

## Notee, A Web Application for Stock Market Research Analysts

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**Abstract** - In the Capital Market domain, the investors need to make investment decisions. These decisions can be based on insights provided by the proprietary algorithms and on the other hand, a software application can help research analysts bring efficiency to their research process by reducing noise from the information collected, structuring the information in a usable manner, and enabling analysts to circulate their analysis to the broader audience.

**Key Words:** Journalizing, Tagging, Analysts, Market, Company.

### 1. INTRODUCTION

Market research analysts, also known as market researchers, assist businesses in gaining or maintaining a competitive advantage by identifying and delivering data-driven insights into future markets, competitors, and even customer behavior [1]. To uncover answers, market research analysts comb through trending keywords, survey results, social media mentions, and other data. In other words, they turn data into actionable insights that organizations can use to generate everything from effective marketing campaigns to competitive product launches there is a need for an application aimed at bringing efficiency to research analysts' work. As analysts meet several listed and unlisted companies all around the year to gather information important for investment decisions, the two major problems analysts face are "Journalizing" and "Tagging".

Journalizing deals with issues when analysts meet one company's management multiple times of the year and the notes have to be kept all in one place (which can be done using applications like Evernote). The more important problem to solve is Tagging, most research analyst meetings revolve around business models, financial performance, and prospects of the company. Application available in the market doesn't do a good job of tagging information so it becomes easily accessible to analysts at the time of analysis.

### 2. BUSINESS OBJECTIVE

To make a recommendation about whether to buy, sell, or hold a stock, a Stock Market Research Analyst looks at data about the company, its rivals, its products, and anything else that could impact the company in the short and long term. As a result, Research Analysts must keep records of everything they utilize in their research and make sure it's from reliable sources. They must also organize all of the trailing data in a way that any of their customers can verify.

Whenever an analyst has to journalize the data for a particular company it is very much important that they might refer to the data which was previously entered. In that way the analyst can

make changes to it or refer to it so that they can provide better results to the audience. Business objective represents the various aspects of the company which is essential for the application.

a) NSE (National Stock Exchange of India Limited)  
National Stock Exchange of India Limited established in 1992 is the largest financial market in India located in Mumbai, Maharashtra. It was the first to replace with a paperless computerized system providing fully automatic trading. With the help of NSE, it is very helpful for the companies which wish to list as there as numerous rows of trading activity which is made on ton platform also proving full transparency with the help of automated systems [2]. As a company needs to adhere to the strict rules of NSE for the listing we can consider the NSE ticker for identifying the company.

b) Industry Information & recent trends  
For any particular company, it is very much required to understand the industry in which it operates. And also helps in grouping different companies based on the industry. There are different industry classification systems based on the description of the company activities and the classification system [3].

A Trend is usually termed as a general direction in which something is changing or developing and a market trend, is the one that changes the market where the company operates. One has to identify the market trends, a better understanding of the industry and the factors which are influencing them helps to predict the future trend.

c) Sales Growth  
The rate at which a company's revenues have increased is measured by Sales growth. It is calculated as a percentage change in sales over a set period [4]. Sales growth depicts an increase in sales over time; this is significant because, as an investor, we must, be able to know whether demand for a company's products or services will continue to rise in the future. However, it's vital to distinguish between organic and acquisitive sales growth.

The rate of growth varies depending on the industry and the size of the organization. For large-cap companies, sales growth of 5-10% is regarded as good, whereas sales growth of over 10% is more possible for mid-cap and small-cap organizations.

d) Products or Line of Business  
A product is an object, system, or service that is made available to consumers in response to their demands. It can be offered to the market to meet the needs and needs of customers which defines the company's outcome [5].

A line of business describes a company's product or service, as well as the resources it employs and the method it employs to

offer value to a market segment. It might be a main or one of the principal revenue-generating procedures.

e) Cost of Goods Sold (COGS)

The raw material would be any material or substance that is employed in the production or production of a product. the cost of goods sold is often stated in a company's income statement. Along with labor costs, they are one of the company's direct costs [6]. On a company's income statement, raw materials are usually represented as COGS. Along with the labor, they included in the direct costs of the company

Raw materials, as well as any other costs of producing a product, such as labor and manufacturing overhead, are put together under COGS. Raw materials are grouped under the cost of goods sold, along with all other costs for manufacturing the product, including labor costs as well as manufacturing overhead costs.

