

# Contemporary accession for GST using K-means algorithm and data mining

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## ABSTRACT

*GST application is an electronic application which is utilized to make mindfulness in the general public about the GST standards and the different taxes which have been actualized in each product. Goods and services tax which is typically called as GST is a taxing system executed by the present government with the goal of diminishing the tax complexity in the system. The goods and service tax is aimed at making a single unified marketplace that is intended to make a valuable situation for both the corporate and public sector. The tax replaced existing multiple cascading taxes levied by the central and state governments. Goods and services are partitioned into five expense sections for collection of tax - 0%, 5%, 12%, 18% and 28%. However, Petroleum products, alcoholic drinks, electricity, are not taxed under GST and rather are taxed independently by the individual state governments, according to the past expense routine. There is an uncommon rate of 0.25% on rough precious and semi-precious stones and 3% on gold. In addition a cess of 22% or other rates on top of 28% GST applies on couple of things like aerated drinks, luxury cars and tobacco products. Pre-GST, the statutory assessment rate for most merchandise was about 26.5%, Post-GST, most merchandise are relied upon to be in the 18% tax range. The tax rates, rules and regulations are governed by the GST Council which consists of the finance ministers of centre and all the states. The system uses K Means Clustering method which is a type of data analysis technique. Cluster analysis does the task of grouping a set of the element in a way that similar types of elements are placed in clusters. The algorithm works sequentially to assign data point to one of the K groups.*

**Keyword :** - GST (Goods and service tax), K-Means clustering.

## 1. INTRODUCTION

Goods and Service Tax is a indirect tax which was introduced in India on 1 July 2017 and was common in all states. GST is levied at every step in the production process, but is intended to be discounted to all parties in the different phases of generation other than the final consumer.

The tax replaced existing multiple cascading taxes levied by the central and state governments. Goods and services are partitioned into five expense sections for collection of tax - 0%, 5%, 12%, 18% and 28%. However, Petroleum products, alcoholic drinks, electricity, are not taxed under GST and rather are taxed independently by the individual state governments, according to the past expense routine. There is an uncommon rate of 0.25% on rough precious and semi-precious stones and 3% on gold. In addition a cess of 22% or other rates on top of 28% GST applies on couple of things like aerated drinks, luxury cars and tobacco products. Pre-GST, the statutory assessment rate for

most merchandise was about 26.5%, Post-GST, most merchandise are relied upon to be in the 18% tax range. The tax rates, rules and regulations are governed by the GST Council which consists of the finance ministers of centre and all the states.

### 1.1 Problem Statement

GST is a standout amongst the most critical tax reforms in India, which was pending till 2018. It was expected to be actualized from April 2010, however, because of political issues and clashing interests of various stakeholders it was pending. Now Government of India has adapted this taxation system from 2018. It is an extensive tax system that will subsume all indirect taxes of states and central governments and unified economy into a consistent national market. It is relied upon to resolve wrinkles of existing backhanded duty framework and assume an imperative job in the development of India. This framework shows an outline of GST idea, clarifies its highlights along with its course of events of usage in India. The paper is increasingly centered on the favorable circumstances of GST and challenges looked by India in execution.

### 1.2 Objectives of study

The study has following objectives:

- GST calculator to user for specific product
- Provide the Consultant for any queries.
- Time consuming before purchasing the product.
- Quick response from server when user send feedback.

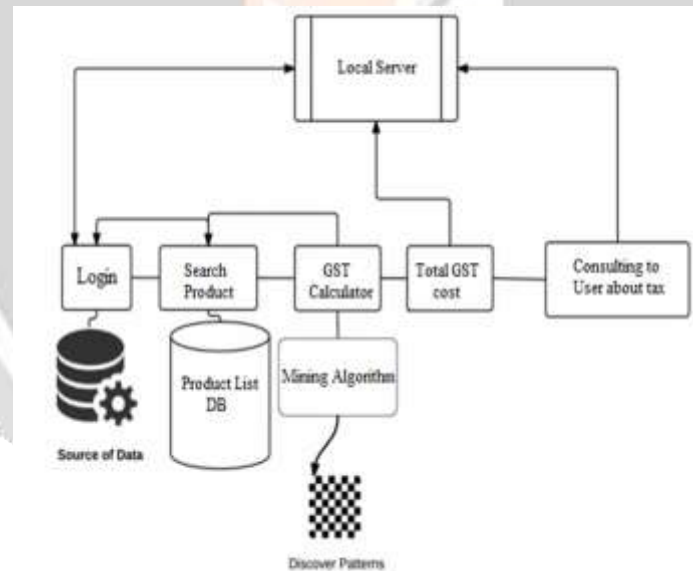


Fig -1 System architecture

### 1.3 Algorithm

#### K-Means algorithm

One of the most recently used unsupervised algorithms is K Means. K Means Clustering is data analysis technique. This is non-hierarchical method of grouping elements together. Cluster analysis or clustering is the task of grouping a set of elements in such a way that elements in the same group are more similar to each other than to those in other than to those in other groups (clusters). Which is used when you have unlabeled data (i.e., data without defined categories or groups). The goal of this algorithm is to find groups in the data, with the number of groups represented by the variable K. The

algorithm works sequentially to assign each data point to one of K groups based on the features that are provided. Objects or elements are clustered based on feature similarity .

