

# The Importance of Text Mining for Services Management

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## Abstract

The present investigative study is a systematic as well as scientific endeavor to understand the beneficial effect of the text mining approach for the service management of the organization. This study uses secondary qualitative data for gaining accurate insight into the present research study. Thematic analysis is done on the collected data set for gaining accurate insight into the present study. Interpretive research philosophy is chosen for this study along with the inductive research approach. This study also uses an explanatory research design for effective insight into the beneficial effect of the text mining process for the service management of the organization. The study focuses on the process of text mining which is used for analysing the client forums, call logs, tickets of customer service, and platforms of social media, news feeds, tweets and many others. It also focuses on the business that have better insights based on client expectations and it requires the areas that focus on overall improvements. The study integrates the customer communications and reviews that can identify the new features for strengthening the product offerings. It focuses on the latest technologies that provide several opportunities for improving the customer experience those results in increased profits and revenue.

## Keywords

Customer, management, Text mining.

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## INTRODUCTION

**Text mining** is an effective transforming method that deals with the modification of unstructured text documents into systemic structural text. The data text mining technique is essential for the identification of a meaningful pattern of the information. The natural language processing technique is used for the automatic procession of unstructured text into the structural format. Transformation of data into meaningful information is essential for service management within the organizational setup. **Service management** is essential for providing a valuable customer relationship approach. It provides a systematic framework for the effective management of the potential customer of the organization.

## Objectives

The major objectives of the present investigative research study are

- To understand the concept of text mining within the business organization
- To evaluate the effect of service management within the organization
- To identify the benefits of the text mining approach for effective service management within the organization.
- To detect the importance of text mining for the effective customer retention of an organization

The major purpose of the present study is to analyze the beneficial effect of the text mining approach for effective service management within the organizational setup. Text mining is an essential gateway for managing the customer relationship with the organization. Service strategy and offerings of an organization became easier by implementing

a text-mining approach within the organizational setup. Service management is believed to be a set of specialized activities that deals with effective customer service management within the organizational setup.

**Natural language processing** (NLP) techniques are majorly used for the transformation of the data into meaningful text based on the machine learning algorithm. Text mining helps to analyze a large amount of information quickly as well as efficiently within the organizational setup. Apart from that, the text-mining approach helps in decoding the expectation of the customer towards a particular organization. It also improves the overall quality of the business organization by utilizing the comment of the customer towards the organization.

## MATERIAL AND METHODS

The research study is based on the beneficial effect of the text mining approach within the organizational setup for effective service management. Service management is essential for the customer need-based growth of the business organization. The entire research focused on the philosophical assumption of Interpretive for enhancing the knowledge regarding the benefits of the text-mining approach for the growth of the organization. Identification of research philosophy is an essential criterion for controlling the data collection as well as the data analysis process of the study. **Interpretive** research philosophy is a renowned philosophy that is mainly used in social science research. It directly focused on situational analysis by using the qualitative data set rather than the quantitative data [1]. This research philosophy believed in situational truth rather than the universal truth. This research deals with the **explanatory**

*research design* for scientifically exploring the effect of text mining on the service management of an organization. Explanatory research design is used within the research realm when the available information is significantly scanty in the amount [2]. This research design wanted to explore the causes of a particular phenomenon for gaining in-depth insight into the beneficial effect of the text-mining approach within the organizational setup.

The inductive approach is chosen for identifying the benefits of text mining within the business organization. The inductive research approach deals with the understanding of the phenomenon of specific scenarios to the general

conclusion of a fact [3]. It relies on the collection of a large amount of data from the different situations of a particular problem for delivering an effective conclusion from it. Apart from that the present investigative study uses secondary qualitative data for continuing the entire study in a systematic manner. Secondary data are collected from different scholarly articles as well as high-impact journals for evaluating the background of the aforementioned topic [4]. As the present study deals with the collection of secondary qualitative data, no sample size is denoted for the data set. Rather a set of inclusion and exclusion criteria are set for the effective collection of the data set.

