

# Model Employee Appraisal System with Artificial Intelligence Capabilities

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## ABSTRACT

*An employee appraisal system is one of the most critical components of every organization and its effective management leads to higher productivity among the employees. In practice, there are many possible errors or biases in the performance appraisal process. These errors affect the objectivity of the appraisal to a large extent. The most common errors in appraisal include the Halo Effect and Horn Effect, leniency Error (Loose rater), the Error of Strictness (Tight rater), the Central Tendency Error, the Recency Effect, the Contrast Error and the Similarity (similar-to-me) Effect. The aim of this research project is to develop an intelligent IT system to address the issues of existing employee appraisal system. The system would be seamless and reduce human intervention to minimal. The system can be realized as a dashboard. Outcome of this research can be applied in today's businesses. The design of the system mentioned here is a process to ensure that the rater bias is limited. This type of system would be more beneficial for larger organizations with thousands of employees. A limitation could be that this type of application can be overhead for small companies.*

*Keywords:* Artificial Intelligence, Employee Appraisal System, Machine Learning, Management by Objective System, Performance Appraisal

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## 1. INTRODUCTION

The purpose of this study is to model an Artificial Intelligence (AI) based intelligent system which can be used in an organization to minimize appraisal bias and support both employees and management to understand the progress and shortcomings of an individual's performance. Appraisal systems in an organization are used for employee evaluation, determining promotion criteria, increasing wages based on performance and evaluating training requirements. These parameters are defined to help an organization grow and achieve its objectives i.e. to make profit (Lansbury, 1988). The employee aversion is common occurs during the appraisal process. Appraisal system helps manager to achieve this. So, this makes manager's role very critical in the overall process. A biased feedback from a manager can become a hurdle in a deserving employee's career growth. The most common biases/errors in appraisal include: the Halo Effect and Horn Effect, leniency Error (Loose rater), the Error of Strictness (Tight rater), the Central

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Tendency Error, the Recency Effect, the Contrast Error and the Similarity (similar-to-me) Effect (GÜRBÜZ & Dikmenli, 2007). Biases such as favouritism and leniency towards poor performing candidates will annoy highly performing candidates. This paper proposes an intelligent appraisal system to reduce this problem and ensure fairness in appraisal. In the next section discusses the appraisal concept, objectives and benefits of the appraisal process and biases in the appraisal process. Then the following section describes in detail the design of the proposed system. Then the paper presents the description of its implementation as a dashboard.

## **2. APPRAISAL CONCEPT AND SYSTEM**

### **2.1. Genesis and Objective of Appraisal System**

An appraisal process is a formal way of judging someone based on relevant parameters. It is a way to judge an employee on their performance, which benefits the organization. If organization changes its conditions and thus performance parameters will change and employees have to adapt to it as required. Appraisal systems are basic set of rules to which an employee has to adhere and such rules are set to help organization grow and in turn reward the employee.

Performance of a company depends on performance of employees. But if the business strategy is incorrect or business environment changes due to political changes or reasons which company cannot control then it affects all the employees. The job of a performance appraisal system is to address this before the business goes out of control. It is very important to identify the best and the worst performers in an organization. Managers play crucial role in this exercise. It is the responsibility of the manager to provide a fair assessment and give a rating that deserved by the employee. Employee aversion can occur if they receive an unfair rating. Human assessments are subjected to error and biases. Managers are also uncomfortable to show superiority and to judge worth of a fellow employee (McGregor, 1957). An appraisal system is used to assess employees of an organization and categorize them based on their performance. However, there is a probability of error in judgment and certain bias rendered towards an employee. We can address appraisal system issues with the use of technology and try to minimize mistakes that manager can commit intentionally or unintentionally.

### **2.2. Bias in Appraisal Process**

Performance appraisal is often a negative, disliked activity and one that seems to elude mastery (Russell & Russell, 2010). A poor appraisal is as good as no appraisal. Recently, a study was conducted to find bias pattern in appraisal process and it was concluded with these key findings (Wilson, 2010), the first was supervisors' tendency to make primarily positive comments. Managers do not like giving a negative feedback and employees do not like receiving a negative feedback (Houghton, 2010) because both parties know that these are subjected to intentional or unintentional bias. The second was inconsistency in providing positive comments and relevant ratings to it. Explanation for this behavior can be found in neuroscience and unconscious bias research study that indicates that it requires less cognitive effort to provide rating than to write comments. The problem here is that, appraisal process happens once or twice in a year and employees get around 30 – 60 mins to discuss with their manager. This time is insufficient. Here, are few biases that exist in the process (Kumar, 2005),

- Halo effect
- Horns effect

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