Research Article

Decision Tree Approach for Predicting Manpower Performance in Banking Sector using Relational Analysis Method

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Abstract

The study aims on evaluate and manage manpower performance in banking sector, the performance evaluation model of man power is combining decision tree method. Banking sector is essential and fast growing sector. Performance Evaluation is one of the key factors to the growing sector which is also the focus of this study. This paper concentrates on collecting data about employees, generating a decision tree from the historical data, testing the decision tree with attributes of an employee and generating the output as whether to give the promotion or not. The research design for this study is frame by some statistical tools for the purpose identifying the accurate result. In simple words we can say that performance evaluating is an analysis of employee's recent successes and failures, personal strengths and weaknesses, and suitability for promotion or further training.

Keywords: Decision tree, Relational Analysis, Performance, Prediction, Banking sector.

1. INTRODUCTION

The main objective is to evaluate the performance of employee using Decision Tree in banking sector. Banking sector is one of most important sector in economical grow and also to the public. So this study concentrated on this particular sector and to analyze the performance of the man power. In any sector man power is the main source. Employees are the focal point in the success of every sector. Performance evaluation helps to investigate past behaviour and so provides an opportunity to reflect on past performance of the bank employees. But to be

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successful they should also be used as a basis for making development and improvement plans and reaching agreement about what should be done in the future to enhance the bank's effect and effectiveness.

1.1: Performance Evaluation:

Definition: Performance Evaluation is defined as a formal and productive procedure to measure an employee's work and results based on their job responsibilities. It is used to gauge the amount of value added by an employee in terms of increased business revenue, in comparison to industry standards and overall employee return on investment (ROI).

Most of the organization has evaluating the manpower performance at least once in a year. It is one of the main processes in organization. Because it will helps to the organization's growth. Performance reviews help the managers to feel more honest in their relationships with their subordinates and feel better about themselves in their supervisory roles. Subordinates are assured that a clearer understanding of what goals and objectives are expected from them, their own personal strength and areas for development, and a solid sense of the relationship with their supervisor. Avoiding performance issues ultimately decreases the morale, credibility of management, organization overall effectiveness, and waste most of the management time to do what is not being done properly.

1.2: Banking sector:

Banking service is one sector where a great degree of attention is being paid to performance appraisal systems. Several of the Public sector banks (PSBs) have changed their PAS or are in the process of changing them. Banking sector is an industry and section of the economy devoted to the holding of the financial assets for others and investing those financial assets as a leveraged way to create more wealth. Banking sectors plays an important role in the economic development of the country and is the most dominant segment of the financial sector. Banking help channel savings to growth by allocating savings to investments that have potential to yield higher returns.

1.3: Decision tree:

A decision tree is a decision support tool that uses a tree-like model of decisions and their possible consequences, including chance event outcomes, resource costs, and utility. It is one way to display an algorithm that only contains conditional control statements. Decision trees are commonly used in operations research, specifically in decision analysis, to help identify a strategy most likely to reach a goal.
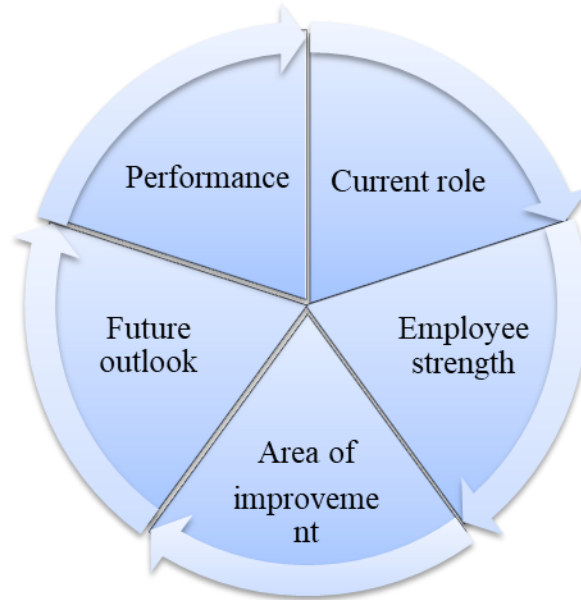
Fig:1 Objectives of performance evaluation of manpower

2. Related works

Y. Zhang (2009) suggested that in Chinese state-owned banking industry, employees' perception of justice has a positive relationship to their overall satisfaction with both the performance evaluation process and its outcomes. However, statistically significant differences were found in relation to whether employees had received training in performance evaluation or not

Eichel and Bender (1984) stated that performance evaluation can also be called as the Achilles heel of management. Although leaders of many public organizations strive to be employee focused or employee centred, a lack of emphasis is given to a process intended to assist the employee in achieving both personal and organizational goals.