**Table 1:** Inclusion and Exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>• Data after the year 2019</li> <li>• Peer-reviewed journals</li> <li>• Scholarly articles</li> <li>• Journal which only used the English language</li> <li>• Keyword-specific search of the information</li> </ul>	<ul style="list-style-type: none"> <li>• Data before the year 2019</li> <li>• Journal with another unknown language</li> <li>• Journal with restricted access</li> </ul>

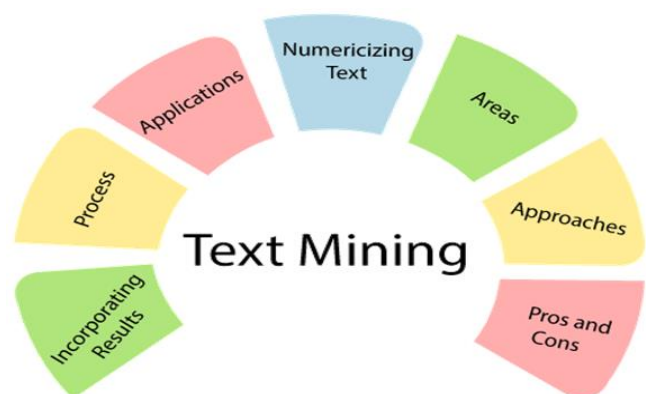
Above table denoted the inclusion and exclusion criteria for the collection of secondary qualitative data which are particularly set for the identification of the resourceful journals for the collection of information. The present study used the Google scholar platform for collecting secondary qualitative data for gaining effective insight into the benefits of the text-mining approach within the organizational setup [5].

Using secondary qualitative data is cost-effective as well as less time-consuming for the entire study. The collected secondary data set are analyzed by using thematic analysis of the data set. Thematic analysis is one of the essential qualitative data analysis methods that helps in the effective identification of codes based on the repetition of the keywords within the previous research work. It is a cost-effective method for the authentic analysis of the benefits of text mining within an organizational setup. On the other hand, the thematic analysis needs more time for the accurate analysis of the collected data set [6]. In the case of the present study, a total of 6 months is allocated for the effective completion of the research study based on the benefits of the text mining approach for effective service management within the organization.

## RESULTS

Text mining is used for improving the provision regarding service to the potential and existing customers of business. The text mining is used for the overall improvement regarding provision of service for potential and existing customer’s communications. Furthermore, it also includes the reviews that can identify the new features for strengthening the product offerings. Apart from that, the technology also provides the main opportunity for improving the customer experience that will result in increasing the

profits and revenue [7]. The text mining is considered to be the act of taking vast volumes based on raw text data and it also performs the analysis for producing the structured results. On the other hand, the process of text mining is often delegated for AI-powered mining tools which are due to all the benefits regarding machine learning and automation regarding the mining process. Within the business processes, the data mining process is used for discovering the relationship and several patterns within the data which help in making better business decisions. Moreover, the data mining process can help in spotting the sales trends, help in predicting the customer loyalty and help in developing smarter campaigns of marketing.



**Figure 1:** Components of Text data mining

The above figure illustrates about the main components of Text data mining includes incorporating results, applications, processes, numerating the texts, areas, pros and cons and other approaches. Apart from that, the process of text mining is analysed through the automatic process with the help of advanced technology and it is the reason for which larger amount of information within e-commerce [8]. It also

includes digging out the potential models, helping the makers of business decisions, predicting total customer behaviour, making right decisions and reducing overall risks. Text mining is also known to be the process of data mining and it is the actual process that demonstrates the transforming of unstructured texts into a structure format. It is used for identifying the meaningful patterns and other new insights and one of the main popular decisions includes the appropriate applications of text mining which is Information Retrieval.

