IJCSE International Journal of Computer Sciences and Engineering Open Access
Review Paper Vol.-6, Issue-9, Sept. 2018 E-ISSN: 2347-2693

Efficiency Stress Prediction in BPO Industries Using PFBDT Algorithm

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Available online at: www.ijcseonline.org

Accepted: 26/Sept./2018, Published: 30/Sept./2018

Abstract— The exploration of Business Process Outsourcing (BPO) is a huge attention in India. A concern, the performance outcomes and hope of Indian service workers are efficient. To motivate the employee developing and managing levels of their hope, and also their problems such as erosion, pressure, and burnout that have afflicted the BPO industry. The main motivation is to reduce the stress level of employees in BPO field with data mining techniques. The data mining is to demonstrate the potential of gathering large collections of data, and analyzing these data sets to gain useful business oriented information. In this paper, for all the above algorithms the input data set will be considered as Employees issues. Based on the given input each algorithm will be processed and the respective solution is obtained. As per the performance of the given algorithm is not that much predictive in the accuracy and high error rate we propose a new method called Proposed Fast Boosting Decision Tree Algorithm (PFBDT) which will enhance accuracy rate and reduce in error rate.

Keywords—BPO, Stress, Data Mining, Classifier, Algorithms

I. INTRODUCTION

Issue is rarely understood and there is no a clear definition of the term (Stranks, 2005). Today, there is a general acceptance of Issue as a problem in every industry that needs to be addressed urgently. The term 'Issue' is often misused and has become a sunshade term. Issue can be defined in several ways and hence it is important to use a directed approach that covers various aspects of this concept. In simple terms, Issue can be defined as an influence that disturbs the natural equilibrium of the living body (Stranks, 2005). Cranwell-Ward and Abbey, (2005) defines Issue as a reaction by the individual to pressure, external and internal, self-imposed, and which gives rise to physiological, psychological and behavioural changes. Issue is the response by the body to the demands placed on it; the individual's capacity to cope with this demand will determine the level of Issue the person is faced with.

Work related Issue is estimated to affect at least a third of the workforce in any one year. Various studies have proven that individuals working in the hospitality industry show signs of Issue and overwork, due to demands placed by organizations that tend to pressurize the employees. Issue management is the issue of managing such demands and pressure placed on the individual, in the most effective way. Many hospitality organizations have started Issue management programmers but staff turnover still remains high due to job Issue.

Organizational Issue or job Issue can be defined as physical and emotional responses that occur when the requirements of the job do not match the capabilities and resources provided (Lo &Lamm, 2005).

While there are other consequences related to occupational Issue , such as absenteeism, alcoholism, drug abuse, costs of the errors made on the job, poor decision making because of impaired conditions at work, the insidious costs of relationships of managers with their family and colleagues that are affected due to the high levels of Issue cannot be quantified (Ross &Almaier, 1994).In this research project, an effort has been made to draw out the major Issue that affects the employees and production of organization in BPO sector. This research intends to create awareness regarding the growing problem of Issue and Issue related illnesses. The research identifies Issue as a vital factor that affects employee performance in any organization. The literature review assists in providing a base to carry out the research. The research further recognizes 'Issue ors' that perform an important role contributing towards job Issues. The research concludes by presenting the best techniques for analyzing the issues of employees in BPO sectors.

Some of the general services provided by the BPOs are Receivables and Payables, Inventory Management, Order Processing, Cash flow Analysis, Reconciliation, Data Entry, Payroll Processing, QuickBooks Accounting, Financial

Statement Preparation and Accounting Services. Some of the web based services include live online sales and order entry, E-commerce transaction support, Live online enquiry handling, Web Design/Development.

An important new trend in information technologies is to identify meaningful data collected in information systems. As this knowledge is captured, this can be key to gaining a competitive advantage over competitors in an industry. The value of data mining is to proactively seek out the trends within an industry and to provide this understanding to organizations that maintain substantial amounts of information. The goal then of data mining is to improve the quality of the interaction between the organization and their customers.

In earlier times, due to lack of existing information systems unable to store the data and to analyze those, companies suffered. However, in this day and age, a new pattern of looking into data and extrapolating patterns has come about offered at many levels to organizations.

