

Reverse Performance Appraisal Method for Employees Productivity and Performance using soft-computing Techniques

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Abstract

The performance evaluation process provides supervisors with the tools to evaluate subordinate performance on a formal, periodic basis and to create a mutual understanding of individual needs, work objectives and standards of acceptable performance. Likewise, subordinates can suggest ways for supervisors to improve their performance and help develop their potential. In the reverse appraisal process, the departments first must create a form for subordinates to complete in evaluating their supervisors. Then a system must be established for collecting the forms from subordinates, delivering them to the appropriate executives, and using them for supervisors' evaluations. The system must maintain the anonymity of the rater and the confidentiality of the information collected.

360 Degree Feedback is a system or process in which employees receive confidential, anonymous **feedback** from the people who work around them. This typically includes the employee's manager, peers and direct reports. **360 Feedback** can also be a useful development tool for people who are not in a management role.

1. The Reverse Performance Review

When asked about the best jobs they've ever had, most people will say that their best jobs were the ones for which they had the best managers. “Most people” isn't merely anecdotal, though: that claim is backed up by plenty of data. For example, Gallup research finds that “managers account for at least 70% of the variance in employee engagement scores across business units,” and half of the workers surveyed “have left their job to get away from their manager at some point in their career.”

Managers have this influence because they are responsible for creating the environments in which their employees operate. A great manager motivates and inspires everyone on the team to do exceptional work. On the other hand, a manager who struggles to create an optimal environment

can actually inhibit a team. For managers to improve, they need feedback—not only from senior leadership, but from employees as well.

In a way, this feedback process is a reverse performance review. It starts when managers ask employees the right questions. For example, a question such as “Is there anything I can do to be a better manager?” won’t elicit the feedback someone needs to improve because it’s too vague and open-ended.

1.1 The Reverse Performance Review: 6 Questions Every Manager Should Ask Their Teams

These six questions are designed to address the features of a team culture that, when optimized effectively, will create the best environment for employees to achieve — and for managers to thrive:

1. Do you feel I ask you to do things that you either don't see value in or don't clearly understand the purpose of ?

Think of the movie *Office Space* and the pesky TPS report the manager demands. The employees are frustrated about the task because they don't understand *why* they have to do it. As a manager, you want to lower the feeling of work that is perceived as useless across your team. To do this, it's important to understand the asks that feel that way to your employees.

2. Do you feel like you own the work you're doing, or do you feel like you're just doing what you're told?

To create an environment where employees will succeed, make sure employees feel like they have ownership over the work they're doing. This means that, when you delegate a task, they understand it's meaningful and value additive.

3. Are the goals we're setting together meaningful and manageable?

Your expectations as a manager should be high but reasonable. You want to think about the old fable “Goldilocks and the Three Bears” here: if expectations are too low, employees won't feel challenged. If they're too high, they will feel discouraged. Work to get them closer to “just right” — a place where employees feel stretched, but not overwhelmed.

4. Do you get a balance of positive and negative feedback?

As a manager, you want to be pointing out the behaviors that are leading employees to their goals as much as those that are standing in their way and preventing them from achieving results. This question is designed to measure recognition, which should also be high.

5. Do you understand how to get your job done in a meaningful, efficient way? If not, how can I clarify the ambiguity?

People will perform better if they have clarity — that is, if they understand their role, how their team fits into the larger function/organization and what tools and resources they can use to do their job. Truly, do they know how to do their job?

6. Do you feel as though you can go to your colleagues to brainstorm, solve problems and collaborate to get work done?

You want your employees to feel like their team has their back and can collaborate and communicate. A high sense of team is a high indicator of motivation and success.

Remember that these questions should be scale-based: 1 to 10, or even 1 to 100. Think of it like a personal Net Promoter score. You also want to encourage employees to give specific examples to elaborate on their responses. By soliciting simple yes or no answers, you miss out on a lot of valuable information. Moreover, it doesn't lend itself to a growth mindset: There's always room for improvement. If employees answer yes to any of the above questions, you miss the opportunity to hear what might make their experience even better — and by extension; improve your team's overall performance.

