Pandas for general-purpose data analysis

### 3.2 Spyder

Spyder is an open source cross-platform integrated development environment (IDE) for scientific programming in the Python Language. Spyder combines the prominent Python packages for Data science namely: Pandas, SciPy, NumPy, Matplotlib and other Data Visualization Libraries.

Spyder offers built-in integration with many popular scientific packages, including NumPy, SciPy, Pandas, IPython, QtConsole, Matplotlib, SymPy, and more.

Spyder comes with a beautiful plugin system and handful of APIs along with built-in libraries. Spyder can also be extended as PyQt5 library and be useful in creating beautiful GUI based applications.

#### Salient Features:

IDE's are mainly concerned with writing and testing applications, Spyder editor comes up with a list of its beautiful features.

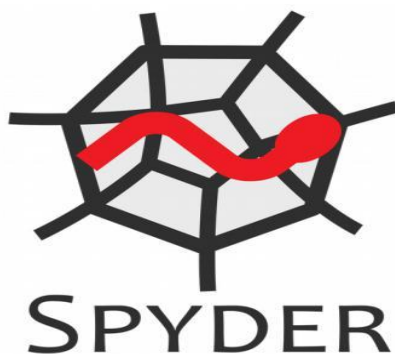


Fig -2: Spyder

The main editor's feature is:

- Syntax Colors for Python Codes
- Breakpoints and conditional breakpoints (debugger: pdb)
- Dynamic code introspection (Powered by rope).

- Code completion and calltips
- Pylint code analysis
- Browsing classes and function

### 3.3 Google Collaboratory

Google Collaboratory is a google research project which is built to help education of Machine learning and Particularly Data Science. It is on Google Cloud.



Fig -3: Google Collaboratory

It is a free cloud service based on Jupyter notebook and supports free GPU. It allows anyone to develop Deep learning applications

### 4. CONCLUSIONS

Mergers and acquisitions are important, infrequent events that are difficult to predict. M&A transactions happen regularly and sometimes they take the shape of friendly transactions and sometimes they are hostile. They help companies to grow in the same industry as well as expand into new industries. The process of M&A transaction can be lengthy or short depending on the complexity of the transaction as well as size. The time period may also depend on the regulatory approvals required for the same.

Thereby M&A process is pretty straight forward. It does tend to follow a logical and sequential process but it is complicated and does require a complex transaction management which is why experience in this field is so important to anticipate problems before they come up. It is real, Personal and man management exercise and more relation is built between the buyer and the seller more likely the deal can be closed.

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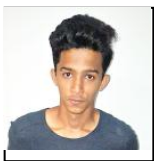
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