Large scale automated search and interpretation of discovered regularities belong to Knowledge Discovery in databases (KDD), but are typically not considered part of data mining. KDD concerns itself with knowledge discovery processes applied to databases. Typically, KDD has to deal with inconclusive data, noisy data, and sparse data [8]. Thus, KDD refers to the overall process of discovering useful knowledge from data while data mining refers to the application of algorithms for extracting patterns from data.

Data mining, if done right, can offer an organization a way to optimize its processing of its business data. In this day and age, new data mining companies are springing up to the challenge of providing this service. Though data mining is improving the interaction between a business organization using data mining and its customers, there are many data mining companies that are trying to vertically integrate to offer the best services to broad markets. This is done by focusing on a particular industry and trying to understand the types of information collected by companies in that sector. Data mining is then the process of extracting out valid and yet previously unknown information from large databases and using it to make critical business decisions [3].

Data mining or exploratory data analysis with large and complex datasets bringstogether the wealth of knowledge and research in statistics and machine learning for the task of discovering new snippets of knowledge in very large databases.

Over the last three decades, increasingly large amounts of critical business data have been stored electronically and this volume will continue to increase in the future. Despite the growing volume of data collected by businesses, few have been able to fully capitalize on its value. This is due to the difficult task of fully analyzing these data and discerning the underlying patterns that can emerge. An example of a difficult problem that data mining will try to solve is the following. Suppose a retail company, such as Wal-Mart, which collects large quantities of information from every buyer that comes through the store, wants to investigate the problem of inventory management. Predicting inventory optimization for a large client who sells millions of products is not an easy problem. There are many sub-problems complicated enough to take sufficient time to figure out. One such sub-problem involves understanding and predicting Wal-Mart's customer and consumer preferences.

A data-mining tool can be used in this example to discern the subtle patterns in customer behavior to help Wal-Mart stock the proper amounts of inventory. Since an organization may hold data that can consume many gigabytes or terabytes of storage, data mining can probe through this mass of data and sort out all important pieces of information and present it to a CEO of a client to better understand his client's business structure.

II.LITERATURE REVIEW

Boosted decision trees are compared with neural nets and various decision tree methods using the MiniBooNE experiment as a test bed. A discussion of methods for pruning variables and for increasing the speed of convergence aregiven. Ramakrishna (2002)has done the research on projected that the senior human resourcesexecutive endorses that clearly saying the performance management system is very critical for an employee to know what is expected out of him and what the performance limitations are. The study, based on a sample survey of BPO workers (n=544) across the country, reported that the BPO is an industry where performance is almost entirely metrics- driven and it is also a business where metrics and the burden to deliver on them have appeared as significant causes of stress. Yet - by the very fact that the metrics are instinctively generated and cannot industry than in the information technology industry. As per their learning, the overall satisfaction score for the ITES (Information Technology Enabled Service) workers was at 8.3 (or 83.0 per cent) on a scale of 10. Conclusion trees are a highly flexible modeling technique. For instance, to build regression models and neural network models, the missing values have to be inserted into training data while decision trees can be built even with missing values. Decision trees are intended for the classification of attributes regarding the given target variable [6].

Klepac et al., 2003 has concluded the neural networks are a powerful tool in trend prognosticsand predictions based on

past data. In data mining, neural systems are often combined with other methods because if used alone, they can hardly guarantee a good interpretation of results. Rani and Mahalingam (2003), based on a sample survey of BPO employees (n=544) across thecountry, reported that the BPO is an industry where performance is almost entirely metrics-driven and it is also an industry where metrics and the pressure to deliver on them have emerged as significant causes of stress. Yet - by the very fact that the metrics are automatically generated and cannot industry than in the IT industry. As per their study, the overall satisfaction score forth ITeS employees was at 8.3 (or 83.0 per cent) on a scale of 10.

Brown and Stone (2004) reported that BPO accounted for 34 percent of the global outsourcingcontract value in 2004 and estimated that BPO services would grow from $1.3 billion in 2002 to $4.3 billion in 2007. Babu, P.R. (2004), based on a sample survey of 277 call center workers, has opined that theperformance of the BPO workers is linked with incentives in cash and kind and the annual growths in salary as well as the vertical mobility of the agents in the BPO firms are also linked to their ratings. Networking performance with incentives and/or punitive actions forces the agents to stress continuously. [8], According to one study, ―concerns that communicate most effectively are more likely (51.6%) to report turnover rates below those of their industry peers (33.3%).