Dr. Shambhu Nath Chowdhury (2008), banking services is one sector where a great degree of attention is being paid to performance evaluation systems. Several of the public sector banks (PSBs) have changed their PAS or are in the process of changing them.

Objectives of the study:
- *Performance of the manpower: In this study the main scope to evaluating performance of the employees. Here first we have to measure the performance by using the solid documents and records. In this process superior make a formal discussion with the employees to analyze their works and involvement. In this is formal feedback collecting from the employees. This part shows jobs done by the employees over the particular period. It simply verifies the accomplishment jobs of the employees. It shows goals are achieved by the manpower.*
- *Current role: In here this study analyze the employee's jobs, and they are satisfy with their job or not. It simply displays the capability of the employee and job satisfaction. Also help to analyze employees need of training and motivation.*

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- *Employee strength: Employee strength is the employee's overall traits and abilities to complete their goals. In here we find the employee strength. It will help to employees to understand their skill and abilities to grow up in the career bath and also help to employee's skills which have to maximize.*
- *Area of improvement: To identify the area of improvement of the employees. By collecting data and feedbacks from employees to appraise the performance by using that data we can identify the strength and also weakness. It will help to the employee to understand of skills development.*
- *Future outlook: This is the main part of the project because it will help to employees to find their future goals of their career bath and analyze the way to achieve their goals. The organization is help to employees to reach their future goal for make a good relationship with the employees and get the loyalty from the employees.*

3. Research design and data

This study followed by the secondary research or review research design. This research method involves using already existing data. Secondary research includes research material published in research reports and similar documents.

Secondary data analysis involves a researcher using the information that someone else has gathered for their own research purposes. The utilization of this existing data provides a viable option for researchers who may have limited time and resources.

Findings present the key information about the most important outcomes of a treatment, including the best effect estimate and the certainty of the evidence for each outcome. This section of the dissertation should be easy for the readers to follow, which means that you should avoid going into a lengthy debate over the results' interpretation. It is vitally important to focus only on clear and precise observations.
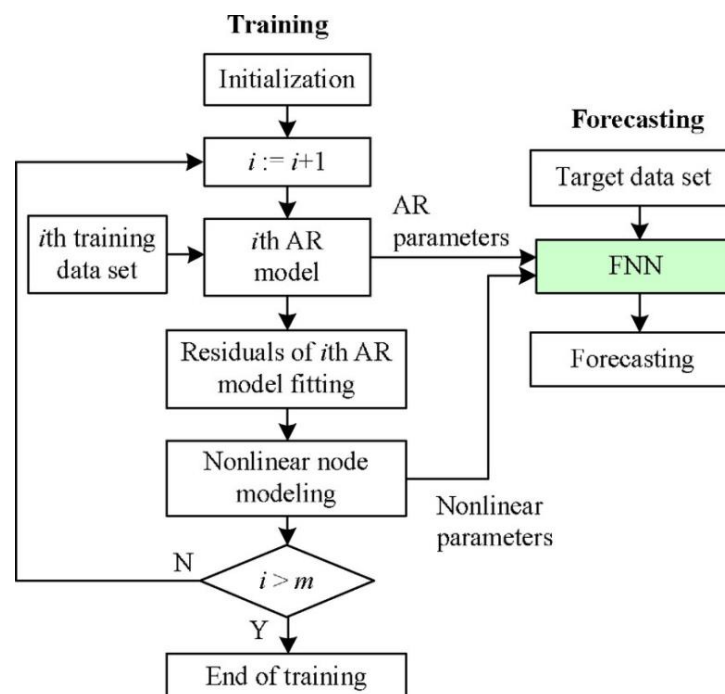
Fig 2: Decision Tree Modeling and Proposed System

