

# Chapter 31

## Human Talent Forecasting using Data Mining Classification Techniques

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### **ABSTRACT**

*Talent management is a very crucial task and demands close attention from human resource (HR) professionals. Recently, among the challenges for HR professionals is how to manage organization's talents, particularly to ensure the right job for the right person at the right time. Some employee's talent patterns can be identified through existing knowledge in HR databases, which data mining can be applied to handle this issue. The hidden and useful knowledge that exists in databases can be discovered through classification task and has been widely used in many fields. However, this approach has not successfully attracted people in HR especially in talent management. In this regard, the authors attempt to present an overview of talent management problems that can be solved by using this approach. This paper uses that approach for one of the talent management tasks, i.e., predicting potential talent using previous existing knowledge. Future employee's performances can be predicted based on past experience knowledge discovered from existing databases by using classification techniques. Finally, this study proposes a framework for talent forecasting using the potential Data Mining classification techniques.*

## **INTRODUCTION**

Human capital is a definitely critical issue and it demands close attention from the top management and Human Resource (HR) professionals in any organization. Human Resource Management (HRM) that deals with human capital aims to facilitate organizational competitiveness; enhances productivity and quality; promotes individual growth and development; and complies with legal and social obligation (DeNisi & Griffin, 2005). Besides that, an organization needs to struggle effectively in term of cost, quality, service and innovation in order to achieve organization's target. All these depend on having enough right people, with the right skills, employed in the appropriate locations at appropriate points in time. Recently, among the challenges for HR professionals is managing talent, especially to ensure the right person for the right job at the right time. These tasks involve a lot of managerial decisions, which are sometimes very ambiguous, uncertain and difficult. On the other hand, HR decision practices depend on various factors such as human experience, knowledge, preference and judgment. These factors cause inconsistency, inaccuracy, inequality and unforeseen decisions. Consequently, in promoting individual growth and development, this situation can often make people sense injustice and this can also influence the productivity of an organization. In talent management, to identify the existing talent for the right job is the topmost challenge for HR professional (A TP Track Research Report, 2005); and at present, most of the determination processes use human experience knowledge that is supported with evidence to justify the potential talent.

The advancement of technology has proposed some new approaches that can be used to solve some decision making problems. Data mining (DM) and also known as Knowledge Discovery in Database (KDD) approach is a computer technology that can be used to handle some talent management issues. DM is one of the Artificial

Intelligent (AI) technologies that have been developed for exploration and analysis in large quantities of data to discover meaningful patterns and rules. In HRM, HR data can provide a plenty of resource for knowledge discovery and decision support tools. Therefore, the application using DM approach has not attracted much attention in HRM field (Ranjan, 2008) compared to other fields such as in marketing, financial, manufacturing, medical and many others. DM approach has several tasks such as classification and prediction; concept description; association; cluster analysis; outlier analysis; trend and evaluation analysis; statistical analysis and others. Over the years, data mining has evolved various techniques to perform tasks including database oriented techniques, statistic, machine learning, pattern recognition, neural network, rough set and etc. Classification and prediction technique is among the popular task in DM. For that reason, in this article we attempt to use DM classification techniques for managing talent tasks especially to identify existing talent by predicting the performance using past experience knowledge. Finally, this study aims to suggest the framework for talent forecasting using selected DM classification techniques.

This paper is organized by describing related work on HR decision system that uses Artificial Intelligent technology. Next, some issues in talent management are discussed while reviewing HR researches that use the DM approach. Then DM classification techniques are discussed followed by an explanation on how talent management tasks use the DM approach in their problems solving and suggests framework for talent forecasting using DM classification techniques. Finally, the paper ends with the concluding remarks and future research directions are also identified.

## **HR DECISION APPLICATION**

Nowadays, HR has been linked to improve productivity, good customer service, greater profit-

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