Spector (2004) studied that long working hours in the organization increase the stress among theemployees and in this situation; they can reduce their stress level by making conversation with their peers and family members. Chanda,et al., 2005 reported the Indian BPO division has appeared rapidly, and its exports havegrown from $565 million in 2000 to about $7.3 billion in 2005. These carry across were projected to increase to $20 billion in 2007 and employment in the sector was expected to rise from its current level of 300,000 to over 1.1 million by 2008.

Shivani (2006) observes that the performance appraisal in BPOs means a hurried 5-minutesession for the HR manager who, many a time, is very badly prepared for the session and sometimes the employees get to meet their managers and interact with them only during this time. The number of ratings to be given under various categories is fixed, following a bell-curve distribution and the ratings depend on _quota. Awards are mostly given as ad hoc measures to temporarily satisfy the employees and most often do not influence the final ratings, which are also often ad hoc! What further complicates affairs is that the ratings also determine whether theperson will be eligible for a promotion in the next 12 months. According to her, such practices demotivate the employees.

Bhaduri (2008) has done the research in opines that if one wants to manage attrition, one shouldstart by looking at the performance management system of the organization. In his opinion, every manager should be adequately trained to give candid feedback and also to coach the players in his team. These studies indicate that all is not well with the appraisal system in the BPO firms. In this context, an attempt has been made by the researchers to study, analyze and group the correlates of the employee satisfaction with the performance appraisal system being practiced by the foreign MNC BPO firms operating in India.

Richardson (2008)- A classification of stress interventions has been done, those are primary, secondary and tertiary. He suggested all the employees to adopt relaxation training intervention for stress management which is the easiest and least expensive approach to implement. Singh A. P & Singh S.(2009) –His study emphasizes on the phenomenon of Job Satisfaction inthe organizations. According to him, Job Satisfaction is directly related to Stress and Work culture that an Organization provides. He identified three sectors in which stress originate and classified stress into two main types i.e. eustress and Distress. Further, he pointed the importance of positive stress and positive events for better performance and satisfaction of employees.

Gladies J. J. & Kennedy V.(2011)- The author revealed a significant correlation betweenOrganizational Climate and Job Stress among the women working in IT companies of India. According to him, learning how to manage stress is a very crucial issue that should be developed in IT companies so that they can reduce or eliminate the causes of stress environment. Urska Treven, Sonja Treven & Simona Sarotar Zizek (2011)- Organizations, where theworkers are said to be stressed are more likely to be unsuccessful in the competitive market. Various approaches of managing stress, good work organization and good management are theeffective ways of preventing stress. He categorized stress broadly into three main types; they are a) Transient Stress b) Post Traumatic Stress Disorders (PTSD) c) Chronic Stress.

Khalid A. (2012)- There is a direct relationship between stress and job performance in anyorganization. To improve the performance of an individual in an organization an employee should receive good support from their leaders. Hence, a supportive leader can improve the performance of an employee even at unfavorable situations. Kavitha(2012)- The article focuses on the organizational role stress for the employees in the ITsector. It also highlights that women face more stress than men in the organization to be more specific married women faces more stress than the unmarried women. Vijaya Baskaran (2013), expressed in this paper attempts to recognize and systematically address the various Big data trends happening across the cyberspace and how adaptive organizations are putting their efforts to usher in a

completely new era of computing by being much closer to their customers and business associates.

III.RESEARCH METHODOLOGY

The proposed methodology is used for all the above algorithms the input data set will be considered as Employees issues. Based on the given input each algorithm will be processed and the respective solution is obtained. As per the performance of the given algorithm is not that much predictive in the accuracy and high error rate we propose a new method called Proposed Fast Boosting Decision Tree Algorithm (PFBDT) which will enhance accuracy rate and reduce in error rate

3.1 Proposed Fast Boosting Decision Tree Algorithm (PFBDT)

1. Initialize weights (sorted in decreasing order).
2. Train decision tree ht (one node at a time) using the Quick Stump Training method.
3. Perform standard Boosting steps:

(a) Determine optimal _t (i.e. using line-search).
(b) Update sample weights given the misclassification error of ht and the variant of boosting used.
(c) If more Boosting iterations are needed, sort Sample weights in decreasing order, increment iteration number t, and goto step 2.