The manpower performances are measured by superior and collecting feedbacks. It directly shows the performance of the manpower and show accomplishment of goals. Fig:2 explains the tree process used to measure the performance of the manpower. By using the collected data most of the man powers reached targets or goal in their time. But should not all the employees reach their target, they are deserve for the motivational training. It will help to improve their skill development.
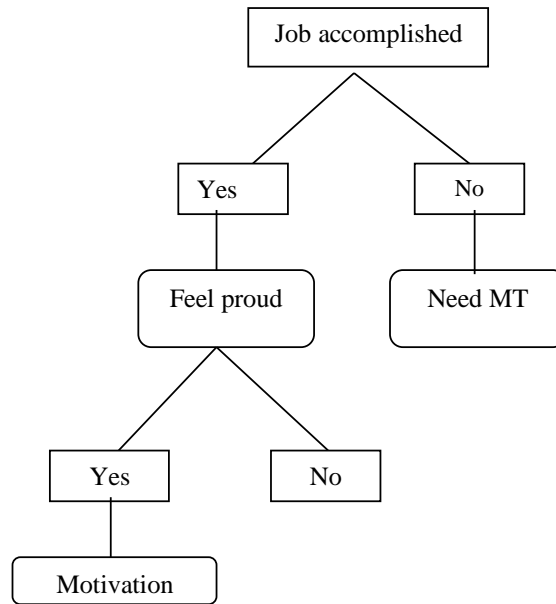
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                    Job accomplished
                    /              \
                 Yes                No
                  |                  |
              Feel proud          Need MT
              /        \
           Yes          No
            |
        Motivation
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Fig.3: Performance Analysis

Table 1: Performance analysis

Are you accomplished your job in this quarter?		
Yes:		No
Are you proud with your accomplishment?		Do you need any motivational training
Yes	No	
Which is motivating you to reach the target?		

3.1 Current role:

In here analyzing about role give to the employee is fit for them. It display indirectly the employee satisfaction of their work and here finding role fitness and need of changes in role. Fig3: show the tree model that help to analyze about pros and cons of current role of the man power in organization. By used this process most of the employees happy with their role and works and they felt their role is mostly to help the organization succeed.
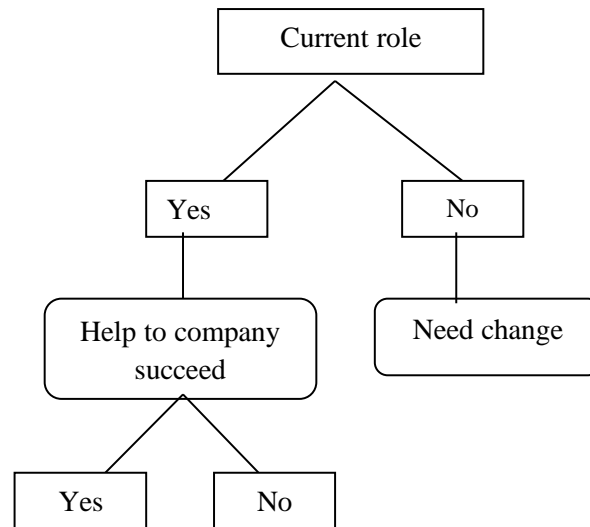
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Fig.4: Analyzing Role of manpower

Table 2: Analyzing Role of manpower

Are you happy with your current role?		
Yes:		No
Do you think your role helps the company succeed?		What kind of work easiest to you?
Yes	No	

3.2 Employee strength:

Employee strength is the employee's overall traits and abilities to complete their goals. It help to analyze the skills that help reach their targets. Fig.4: help to identify the manpower strength and maximize the skills. By used this process most of the employees have to maximize their strength.
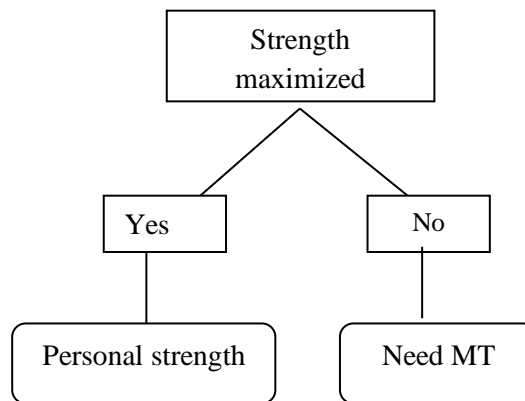
Fig.5: Finding employees strength

Table 3: Finding employees strength

Do you feel your strengths are maximized here?	
Yes:	No
Which personal strength helps you do your job efficiency?	Do you need any motivational training?