2. Reverse Performance Evaluation

Reverse performance evaluation can be done to assess the manager's ability to perform professionally at the organization. By doing that organizations would be able to keep a record of the performance of their managers. There are directors and corporate owners who usually conduct performance estimations as a way to measure a worker's job performance and capability to meet goals.

Usually, a boss or supervisor will sit down with each worker and discuss the strengths and weaknesses of her job performance over a pre arranged period of time that is mostly a year. In a

reverse appraisal, workers can evaluate the effectiveness of their managers. In case this appeals to your firm, begin by setting rules for how the appraisals will be directed and what they'll measure.

Assessment of an organization's behavior and efficiency by the employees utilized typically in participating management practices and worker enabling programs and Aston University Online is the best choice for such programs.

3. Fuzzy based appraisal technique:

Fuzzy logic theory was initially introduced by L.A Zadeh in early 1965. This theory is mostly applicable to systems having imprecise or incomplete data available. Fuzzy logic theory is widely used in multi-criteria-decision-making processes. Since process of performance appraisal includes fuzziness and uncertainty in judgments of decision maker therefore fuzzy logic reasoning can be effectively applied for performance appraisal of employees. The two most commonly used fuzzy based appraisal techniques for evaluating performance of an employee are as follows:

- a. Fuzzy analytic hierarchy process (FAHP):* This technique combines concepts of fuzzy sets and hierarchical structure analysis for multi-criteria-decision-making process. FAHP defines each performance attribute in terms of natural language which a common language in fuzzy logic theory. FAHP replaces crisp value with a range of values to incorporate decision maker's uncertainty. It resembles impressively human thoughts and perception. The comparisons made by experts are represented in form of fuzzy numbers to construct pair-wise comparison matrices.
- b. Adaptive neuro fuzzy inference system (ANFIS) based performance appraisal technique:* This study introduces a novel ANFIS based learning approach for evaluating performance of employees working in different organizations. ANFIS is an adaptive learning technique based on principle of operation of artificial neural networks. It comprises of a set of input, output and hidden layers connected with the help of nodes whose weights are adjusted and tuned during learning process. A schematic view of ANFIS architecture is shown with the help of Figure 1. During training process input vectors are supplied to the input layer which further propagate through hidden layers and reaches the output layer. In the output layer actual output is compared with the desired output and an error is generated which is further propagated backwards thereby adjusting connection weights of the nodes.