Our proposed fast boosting decision tree algorithm has three phases inbuilt within it. Let us discuss each phase briefly from the following studies.

Phase1: Initialize weights to nodes so that it will be easy to form the trees based on the given condition (Decreasing Order) using decision tree.

Phase2: Decision Tree Algorithm

Application of basic statistical methods is used to study the BPO Employee. It is found that women BPO employees have high stress comparatively than men. Various stresses are provided to carry out a more detailed of BPO employee and separate the attributes which have the highest effect, decision trees are used.

A boosted classifier having the form$H(x) = \sum_t ath t(x)$ can be trained by greedily minimizinga loss function L; i.e. by optimizing scalarat and weak learner ht(x) at each iteration t.

Step 1: compute classification entropy.
Step 2: for each attribute, calculate information gain using classification attribute.
Step 3: select attribute with highest information gain.
Step 4: remove node attribute, for future calculation.
Step 5: repeat steps 2-4 until all attribute have been used.

3.2 Decision Tree Algorithms ID3 Algorithm {ID3 (D, Attributes, Target)}

- Create a node t for the tree.
- If all examples in D are positive, return the single-node tree t with label "+".
- If all examples in D are negative, return the single-node tree t, with label "–".
- Label t with the most common value of Target in D.
- If Attributes is empty, return the single-node tree t. Otherwise:
- Let A* be the attribute from Attributes that best classifies examples in D.
- Assign t the decision attribute A*.
- For each possible value "a" in A* do:
- Add a new tree branch below t, corresponding to the test A* = "a".
- Let D_a be the subset of D that has value "a" for A*.
- If D_a is empty: Then add a leaf node with label of the most common value of Target in D. Else add the sub tree ID3 (D_a, Attributes \ {A*}, Target).
- Return t.

Phase 3: Train decision tree ht (one node at a time) using the Quick Stump Training method.

Step1: Train each feature only using data in a relatively small m- subset.
Step2: Sort the features based on their preliminary errors.
Step3: Continue training one feature at a time on progressively larger subsets, updating"(k) m.
Step4: If it is underachieving, prune immediately.
Step5: If it trains to completion, save it as best-so-far.
Step6: Finally, report the best performing feature (& respective parameters)

The major advantages are Highly Accuracy, Noiseless, Independence, and easy to maintain. PFBDT useful especially when there is no prior knowledge about the analyzed data. They are more commonly used to complex relationship between input and output or to find pattern in data.

IV.PERFORMANCE ANALYSIS

In this approach, the classification accuracy rates for the datasets were measured. For example, in the classification problem with two-classes, positive and negative, a single prediction has four possibilities. The True Positive rate (TP) and True Negative rate (TN) are correct classifications. A False Positive (FP) occurs when the outcome is incorrectly predicted as positive when it is actually negative. A False Negative (FN) occurs when the outcome is incorrectly predicted as negative when it is actually positive.

1. **Accuracy** - It refers to the total number of records that are correctly classified by the classifier.

$$\text{Accuracy} = \frac{TP + TN}{TP + FP + FN + TN}$$

Table.1 Confusion Table

Prediction		Disease	
		+	-
Test	+	True Positive (TP)	False Negative (FP)
	-	False Negative (FN)	True Negative (TN)

2. **Classification error** - This refers to the misclassified datasets from the correctly classified records.

3. **True Positive Rate (TP**): It corresponds to the number of positive examples that have been correctly predicted by the classification model.

4. **False Positive Rate (FP):** It corresponds to the number of negative examples that have been wrongly predicted by the classification model.

5. **Kappa Statistics** - A measure of the degree of nonrandom agreement between observers or measurements of the same categorical variable.

6. **Precision -** is the fraction of retrieved instances that are relevant.

$$\text{Precision} = \frac{TP}{TP + FP}$$

7. **Recall-** is the fraction of relevant instances that are retrieved.

$$\text{Recall} = \frac{TP}{TP + FN}$$

8. **Root-Mean-Squared-error** - It is a statistical measure of the magnitude of a varying quantity. It can be calculated for a series of discrete values, or for a continuously varying function. Since the class label prediction is of multi-class, the result on the test set will be displayed as a two-dimensional confusion matrix with a row and a column for each class. Each matrix element shows the number of test cases for which the actual class is the row and the predicted class is the column. Finally, the error rate is one minus this.