3.3 Area of improvement:

In here finding about skills of manpower have to develop. It indirectly helps to recover the weakness of the employees.
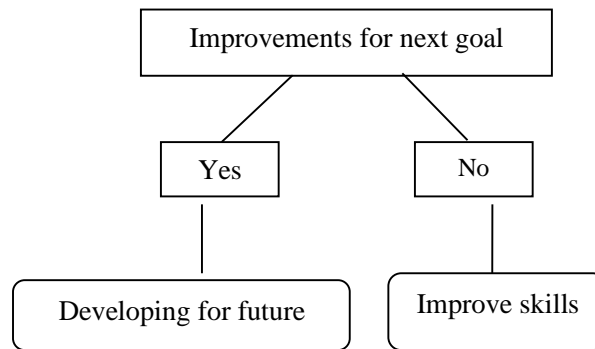

Fig .6: Findings of area to improve

Fig5: explain the process of findings the weakness of the employees. By using the result, have to arrange various types of training programmes. It helps to know the area has to improve and help to develop the creativity of the manpower. After used this process most of the employees are ready to improve their skills and understand the need of skills training.

Table 4: Findings of area to improve

Do you make any differences/ improvements in next quarter?	
Yes	No
How will you do those differently in the future?	How can I help you to improve your skills?

The linear regression methods are calculated by using below methods,

Whereas x is the input values and y represents the feedback results so the mean is calculated as

Mean (m) $= \sum_{i=0}^{n-1} \frac{x-y}{N}$ ………. (1)

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n case of regression, the model started with all observations, D, and searches each observation of each independent to locate the independent and divide the value, which divides the observations into two groups, say, D1 and D2 , such that square sum of errors is minimized,

$$\text{Error Rate}(M_r) = \sum_{i=0}^{n-1} \frac{x-y}{N} + \sum_{i=0}^{n-1}((x-x1)-(y-y1))/N \qquad \ldots\ldots\ldots (2)$$

So the median is $\text{Median (Md)} = \dfrac{(x+x1)*(y+y1)}{(x*y)}$ ------- (3)

Skew is represented as, $Sw = \dfrac{1}{N} \sum_{i=0}^{n-1}(x+y)/N + Mean(n)$ - Mr -------- (4)

The Estimated Performance (%) $= \dfrac{\sum_{i=0}^{n-1} Mean - Skew}{N}$ ……………………..(5)

This study helps to employees to find their future goals of their career bath and analyze the way to achieve their goals and how you get there is by setting short term career goals that constitute your development. Based on the following questions the information are categorized. By using collected information find the way to help the employee's skill development.

- What is your most important goal in next quarter?
- What type of career growth most important to you?

The below tables shows that descriptive statistics results of various methodologies and compared with our proposed approach. The performance are evaluated by using weka tool. The data collect from 10,000 employees and 5 different set of banking industries.

Methods	Mean	Median	Skew	Performance
LogX	1.1543	1.2034	3.0245	78%
EPS	1.5782	0.9897	4.5688	81%
SVM	1.5689	1.1552	3.4586	83%
RouteF	1.5690	1.2378	2.9901	79%
Optimization	1.4569	1.1231	2.9089	89%
Decision Tree	2.5678	0.9812	5.5982	94$

Table 5: Comparison various methods using Weka tool

Decision Tree Approach		Mean	Median	Skew	Performance
Training data	1000	0.9867	0.7861	2.1561	91%
Test data	500				
Training data	2000	1.1500	0.8911	2.2341	89%
Test data	1000				
Training data	5000	1.2456	1.0891	2.3211	92%
Test data	2500				
Training data	7500	1.3451	1.2210	2.3412	91%
Test data	3000				
Training data	10000	1.5681	1.3213	2.7681	93%
Test data	5000				