f) Working Capital

Cash accounts receivable/unpaid bills from customers and raw materials and completed product inventories are all examples of current assets that a firm might use to generate working capital. A company's Net Working Capital (NWC) is a measure of its short-term financial health, liquidity, and operational effectiveness [7]. A corporation should have been able to develop and invest if it has a strong positive NWC. To develop or repay creditors, a corporation may experience challenges if its current assets are less than its current obligations. Even bankruptcy might be an option for the company.

g) Capital Expense (CAPEX)

Capital spending or capital expense is the money paid by an organization or corporate entity to acquire, maintain, or enhance permanent assets such as property, cars, equipment, or land (Capex or CAPEX). It is a capital expenditure when money is paid for the first time to acquire an asset or to prolong the life span of such an existing property, like replacing the roof. By industry, a company's expected capital expenditures may be predicted [7].The petroleum exploration and production industry, the manufacturing industry, the telecommunications industry, and the utility industry are one of the most capital-intensive businesses. These industries also have the biggest levels of capital expenditures.

h) Margins

An investor is required to make a margin deposit of a certain amount before being able to cover the credit risk of their broker or exchange [7]. A derivative transaction, such as getting a loan from a broker and using it to buy or sell financial products, puts the trader at risk of defaulting on the loan.

i) Corporate Governance

Corporate governance enables effective, enterprising, and responsible management to promote long-term firm success. Corporate governance directs and governs enterprises. Directors control their businesses [8]. Shareholders elect directors and auditors and guarantee an appropriate governance structure. The board sets strategic objectives, provides leadership to implement them, oversees corporate management, and reports to shareholders.

### 3. PROPOSED SOLUTION

There is a lot of information regarding a company and it has to be analyzed properly for further planning. These data when formulated properly can provide earful insights. A web application easily accessible via a web browser either on smartphones/tablets/pc is required. The need for modification of the data at any time and any place is important. The application can be able to store the relevant data regarding a company so that can be utilized to perform necessary actions. The whole application can be broken down into two main components

- i. Sign in-in and sign-up.
- ii. Main page where all the actions are carried out. (This section will be further broken down)



The sign-in page features a title 'Sign-in' in red. It contains two input fields: 'Email-ID' with a placeholder 'Registered email-id' and 'Pin' with a placeholder '6 Digit Pin'. Below these fields is a 'Sign-in' button.

Fig -1: Sign-in page



The sign-up page features a title 'Sign-Up' in red. It contains four input fields: 'Name' with a placeholder 'Enter Name', 'Email-ID' with a placeholder 'Registered email-id', 'Pin' with a placeholder '6 Digit Pin', and 'Confirm Pin' with a placeholder 'Re-enter 6 Digit Pin'. Below these fields is a 'Sign-in' button.

Fig -2: Sign up page

Forgiven application it is necessary to have a security system where each user can store the data as required. To provide such functionality a signup page is employed. The signup page collects the information about the user mainly the user-id and password. In this application, we have employed a PIN which consists of six digits number as a password to provide easy sign-in access. Once the user has successfully registered,

they can use the user-id and the pin to sign in. The session is maintained until the user sign-out.

ii. Home-page

The homepage forms the main page wherein the page is broken down into components each one having its functionality. This page consists of the search bar to search for a particular company which displays the company name based on the listed companies which are saved in the database. Suggestions are provided based on the letters typed for faster selection. Also, to quickly access the company details again users can pin the company which is displayed in the pinned section which is present on the left side of the screen. Once the user selects the company a pane is activated to add or modify the content.

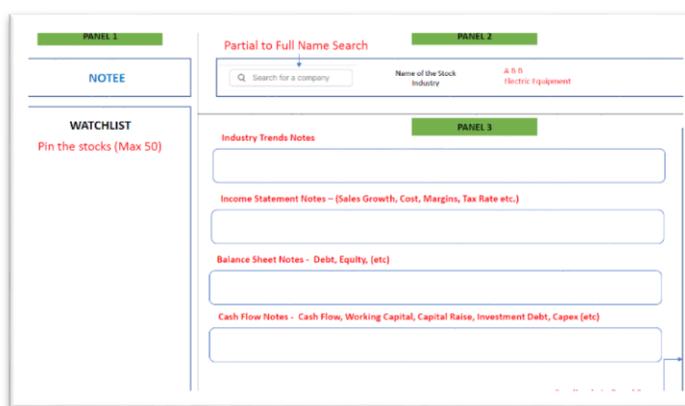


Fig -3: Homepage

The content which is being entered can be tagged as required by the analysts.