Table2 Performance Analysis of Various Classifiers

Classifier	Accuracy (%)	True Positive rate	False positive rate	Precision	Recall	Classification Error(%)
Random Forest	63.34	0.633	0.254	0.570	0.633	36.66
J48	64.45	0.500	0.544	0.521	0.500	35.55
PRISM	63.45	0.750	0.350	0.825	0.750	36.55
IBK	54.50	0.871	0.594	0.571	0.871	45.50
SMO	54.00	0.643	0.465	0.629	0.643	46.00
Bayes Net	52.50	0.681	0.502	0.625	0.681	47.50
Simple Logisitics	49.80	0.547	0.450	0.520	0.547	50.20
PART	49.99	0.652	0.550	0.650	0.652	50.01
ZeroR	52.25	0.584	0.546	0.643	0.584	47.75
AD Tree	61.18	0.500	0.640	0.684	0.500	38.82
Simple Cart	60.16	0.600	0.490	0.682	0.600	39.84
Multilayer perception	61.58	0.546	0.500	0.855	0.546	38.42
Navie Bays	53.75	0.571	0.594	0.528	0.571	46.25
NNge	51.20	0.655	0.500	0.540	0.655	48.80
KStar	50.25	0.564	0.459	0.561	0.564	49.75
K-clustering	51.10	0.781	0.502	0.645	0.661	48.50
KNN	42.80	0.647	0.450	0.520	0.537	53.20
Rough set	45.99	0.552	0.550	0.650	0.642	49.01
Rule based	54.25	0.584	0.546	0.643	0.584	47.75
Decision Tree	67.56	0.407	0.320	0.478	0.507	46.32

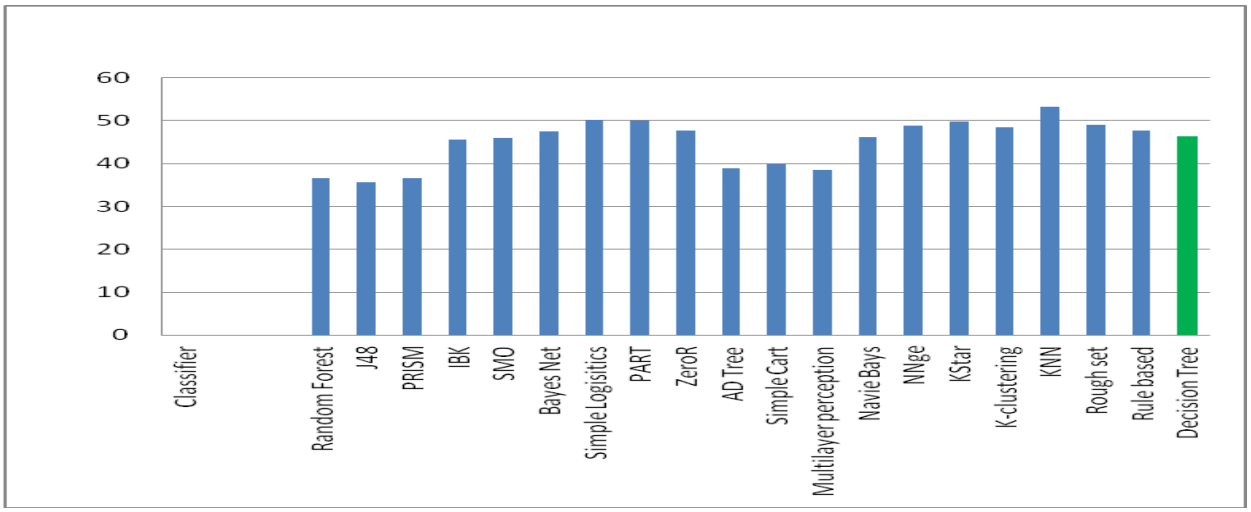

Figure1. Comparison of Classification error in various algorithms.