**Algorithmic steps for k-means clustering** Let  $X = \{x_1, x_2, x_3, \dots, x_n\}$  be the set of data points and  $V = \{v_1, v_2, \dots, v_c\}$  be the set of centers.

- 1) Randomly select 'c' cluster centers.
- 2) Calculate the distance between each point and cluster centers.
- 3) Point cluster which have minimum distance from the cluster center of all the cluster centers.
- 4) Using formula, recalculate the cluster center:

$$v_i = (1/c_i) \sum_{j=1}^{c_i} x_j$$

Where, 'c i' represents the number of points in I th cluster.

- 5) Calculate again the minimum distance between each point and new obtained cluster centers.
- 6) If no point was matching then stop, otherwise repeat from step 3).

UNITS Software context : We are using TCP/IP protocol for establishing connection and transmitting data over the network. The minimum requirements the client should have to establish a connection to a server are as follows:  
Processor: Intel , Ram : 1GB ,Hard Disk: 2GB ,Web server: Java Web Server,Protocols:TCP/IP. Major constraints Basically initial software will use around 10 GB on hard drive, and the our actual application will be around 300 MB data. When we deploy the application on web server we will assume the 1 GB space for website and 500 MB for database.

## 2. MODELS

### 2.1 User Model

Here user model role is to check the product wise tax based on the product price.

User also authority to buy the product and send the feedback based on the experience.

Here also check the buy count, hit count, feedback report for future prediction.

Here user asks any problem to the consultant.

Consultant Model:

Consultant model is the authorized user to answer the customer question based on any criteria. Consultant checks the customer question and sends correct answer to the customer.

### 2.2 Admin Model

Admin is the most important role in this system. He checks all customer details as well as consultant. Here authority to add new product in this system. Admin check the overall result specific product.

## 3. KEYWORD BASED DATA EXTRACTION

1. Load the data on system framework
2. Preprocess the input request and generate the structure format
3. Apply requested query on the data for result
4. Check Weather the data is available on server or not
5. If yes then calculate the result
6. Display Record
7. Get the result analysis i.e. we get the fast input data to the user
8. Stop

#### 4. LITERATURE REVIEW

“Goods and Service Tax-An Appraisal” study by the Agogo Mawuli (May 2014)<sup>1</sup> and found that GST not comfortable for low-income countries and does not provide approximate way to poor countries. If still these countries want to implement GST then the rate of GST should be less than 10% for growth.

“GST in India: A Big Leap in the Indirect Taxation System” study by the Dr. R. Vasanthagopal (2011)<sup>2</sup> studied, and concluded that switching to meaningless GST from complicated indirect tax system in India will be increasing step in booming Indian economy. Success of GST will lead to 130 countries are acceptance in world and a new strict form of indirect tax system in Russia also.

“Goods and Service Tax Reforms and Intergovernmental Consideration in India” study by the Ehtisham Ahmed and Satya Poddar (2009)<sup>3</sup> and found that GST introduction will provide very easy and transparent tax system with positive in output and production of economy in India. But the benefits of GST are critically dependent on operation of GST.

“Goods and Service Tax- A Way Forward” Nitin Kumar (2014)<sup>6</sup> and concluded that aimed of GST in India help in removing useless distortion by indirect tax system and expected to encourage unbiased tax structure which is various location is different.

“Goods and Service Tax- Panacea For Indirect Tax System in India” study by the Pinki, Supriya Kamma and Richa Verma (July 2014)<sup>7</sup> and concluded that the new NDA government in India is strict and correct of GST and it is beneficial for government, state government and as well as for consumers in long run if its implementation is backed by strong IT infrastructure.

#### 5. CONCLUSIONS

GST is given for India a world class tax system by grabbing different treatment to manufacturing and service sector. But this will be subject to its rational design and timely implementation. We design easy to all customers for analysis the taxes using the mining technology. This system scope is no limited, some modification we redesign to the any application or any one for calculating the tax particular product. In future we will able to implement any android application by taking this same idea. We develop the system for the all shops, mall, e-commerce application and we extend the full system based on all categorized taxes.

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