For example: If an analyst has interacted with the company management four times in the pane year – and in all meetings, there were questions around #Sales Growth and #Margins. The software we are developing will journalize all four meetings at the same time and will add tags like #Sales Growth and #Margins to all relevant comments by the management across all four meetings.

So, in the future, if analysts want to assess what has been the management commentary around #Margins – an option will be provided where all the comments about margins will be bunched together and presented. This is also a form of time series analysis.

Finally, the output can be converted into PDF for easy print and circulation.

#### 4. TECHNOLOGY USED

a) Node.js

Node.js is an open-source, cross-platform JavaScript runtime. This program's flexibility makes it an excellent option for a broad variety of jobs. Node.js is operated outside of a browser using the V8 JavaScript engine. As a result, Node.js is very fast. Because it does not generate new threads for each request, Node.js software works on a single thread. JavaScript code cannot be stopped by the asynchronous I/O primitives of the Node.js standard library, and libraries in Node.js tend to

follow non-blocking paradigms, therefore blocking is uncommon [9].

Unlike other I/O implementations, such as reading from a network, utilizing a database, or using a file system, Node.js will start operations as soon as it gets a response, conserving CPU cycles and avoiding deadlocks. Using this way, there is no need to add the expense of thread concurrency management, which may be a major source of failures in Node.js. Node.js provides a big advantage since JavaScript developers can create server-side code without knowing a language.

With Node.js, you don't have to wait for all of your browsers to also be updated; you can pick the ECMAScript version to use by updating the Node.js edition, and you can also activate other experimental capabilities by flagging Node.js. This implies that the new ECMAScript standards may be utilized in Node.js without any problems.

b) React

React is a free, open-source JavaScript front-end toolkit for generating UI components. Meta (formerly Facebook) and developers maintain it. React may serve as the basis for the development of mobile apps, single-page applications, or applications that are displayed on the server when combined with a framework such as Next.js [10].

In contrast, React is concerned primarily with state regulation and presenting that knowledge to the DOM. As a result, the development of React applications typically requires the use of other frameworks for route and client-side functionality. ReactJS is a JavaScript toolkit for constructing declarative, fast, and adaptable user interface components.

- Using React, it's simple to develop user interfaces that support interaction. Provide React with a set of fundamental views for each step of your project, and it will automatically render the necessary components and make any necessary updates as your data changes. Declarative views make the code more predictable, understandable, and debug-friendly.
- Component-based design: Create isolated components that maintain their state, then combine them to create complicated user interfaces. You can simply transfer rich data through the app while keeping the state outside the DOM because component functionality is implemented in JavaScript rather than templates.
- You just need to learn it once to be able to use it wherever; this is because React does not need you to rewrite your current code to take advantage of its new features. React is capable of running on the server and powering mobile apps when combined with Node.js and React Native.

It is the main purpose of ReactJS to design UIs that improve app performance. There is an increase in the app's speed as a result of using virtual DOM (JavaScript object). JavaScript's virtual DOM is more efficient than the traditional DOM. ReactJS may be used in a variety of ways, including as a standalone framework, as well as an extension of another. Improves the readability and helps maintain bigger applications by using component and data patterns.

c) MongoDB

MongoDB is a document database that combines scalability and flexibility with the querying and indexing capabilities that

you want. The document model in MongoDB is simple to learn and use for developers, while still delivering all of the features needed to handle the most complicated requirements at any scale. There are drivers for over ten languages and this has led to the development of dozens more with the help of the community [11].

Data is stored in MongoDB using documents that are similar to JSON and have flexible fields that can alter from document to document as well as data structures that can develop over time.

The document model corresponds to the objects in the application code, allowing you to work with data more easily. Ad hoc searches, indexing, and real-time aggregation are all useful tools for accessing and analyzing data.

A distributed database at its core, MongoDB provides high availability, horizontal scalability, and global dispersion as a built-in feature.

MongoDB is a completely free database. Before October 16, 2018, all versions were released under the AGPL. The Server-Side Public License (SSPL) v1 applies to all versions issued after October 16, 2018, including patch patches for previous versions.

## 5. CONCLUSIONS

For analysts, it is very much important to journalize the data and to tag it necessarily as and when required as seen in the Sec 1. These issues can be resolved by developing an application based on the sec 3. Using the Business Objectives and the Technology Used sec 2 and sec 4 for the development of the application utilizing the Proposed Solution as seen in sec 3 can help the analysts to perform better research and provide better analysis which helps the audience.

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