The above graph represents that the Decision tree algorithm has given the best performance in some of the attributes like accuracy and Precision & recall rate. At the same time decision tree algorithm couldn't satisfy with the error rate in the data classification. To reduce the error rate and to improve the Accuracy and Precision & Recall rate we propose a method called Fast boosting decision tree algorithm.

Table3. Comparison Between Decision Tree (Dt) Algorithm And Proposed Fast Boosting Decision Tree (Pfbdt) Algorithm.

Parameters	Decision Tree (DT) Algorithm	Proposed Fast Boosting Decision Tree (PFBDT) Algorithm
Accuracy (%)	67.56	78.21
True Positive Rate	0.407	0.306
False Positive Rate	0.320	0.211
Correctly classified Instances	57.14	81.42
Incorrectly classified Instances	42.85	18.57
Error Rate (%)	43.34	29.52
ExecutionTime (Sec)	0.08	0.03

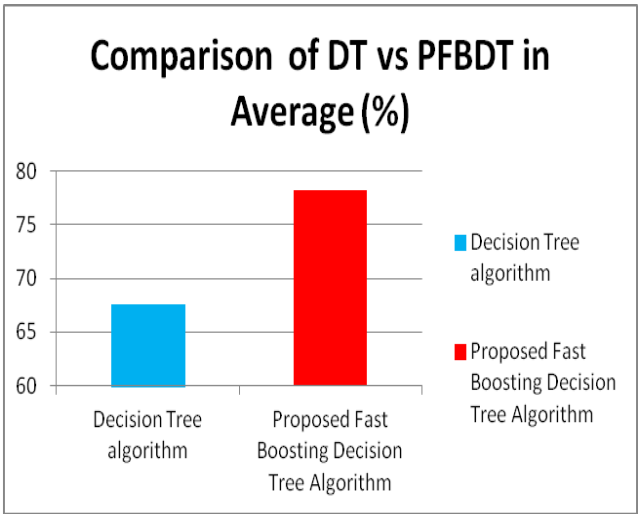

Figure2 Comparison of accuracy between DT & PFBDT algorithms

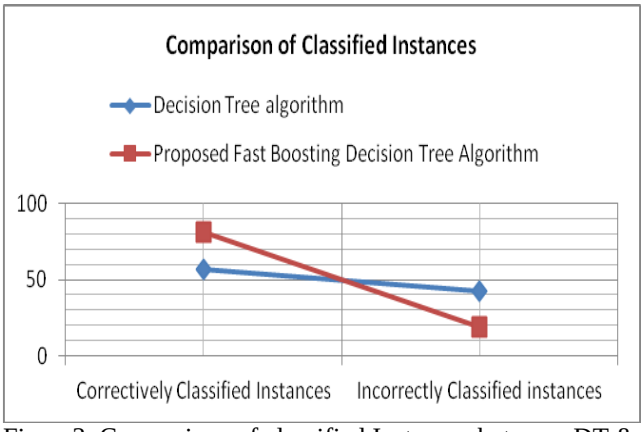

Figure3. Comparison of classified Instances between DT & PFBDT algorithms

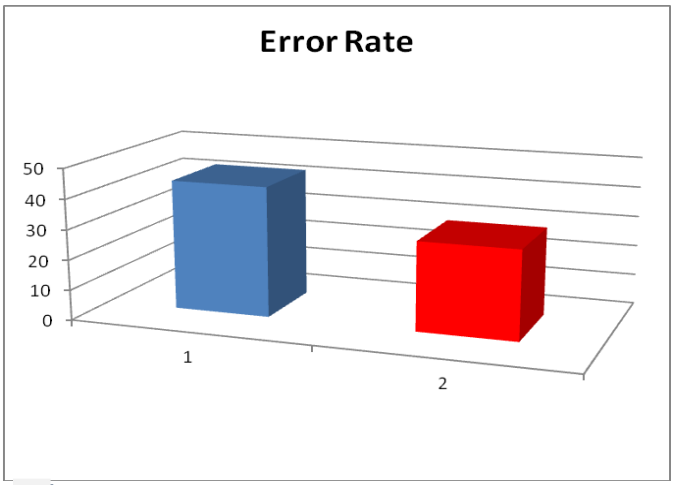

Figure4. Comparison of Error between DT & PFBDT algorithms

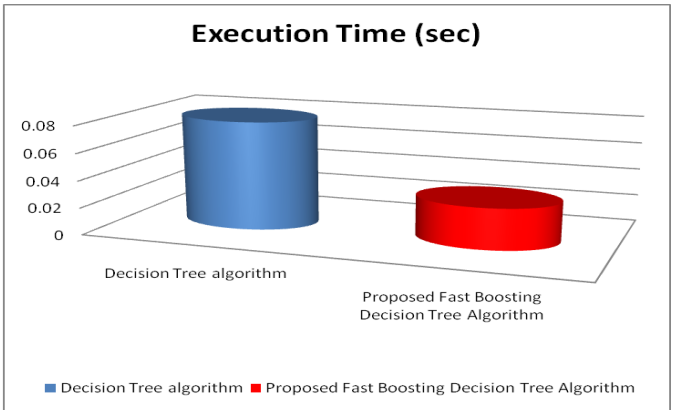

Figure5. Comparison of Execution Time between DT & PFBDT algorithms

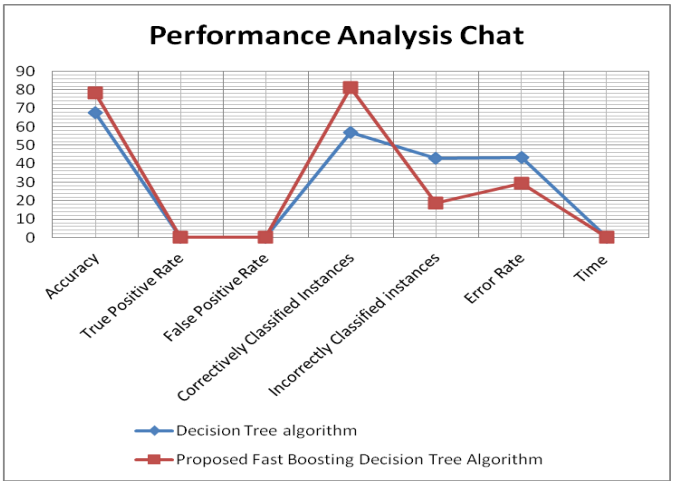

Figure6. Performance Analysis between DT & PFBDT algorithms

The performance obtained using Proposed Fast Boost Decision Tree classifier was found to be higher than the results obtained by our et.al as described in the above table which depicts that Proposed Fast Boost Decision Tree algorithm performs better than that Decision tree. In Proposed Fast Boost Decision Tree classifier algorithm shows only the number of instances is correctly clustered and incorrectly clustered. From this we are able to know that which algorithm is best. Table show the results that the Proposed Fast Boost Decision Tree classifier correctly clustered more instances than other algorithm.