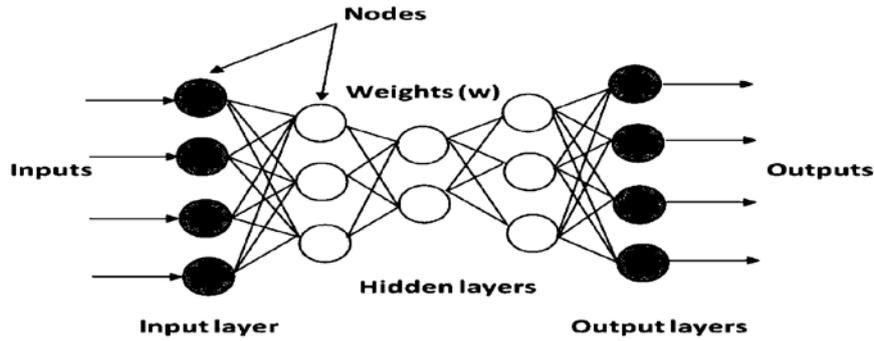


Fig.1 ANFIS architecture

ANFIS technique is a fusion of fuzzy logic reasoning and artificial neural networks approach. These networks can learn and mimic behaviour of supplied data samples in a very effective manner incorporating back-propagation learning algorithm. Therefore, ANFIS architecture is suitable for learning and prediction applications. In Table 4, we have illustrated the working principle and comparison analysis between ANFIS and conventional average based rating technique. We have considered five different employees whose performance are rated based on three different performance parameters namely quality of work, timeliness and behavior. The ratings given to each employee against each attribute are mentioned in the table. ANFIS based learning approach provides the rater with an advantage of giving different weightages to each attribute depending upon the work culture and scope of work of any particular organization. An initial data samples based on the decision of experts can be fed into the controller which can be used for performance analysis. For an instance consider ratings given to employee-2, which clearly shows that the rating for attribute ‘Quality of work’ is ‘1’ i.e. very poor while for other two attributes i.e. for timeliness and behavior ratings are very good. The performance of any organization can be considered as a function of quality of work obtained by different employees. Therefore, it can be given some extra weightage compared to other attributes. As can be observed from the results that the overall rating obtained for employee-2 using ANFIS is 2 i.e. poor even though he has obtained very good ratings for attributes behavior and timeliness. It can be also observed from the results that for the similar ratings the overall rating obtained using average method is 3.67 i.e. satisfactory to good. Therefore, it is clear from the results that ANFIS based rating technique gives an opportunity to assign different weights in an easy and innovative manner.

Table 4 Comparison between ANFIS and conventional average based technique

Employee	Quality of work	Timelines	Behavior	ANFIS rating	Average method
1	5	5	5	5	5
2	1	5	5	2	3.67
3	2	2	5	2	3
4	1	1	5	1	2.33
5	3	3	3	3	3
5-Very good, 4-Good, 3-Satisfactory, 2-Poor, 1-Very Poor					

A complete data for learning and tuning of ANFIS can be initially fed into the controller. This data can be later used for faster and accurate prediction process. Another advantage of proposed technique is that it can be extended and applied for performance evaluation of n-number of employees with m-performance attributes as can be illustrated from Table 5. The computer based simulation approach makes the complete procedure less cumbersome and time efficient.

Employee	Quality of work	Timeliness	Behaviour	---	(m-1)th	m th	ANFIS Rating
1	a ₁₁	a ₁₂	a ₁₃	---	---	a _{1m}	X ₁
2	a ₂₁	a ₂₂	a ₂₃	---	---	a _{2m}	X ₂
3	a ₃₁	a ₃₂	a ₃₃	---	---	a _{3m}	X ₃
---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---
(n-1) th	---	---	---	---	---	---	---
n th	a _{n1}	a _{n2}	a _{n3}	---	---	a _{nm}	X _n

4. Reverse Appraisal for Supervisors (“Bottom Up” Evaluation)

Western Kentucky University

NAME OF INDIVIDUAL BEING EVALUATED:			
DEPARTMENT:		DATE:	

4.1 Instructions

This form is for the purpose of giving anonymous and voluntary feedback to your supervisor regarding his or her performance. Employees are not to use this process to be overly critical of their supervisor, but comments are to be honest, constructive, and stated in a professional manner.

Likewise, supervisors are not to retaliate against employees for any negative information indicated. if you need assistance you may contact the department of human resources. In the space beside each performance factor, provide a rating according to the scale. Completed forms should be returned directly to your supervisor’s supervisor in an envelope marked “confidential”

RATING SCALE

1=STRONGLY DISAGREE	2=DISAGREE	X=NO OPINION	3=AGREE	4=STRONGLY AGREE
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- A. SUPERVISOR HAS A POSITIVE ATTITUDE.
- B. SUPERVISOR LISTENS TO EMPLOYEE CONCERNS
- C. SUPERVISOR PULLS HIS/HER FAIR SHARE OF THE WORK LOAD.
- D. SUPERVISOR IS AVAILABLE WHEN NEEDED.
- E. SUPERVISOR IS RECEPTIVE TO CONCERNS ABOUT HIS/HER PERFORMANCE.
- F. SUPERVISOR SUPPORTS IMPROVEMENT IN THE DEPARTMENT.
- G. SUPERVISOR ENCOURAGES AN ENJOYABLE WORK ENVIRONMENT.
- H. SUPERVISOR ACCEPTS ACCOUNTABILITY FOR OWN ACTIONS.
- I. SUPERVISOR SUPPORTS STAFF IN PROFESSIONAL DEVELOPMENT.
- J. SUPERVISOR PRACTICES GOOD CUSTOMER SERVICE.
- K. SUPERVISOR HOLDS STAFF ACCOUNTABLE FOR PERFORMANCE.
- L. SUPERVISOR COMMUNICATES UNIVERSITY GOALS AND INITIATIVES TO DEPARTMENT.
- M. SUPERVISOR COMMUNICATES UNIT GOALS AND PRIORITIES TO DEPARTMENT.
- N. SUPERVISOR PROVIDES HELPFUL DIRECTION ON TASKS.
- O. SUPERVISOR CLEARLY COMMUNICATES PERFORMANCE EXPECTATIONS.
- P. SUPERVISOR RESOLVES EMPLOYEE CONFLICTS IN AN APPROPRIATE MANNER.
- Q. SUPERVISOR SUPPORTS A DIVERSE WORK ENVIRONMENT.

