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Designing Efficient Ontologies for Organization Development

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ABSTRACT: The development of information technologies has paved the way for various organizations to emerge themselves in national & International markets. The organization working structure plays a great role in success and therefore more efforts, concentration & importance should be given for designing the structure. The structure should be so rigid robust and flexible that it can survive in any up and down conditions of the markets. The various reviews analysis tools are mostly dependent on the organization structure for their efficiency and accuracy. In these papers the main focuses is provided on elaborating the need for effective organization structure. The ontology domain from the literature review analysis is aims towards designing of the structure. The study focuses on challenges in ontology designing that needs to be addressed. The conclusion highlights the need of artificial intelligence approach for ontology generation.

KEYWORDS: Ontology, Opinions, artificial intelligence, Machine Learning

I. INTRODUCTION

The World Wide Web an emerging dynamic and user friendly platform has open the new avenue for manufacturers, producers to sell their goods at national & international markets. These opportunities have given them to develop into a bigger and vast E commerce industry.

The development in information technology has accelerated the growth of soft computing. The work that used to perform manually with the help of pen & paper are performed electronically.

The Race for achieving the goals to become market leaders are becoming quite difficulty for the organization due to growing competition. The structure of organization are becoming quite complex as they are developing world wide in the market. The organization structure should be properly arranged for the smooth working.

The efficient structure is very much important as it helps the organization to predict what's the problem? How it can be solved? And what can be the effect if a particular structure misbehaves? All these can be easily judged if proper structures for organizations are followed. There are various recent research domains that have emerged for organizing their structure. Various organizations are using many data analytics approach for their development in the overall markets.

II. ONTOLOGY

Ontology an recent & research development area that basically aims at building the organization's structure in a very easy & robust manner. The Ontology is defined as "categorizing the entities of the organization based on the common properties & combining the sub entities together and mapping them with the main".

The ontology makes use of binary tree pattern for developing the structure of the organization. It aims at analyzing the important area of the organization and extracting the entities that are related to it. For Example consider a simple bank organization in Fig 1. The entities account, services, employee, infrastructure, insurance and security are identified as the main backbone of the bank and these entities are related directly to the bank. These main entities consist of various sub entities that have their common properties.

For example in below Fig 1 saving & current entities possess the properties of account so these entities are not directly attached to bank but they are attached indirectly as sub entities to account.

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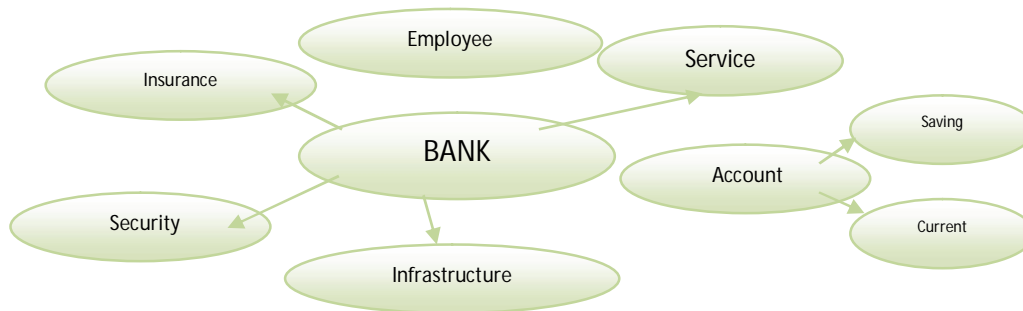


Fig: 1 Representation of Bank organization in Ontology

In this way, the organization complex structure and organized for efficient analysis & working.

The organizations are mostly dependent on the customer's feedback, suggestions and opinions for judging whether the launched products & services are performing well or not do they required updation or need to be altered completely. The analysis of these opinions, feedback & suggestions required complex analysis & computing. This analysis and computing are totally dependent on the structure of the organization.

For Example: "The Saving account service of this bank is not good at all".

In the above example the customer is expressing their views but the particular bank service he has used. The analysis system first consider these sentence and extract useful words form it then it check whether these sentence is related to the bank or not. These checking are performed by matching the sentence extracted words with the organization structure entities and if found then only the sentence are considered for further analysis otherwise the sentence are dropped. These pave the way for making the efficient structure of the organization. There are various development scope and challenges in the field of ontology for organizing the structure.

In this paper the section i) presents an introduction for the need of efficient organization structure. Section ii) elaborates the concept of ontology for designing the structure section iii) review the various approaches used for structure designing. Section IV) challenges in ontology generation and V) conclude with the conclusion.

III. LITERATURE REVIEW

Seongwook Youn et al in their paper "Ontology development tools for ontology- based knowledge management" described the various approaches that are used for ontology generation. The various ontology languages XML, RDF and OWL are summarized as well as different approach builds by various ontology researchers [1].

Diana Maynard and Adam Funk and Wim Peters in their paper "NLP-based support for ontology lifecycle development" describe the requirement for modifying the ontologies on receiving the new and recent data. The NLP approaches for unstructured text are analyzed in order to get an accurate and ideal organization structures. [2]

Diana MAYNARD et al demonstrated the use of rule based approach and machine learning for the analysis and the development of the ontologies. They extracted the name entity recognition by declaring rules for various cases. The evaluation shows that the above approach works well with it. [3]

ThanhThoQuane et al. in their paper "Automatic Fuzzy Ontology Generation for Semantic Help-Desk Support" proposed an fuzzy ontology generation techniques by using fuzzy analysis. The experimental results show that the system attains favorable results. [4]

Quratulain Rajput in their paper "Ontology based semantic annotation of Urdu language web documents" presents a semantic annotation framework that works on Urdu language. The author has experimented the approach and finds the challenges involved in the annotation of urdu language. [5]

AmalZouaq and Roger Nkambou in their paper "Building Domain Ontologies from Text for Educational Purposes" present an approach of converting the textual resources, domain concept maps into ontologies structure. The author by his innovative approach have bridge the gap between e learning Intelligent Tutoring Systems by providing a common domain model.[6]



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IV. CHALLENGES IN ONTOLOGY DESIGN

The analysis of above Literature review has highlighted the challenges that need to be focused and solved during ontology generation.

- The organization structure keeps updating continuously according to the need of the market and presents structure are not capable of updation dynamically and it hampers the efficiency of reviews analysis.
- The organization structure should be flexible for updation of new entities in the structure.
- Human Intelligence is not enough for designing the ontologies as some parameters are left unprocessed.
- The different words express the same semantic entities but there presence in the structure is missing as the words are compared while matching. And these semantically same words are not considered.

V. CONCLUSION AND FUTURE WORK

The paper presents studies towards improvement in organization structure by using various data analytics methods and approaches. The study aims at designing an efficient artificial intelligence based ontology structure that will be capable for designing and self updation from unstructured text by making use of proper NLP techniques.

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BIOGRAPHY

Dr.Abrar S Alvi is a Professor in the Department of Information Technology, PRMIT&R Badnera, Amravati,India. He received Ph.D. in Computer Science& Engineering in the Year 2012, M.E.in Computer Science & Engineering from Amravati University in the Year 2000 and B.E in Computer Engineering from Amravati University in the Year 2000. The area of interest for the research is artificial Intelligence &Algorithms.