V.CONCLUSION

Work pressure can be dignified by several pointers. As a result, some can be used to find out the pressure. It is been concluded that as the competitive situation, technical advancements, HR Practices, economic growth, social developments are taking place day to day. Consequently, every employee is expected to work for long times, perform multiple jobs, available for 24 hours in seven days. These reasons give a psychologically as well as physical difficulties to the workers. When these difficulties rise, then it gives a pressure, strain, anxiety, tension, upset to the workers and ultimately the productivity of the employee‘s decreases. In this work resolution tree algorithm are implemented to classify the issue. This research is concerned with the study and analysis of Data Mining and Data Clustering algorithms, analyzing the existing methods for predicting Issue in the BPO Industry and to design and develop an efficient and effective method for predicting issue level. The existing methods for issue Prediction are Decision Tree, Naive Bays and Neural Network. Then the issue analysis are evaluated and compared and the best result is achieved by our proposed tree classification algorithm using (PFBDT). Based on the needed Conditions each one as needed can be selected on the basis of the performance of our algorithms, can also be used to detect the issue level of BPO industries.

REFERENCES

[1] Growth Achieved and Sustain by the BPO Sector in India, By Ms. Alka Raghunath Global Journal of Management and Business Research: Economics and Commerce Volume 14 Issue 1 Version 1.0 Year 2014.

[2] Employee Turnover: Present Scenario of Indian IT Industry MSNI Assistant Professor, Sri Krishna Institute of Management, Coimbatore, Indian Journal of Applied Research, Volume : 4 Issue : 3 Mar 2014.