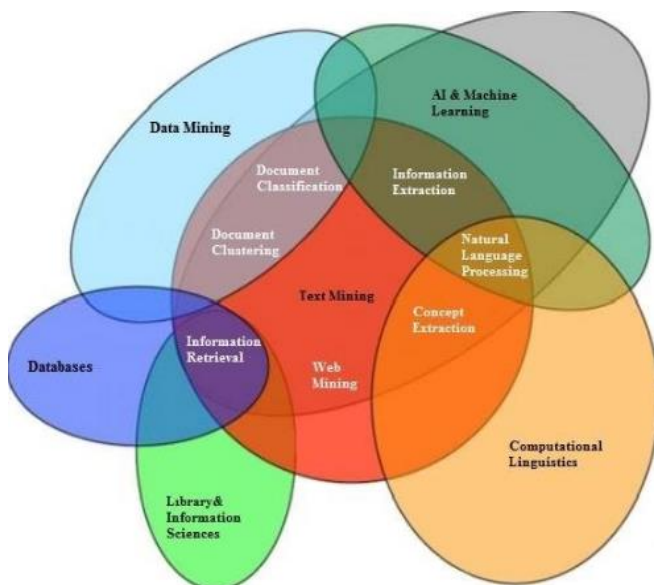
The main benefits of using the process of data mining includes that it helps the companies that gather reliable information. Furthermore, it is also considered to be the efficient and cost-effective solution that is compared with other data applications. Apart from that, it also helps the business more profitable production and other operational adjustments. The data mining processes also uses both the legacy and new systems and also help the overall business in making the informed decisions.

Text mining is considered to be the critical way of processing and analysing the unstructured data. The process of text mining includes in analysing and exploring larger amounts regarding unstructured text data that are aided by particular software which can identify several concepts, keywords and topics. On the other hand, it also focuses on text analytics and some people also draw the distinctions between two terms. The main technique that is used within text mining includes in identifying the intrinsic structures within the textual information and it organise into the relevant subgroups for the further analysis [9]. The text analytics also refers to the applications that includes in using the techniques of text mining for the sort out through all the data sets. On the other hand, the process of text mining is much more practical for all the data scientists and it also includes other users according to the development of big data platforms and it also uses the deep learning algorithm which can help to analyse several sets of unstructured data.

Analysing the data mining process help several organisations in finding valuable business insights within the corporate documents, call centre logs, posts of social network and several other resources based on text data. The capabilities of the process of data mining are corporate into virtual agents and AI chat bots where a company can easily deploy in providing the automated responses. It is for all the customers as the main part of marketing, operations of customer services and sales. The overall process of text mining also includes the conventional process which focuses on gathering the unstructured information from several sources that are accessible within the document organisation. It also focuses on data cleansing and pre-processing tasks that are performed for eliminating and distinguishing the inconsistency from all the data variables.

The data mining process is totally focused on the process of document clustering and document classification. It also focuses on other process such as machine learning and AI, computational linguistics, library and information science, several databases and others [10]. Power BI is also considered to be the powered self-service BI tool which can be performed the unstructured data analytics and it is well-suited for both the business audiences and analysts as per the initiative dashboard features and other visualisation features. Therefore, text analytics is considered to be the concept which includes the information retrieval and process of information extraction process with web mining and data mining process.

Importance of Text mining includes in huge collection regarding collection of documents. The main importance of text mining includes in using the processing of natural language and also for processing AI for uncovering the relationships and patterns within unstructured texts. On the other hand, it also enables the business for automatically identifying the useful information within emails, tickets for customer service, Chabot, posts within social media and several other texts. The larger collection of the text data within the text analytics process that includes in the extraction process of interesting patterns and information's from several data within larger database [11]. It is the process that helps to extract several useful information and the nontrivial patterns form the larger amount of text database. The IR systems also make the use of different algorithm for monitoring and tracking the user behaviour and it also discover the relevant data. The main features of this process include text clustering process, text categorisation process, sentiment analysis, entity-relation modelling and document summarisation.