Table 6: Decision Tree approach for handling Training and Test data results using Weka
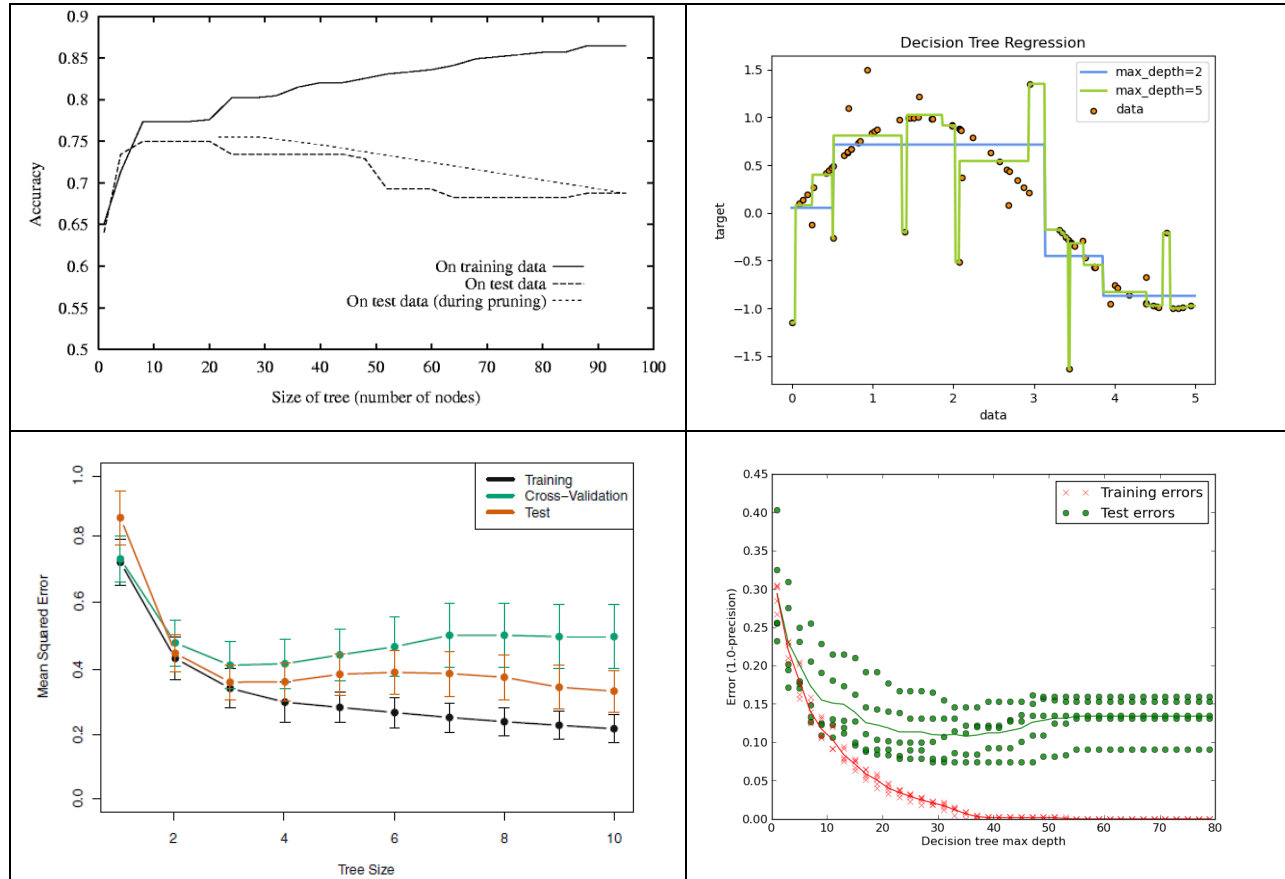
Figure 6: Weka tool result of relationship and representations using Decision Tree (The results are taken from Weka tool based on input of trained and test data result using decision tree approach)

4. CONCLUSION

In current competitive era the success of an organization depends on the calibre of man power. It is the quality of the people that determines the continued survival and growth of the organization. Performance evaluation usually reviews past behaviour and so provides an opportunity to reflect on past performance of the bank manpower. But to be successful they should also be used as a basis for making development and improvement plans and reaching agreement about what should be done in the future to enhance the bank's effect and effectiveness. Performance evaluation is often the central pillar of performance management in the bank to keep the motivation of the employees high.

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Authors Profile

Dr. A. Sengottaiyan, Associate Professor and Head, PG and Research Department of Commerce (CA), Kaamadhenu Arts and Science College. He is an eminent academician, Researcher and having nearly 15 years of rich experience in teaching Commerce subjects. He has produced 8 Ph.D. and More than 25 M.Phil. Graduates. He has undertaken UGC Major Project and also received ICSSR fund. Dr. Sengottaiyan has published many Journals and authored 3 books. He has organised and co-ordinated more than 300 Programmes. He has been recognised with many awards "PK Das South Indian Level Best Faculty" from Nehru Group of Institutions, Coimbatore 2018, Best Project Guide in State Level Youth Science Festival, Madurai 2011 and Best Faculty award from Winners Trust Kallipatti.

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