[3] Chakraborty. S (2008) HRD News letter, Vol 24, issue 6, Sep 2008, page no 34. Theme: Achieving Competitive Advantage (May, 2002), pp. 149-164 Published by: Academy of Management.

[4] De, R (2004) _The Young and the Restless_, Dataquest, November 15, pp.44-50.

[5] Rani, S, Mahalingam, T.V (2003) ―The Young and the Restless‖,[Online], http://dqindia.ciol.com/content/dqtop202k3/bpo/103102105.asp

[Accessed 24 March 2005].
[6] Babu, P.R. (2004) ―Cyber Coolies in BPO, Economic and Political Weekly‖, 39 (5), pp.492-497.
[7] Shivani, (2007)―My BPO Loves Me. My BPO Does Not. Will I Get Promoted?
[8] Ramakrishna (2002) ―Get the Basics Right‖, [Online], http://www.dqindia.com/content/ strategy/hrd/102101701.asp.
[9] Bhaduri, A. (2008) ―Arresting Attrition -Learning From BPOs‖, [Online] http://abhijitbhaduri.com/2008/09/arresting-attritionlearning-from-bpos/ .
[10] Grossman, Gene, M. and Elhanan Helpman (2005) ―Outsourcing in a Global Economy.‖ Review of Economic Studies 72 (January 2005): 135–59.
[11] Ghosh, Biswadip and Judy E. Scott (2005) ―Interorganizational Knowledge Management in a BPO.‖ Omaha, the 11th Americas Conference on Information Systems (August 2005).
[12] Stone and Lisa (2004) ―New BPO Definitions Clarify Service Offerings. Research Note (October 2004): Gartner Research, Document G00123758 <www.gartner.com>.
[13] Pines, A. M and Aronson, E (1988), Career burnout: Causes and cures, pp. 9, New York: Free Press
[14] Freudenberger, H.J and Richelson, G (1980) -Burnout: - The cost of& achievement. Garden City, NY: Doubleday
[15] Coleman J.C. (1976). Abnormal Psychology and Modern Life (Indian reprint), Taraporewalla, Bombay.
[16] Alka Raghunath and Dr. Murli Dhar Panga (2013) ―Problem and Prospects of Indian BPO Sector‖, International Journal of Management, Vol. 3, No. 1, June 2013.
[17] Beehr, T.A. and Newman, J.E (1978) ―Job stress, employee's health and organizational effectiveness: A facet analyses‖, personnel psychology, Vol. 31, pages 231-253.
[18] Spector, P (2004), A cross national comparative study of work-family stressors, working hours, and well being, china and latin America versus the anglo world, personal psychology 2004, pp.119-42.
[19] Ulschak, F.L., and Snowantle, S.M. (1992). Managing employee turnover; A guide for health care executives. Chicago, Illinois: American Hospital Publishing.
[20] Stroh, L, Gregersen, B & Black, J 1998, _Closing the Gap: Expectations Versus Reality Among Repatriates', Journal of World Business, vol. 33, no. 2, pp. 111-124
[21] Black J &Gregersen B 1999, _The right way to manage expats', Harward Business Review, vol. 77, no. 2, pp. 52-63.
[21] Gamberger, D., Šmuc, T. (2001): Poslužiteljzaanalizupodataka [http://dms.irb.hr]. Zagreb, Hrvatska: InstitutRudjerBošković, Laboratorijzainformacijskesustave.
[22] Ulschak, F.L., &Snowantle, S.M. (1992). Managing employee turnover; A guide for health care executives. Chicago, Illinois: American Hospital Publishing.
[23] Rani, S, Mahalingam, T.V (2003) ―The Young and the Restless‖, [Online], http://dqindia.ciol.com/content/dqtop202k3/bpo/103102105.asp [Accessed 24 March 2005].
[24] Babu, P.R. (2004) ―Cyber Coolies in BPO, Economic and Political Weekly‖, 39 (5), pp. 492-497.
[25] Good communication can help boost both your bottom line and employee retention. (2004, September). Contractor's Business Management Report, 5-7.
[26] Grossman, Gene, M. and Elhanan Helpman (2005) ―Outsourcing in a Global Economy.‖ Review of Economic Studies 72 (January 2005): 135–59.