COMMENTS

5. Conclusion

This paper highlighted various performance appraisal techniques for effective performance evaluation of employees. Both traditional and modern appraisal techniques have been analysed for study. The paper briefly touches various advantages, disadvantages and suitability of a particular appraisal technique in any organisations. The study also proposed a new performance appraisal approach based on soft-computing based ANFIS technique. The proposed approach has been further compared to traditional average based rating technique. ANFIS based appraisal approach has got an inherent advantage of learning through supplied data samples, removes biasness and exhibits faster computation compared to other conventional techniques. The proposed approach allows the rater to carry out evaluation in Matlab environment thereby giving faster and accurate results. The results showed that proposed approach can be effectively applied to carry out evaluation of multiple employees considering several performance attributes.

References:-

1. Inderrieden, E.I., Keaveny, T.J., & Allen, R.E. (1988). “Predictors of employee satisfaction with the performance appraisal process”. *Journal of Business and Psychology*, 2(4): 306-310.
2. Stratton, K. (1988). “Performance appraisal and the need for an organizational grievance procedure: A review of the literature and recommendations for future research”. *Employee Responsibilities and Rights Journal*, 1(3): 167-179.
3. Hui, L., & Qin-xuan, G. (2009). Performance appraisal: what’s the matter with you?. *Procedia Earth and Planetary Science*, 1(1): 1751-1756.
4. Boswell, W.R., & Boudreau, J.W. (2002). Separating the developmental and evaluative performance appraisal uses. *Journal of Business and Psychology*, 16(3): 391-412.
5. Vasset, F., Marnburg, E., & Furunes, T. (2011). The effect of performance appraisal in the Norwegian municipal health service: a case study. *Human Resources for Health*, 9(22): 1-12.

6. Shaout, A., & Yousif, M.K. (2014). "Performance evaluation- methods and techniques survey". *International Journal of Computer and Information Technology*, 3(5): 966-979.
7. Yonghong, C., & Chongde, L. (2006). "Theory and practice on Teacher performance evaluation". *Frontiers of Education in China*, 1(1): 29-39.
8. Keaveny, T.J., & McGann, A.F. (1980). "Performance appraisal format: Role and clarity evaluation criteria". *Research in Higher Education*, 13(3): 225-232.
9. Jawahar, I.M. (2006). "Correlates of satisfaction with performance appraisal feedback". *Journal of Labor Research*, 27(2): 213-236.
10. Banner, D.K., & Cooke, R.A. (1984). "Ethical dilemmas in performance appraisal". *Journal of Business Ethics*, 3(4): 327-333.
11. Osmani, F., & Maliqi, G. (2012). "Performance management, its assessment and importance". *Procedia- Social and Behavioural Sciences*, 41: 434-441.
12. Sanyal, M.K., & Biswas, S.B. (2014). "Employee motivation from performance appraisal implications: Test of a theory in the software industry in West Bengal (India)". *Procedia Economics and Finance*, 11: 182-196.
13. Min-peng, X., Xiao-hu, Z., & Xin, D. (2012). "Modeling of Engineering R&D staff performance appraisal model based on fuzzy comprehensive evaluation". *Systems Engineering Procedia*, 4: 236-242.
14. Wu, Y.J., and Hou, J.L. (2010). "An employee performance estimation model for the logistics industry". *Decision Support Systems*, 48: 568-581.
15. Katerina, V., Andrea, S., & Gabriela, K. (2013). "Identification of employee performance appraisal methods in agricultural organizations". *Journal of Competitiveness*, 5(2): 20-36.
16. Purohit, B., & Martineau, T. (2016). "Is the annual confidential report system effective? A study of the government appraisal system in Gujarat", India. *Human Resources for Health*, 14(33): 1-11.
17. Zhang, R., Bao, H., Sun, H., Wang, Y., & Liu, X. (2016). "Recommender systems based on ranking performance optimization". *Frontiers of Computer Science*, 10(2): 270-280.
18. Sing, R.R., & Vadivelu, S. (2016). "Performance appraisal in India- A review". *International Journal of Applied Engineering Research*, 11(5): 3229-3234.
19. Khanna, M., & Sharma, R.K. (2014). "Employees performance appraisal and its techniques: A review". *Asian Journal of Advanced Basic Sciences*, 2(2): 51-58.
20. Fay, C.H., & Clark, R.G. (1987). "Work planning and performance review as a basis for merit pay decisions: An evaluation". *Journal of Business and Psychology*, 1(3): 276-290.