**Figure 2:** Venn diagram of test mining



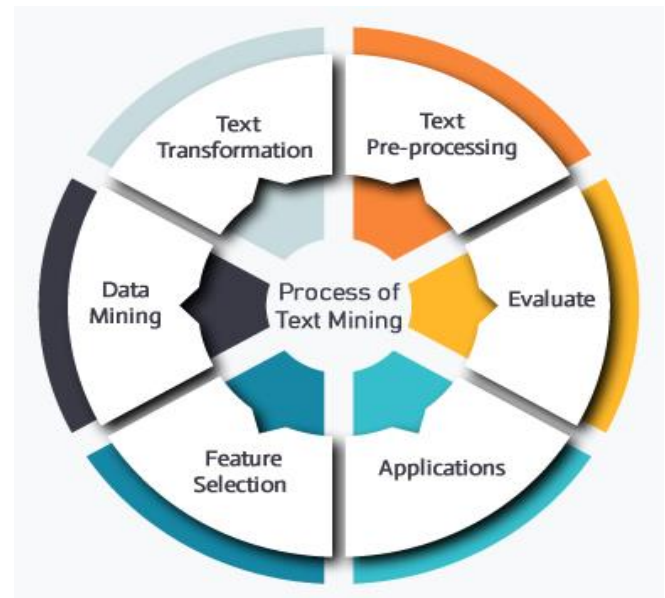
**Figure 3:** Steps of text analytics

The process of text analytics includes transforming the unstructured text data within the machine-process able structured form that form in discovering the hidden patterns. On the other hand, it also deals with machine learning that are focused on the supported analysis regarding text data [12]. The main process of text mining includes pre-processing operations, analysing the patterns through management information systems, information extraction, categorisation, clustering and summarisation. It also includes in identifying the file systems for collecting data and also for retrieval of data. Therefore, within the overall file systems, the stored information cannot be isolated in individual files and it can be much more difficult to retrieve and identify. The main factors that are linked with the process of text analytics includes text features, text content, text organisation and several other processes.

The process includes in transforming overall information based on the data variables. Furthermore, the machines can easily understand and the process of text analytics also automates the overall process that classifies the texts by intent, topic and sentiments. Data cleansing is also considered to be the important step as it holds the total importance of dirty data if they are used within the mining process directly and it can also causes much confusion within several procedures and it also produces the inaccurate results. Therefore, the importance regarding file information and document information help to be much more organised, transparent, efficient and systematic. Hence, it also helps several people that can be capable to access overall information which can be much easier for implementing the process.

The process of Text mining can assist in interpretation and tracking the texts created by blogs, news and emails. The process of text mining includes in assisting the interpretation and tracking process regarding the texts that are created by blogs, news and emails. The organisation might use the technologies that are based on the process of data mining and it is used for assessing the visibility of the brands, likes,

followers and posts. It also provides the organisation with the clear picture of customers that react to several contents and brands. It is considered as the main act that takes vast volumes regarding raw data texts and analyse in producing structured results [13]. In addition, it also delegates the mining tools that are AI-powered which benefits the automation process of mining. The first step within the process of text mining is information retrieval and it help retrieve several information based on data variables. Furthermore, it might require by using the search engine for identifying the coups regarding texts which are digitised and may necessitate digitisation of the physical texts within publications.



**Figure 4:** Important phases of text mining process

The above figures about the phases of test mining process and it focuses on text transformation, text pre-processing, data mining, evaluation, feature selection and applications. On the other hand, information extraction is one of the main techniques of text mining and information exchange also refers to the process. It also extracts some meaningful information which is having vast chunks of the textual data [14]. The process of data mining includes in handling the structured data that have highly formatted data within the database and with ERP systems. Apart from that, it deals with the unstructured textual data that are not pre-defined and it integrates the text mining and data mining approaches based on the analytics. Therefore, it also focuses on the mining techniques such as process discovery, process enhancements and conformance checking.

## DISCUSSION

Present an investigative study that deals with the understanding of the beneficial effect of the text mining approach for effective service management within the organizational setup. Thematic analysis is done on the collected secondary qualitative data for gaining effective insight into the positive effect of the text-mining approach

within the organizational setup. It is evident from the result of the thematic analysis that text mining deals with a large number of data set that effectively enable the analytical processing of the data set in an accurate manner. The text mining process is also utilized in the service management approach of an organization [15]. In the case of social media analysis, text mining is believed to be one of the essential processes that quickly transform the unstructured data of the social media handles into a systematic as well as a structured manner for gaining effective insight from the social media users. Apart from that, the feedback response of the customers is also analyzed by using a text-mining process for improving the customer-based approach of the organization.

It is also stated that the text mining process is effectively used in social media analysis for the strategic improvement of the organization. Social media analysis is believed to be one of the essential methods for analyzing the target market of the organization [16]. Text mining is an approach that enhances data transformation in a quick as well as accurate manner. On the other hand, the capacity of handling large amounts of data set is essential for the effective growth as well as the profitability of the organization. It is stated that utilization of the text mining approach enhances the customer relationship with the organization [17]. Text mining is a beneficial tool for effective communication of the organization with potential customer. Maintenance of appropriate customer relationship management is essential for the effective growth and development of the organization.

It is evident from the present analysis that text mining enhances the report generation process of the organization in an effective manner that impacted the service management approach of the organization. In the era of globalization, people are more interested to go in intellectual investment. In the case of business organizations, intellectual investment is to invest a large amount towards the repairing as well as maintenance of a good relationship with potential customers. It is evident from the analysis that the text-mining approach enhances the provision of organizational service for the effective retention of customers [18]. Natural language processing techniques are used in the text mining approach for the growth and development of the organization. Coding of the structured data set along with the sentimental analysis has been done in the text mining approach for gaining effective insight into the customer's perspective regarding the quality of a particular organization.

The present study suggested that the incorporation of automatic techniques enhances the profitability as well as productivity of the organization. Incorporation of a text mining approach within the organizational process leads towards automation and increased productivity of the organization. The automatic data translating process enhances the systematic processing of the structured data for quick understanding and effective decision-making processes within the organization. Incorporation of a text mining approach enhances the chances of establishing new market opportunities along with the innovative marketing approach

for a particular product. The study indicated that the incorporation of text mining enhances the effective relationship of the company with its effective stakeholders. On the other hand, it emphasizes the effective decision-making process of the organization that in turn helps in the customer-centric growth of the organization in an effective manner [19]. Depending on the need of the specific business firm the form of text mining is applied for the betterment of the organization. Testing the social media handles of the target group of customers is essential for the incorporation of customer-specific policies of the organization.

It is evident from this study that social media analysis deals with a large number of potential customers which is analyzed for tracking the current perspective of the customer towards purchasing a particular product. Apart from that, sentiment analysis, measuring the satisfaction rate of the customer, customer voice analysis, and more are effectively handled by the text mining approach within the organization [20]. Sometimes analyzing the feedback response is another important criterion that is used for the implication customer-centric approach within the organization. Open-ended survey questions are also analyzed by the implication of the text-mining approach within the organization. Text mining enhances the overall service management approach within the organizational setup.

## CONCLUSION

The present investigative study is an endeavor to understand the beneficial effect of the text mining approach for the effective service management of the organization. The present study uses secondary qualitative data for gaining effective insight into the aforementioned problem. Interpretive research philosophy is used in the research study along with an inductive research approach for gaining accurate insight into the benefits of the text-mining approach within the organizational setup. Secondary quantitative data is used for quick as well as efficient analysis of the above-mentioned concepts. Particular inclusion and exclusion criteria are set for the effective collection of the data set. It is clear from the result of the thematic analysis that text mining benefited the business organization for the effective service management of the organization. It helps to enhance the customer relationship approach of the organization which in turn positively affected the profitability of the organization. The entire duration of the entire investigative study is 6 months for gaining effective insight into the research problem.

Text mining is used for improving the provision of the service to both existing as well as potential customers of the organization. Apart from that, the text mining act as a critical analytical process for transforming unstructured data into structured information of a particular data set. It helps to analyze a large amount of data in a quick as well as efficient manner. One of the major benefits of the text mining approach is the handling capacity of a large number of

datasets in an accurate manner. Apart from that, the result of the thematic analysis suggested that the appropriate interpretation of the data of social media handles is also done by the text mining process for gaining effective insight into the current perspective of the customers regarding a particular product. Effective tracking of the data of online platforms is also done by the text mining approach of the particular business organization.

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