21. Ghutke, S. (2014). "Study of traditional methods of performance appraisal". Abhinav International monthly referred Journal of research in Management and Technology, 3(11): 22-28.
22. Speckbacher, G., & Haas, N. (2017). "Everything under my control: CEO characteristics and the evaluation of middle manager performance in small and medium sized firms". Schmalenbach Business Review, 18(2): 109-128.
23. Witt, L.A., & Burke, L.A. (2004). "Personality and high maintenance employee behavior". Journal of Business and Psychology, 18(3): 349-363.
24. Serrat, O. (2017). "The critical incident technique. In Book title knowledge solutions: tools, methods and approaches to drive organizational performance", pp. 1077-1083, Springer, Singapore.
25. Croson, R., Fatas, E., Neugebauer, T., & Morales, A.J. (2015). "Excludability: A laboratory study on forced ranking in team production". Journal of Economics Behaviour & Organization, 114: 13-26.
26. Singh, P. (2015). "Performance appraisal and its effectiveness in modern business scenarios. The SIJ Transactions on Industrial", Financial & Business Management, 3(4): 36-40.
27. Sepehrirad, R., Azar, A., & Sadeghi, A. (2012). "Developing a hybrid mathematical model for 360-degree performance appraisal: A case study". Procedia-Social and Behavioural Sciences, 62: 844-848.
28. Jency, S. (2016). "720 degree performance appraisal: An emerging technique". International Journal of Innovative & Futuristic Research, 3(8): 2956-2965.
29. Aruomoaghe, J., & Agbo, S. (2013). "Application of variance analysis for performance evaluation: A cost/benefit approach". Research Journal of Finance and Accounting, 4(13): 111-114.
30. Gotteiner, S. (2016). "The optimal MBO: A model for effective management by objectives implementation". European Accounting and Management Review, 2(2): 43-56.
31. Suradi, Z., & Arbaiy, N. (2007). "Staff performance appraisal using fuzzy evaluation. In Book title Artificial intelligence and innovations 2007: from theory to applications": Proceedings of 4th IFIP International Conference on Artificial intelligence applications and innovative (AIAI 2007), Springer, US.
32. Manoharan, T.R., Muralidharan, C., & Deshmukh, S.G. (2011). "An integrated fuzzy multi-attribute decision making model for employee's performance appraisal". International Journal of Human Resource Management, 22(3): 722-745.

33. Grusen, E., & Kayakutlu, G. (2011). “Definition of artificial neural networks with comparison to other networks”. *Procedia Computer Science*, 3(2011): 426-433
34. Jang, J.S.R. (1993). “ANFIS: adaptive network based fuzzy inference system”. *IEEE Transactions on Systems, Man and Cybernetics*, 23(3): 665-685.
35. Jang, J.S.R., & Mizutani, E. (1996). “Levenberg- Marquardt method for ANFIS learning”. In *Proceedings of IEEE Biennial Conference of the North America*, 19-22 June 1996, pp. 87-91, Berkeley, USA.
36. Jang, J.S.R. (1996). “Input selection for ANFIS learning”. In *Proceedings of 5th IEEE International Conference on Fuzzy Systems*, 11-12 Sep 1996, pp. 1493-1499, New Orleans, USA