RESEARCH ARTICLE

PERFORMANCE MINING: A NOVEL METHOD TO ORGANIZE, ANALYZE & MAINTAIN AN EFFECTIVE WORKFORCE

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ABSTRACT

Maintaining efficient work force to run an organization has always been a difficult task for all the leading organizations. Every organization tries all its ends up to gather the best talent possible in order to efficiently run and grow its business. However it has been seen from the last one or two decades that with the advancement of technology the process of hiring efficient candidates have been a difficult task. The reason for this is not the lack of talent but inefficient ways of recruitment and improper allocation of slots to right candidates on the basis of performance. On the other hand the concept of Data Mining has got a great boost from the last decade resulting in growth and Success of Business. This paper thus presents a view of collaborating the Concepts of Data Mining and the Performance of an employee in an organization to create an Effective workforce based on the performance strengths of the Employee. Hence the term "Performance Mining" is coined to link both the concepts of Data Ming and Employee performance data to build an organization with the best possible Workforce to maximize the productivity of the Business and thereby supporting the Global Economy.

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INTRODUCTION

Data Mining is the process of collection of raw data and then sorting and classifying the same to analyze different patterns and relations within the data which could prove beneficial for taking decisions at a better and much efficient level in later stage. Generally all big Businesses Industries follow The Cross industry Standard Process for Data Ming (CRISP-DM). The CRISP-DM consists of a six phase cyclical model as shown in the Fig. 1

The Six Phases include:

- Business understanding
- Data understanding
- Data preparation
- Modeling
- Evaluation Deployment

- First Phase, it deals with the knowledge that is to understand business objectives clearly and find out what are the business's needs.

- Second Phase deals with the data understanding and starts with initial data collection, which we collect from available data sources, to help us get familiar with the data.
- Third Phase typically consumes about 90% of the time of the project. The outcome of the data preparation phase is the final data set.
- Fourth Phase, it deals with modeling techniques that have to be selected to be used for the prepared dataset.
- In the Fifth phase, the model results must be evaluated in the context of business objectives of the first phase. In this phase, new business requirements may be raised due to the new patterns that have been discovered in the model results or from other factors.
- Sixth Phase deals with information, which we attain through the data mining process and supports the need to be presented in such a way that stakeholders can use it when they want it.

All these phases have been proven quite beneficial from last decade or so. However if we now look at the basic way of Recruitment we can find the following Five Phase conventional model (Fig. 2) for it:

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Department of Computer Science and Engineering, Model Institute of Engineering and Technology, Kot Bhalwal Jammu (181122), J&K, India.
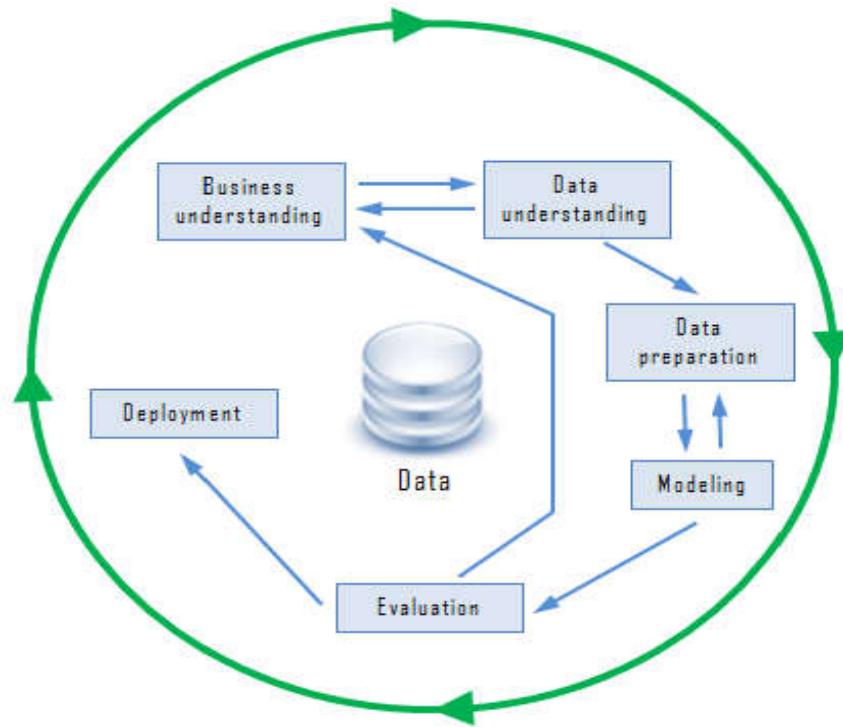
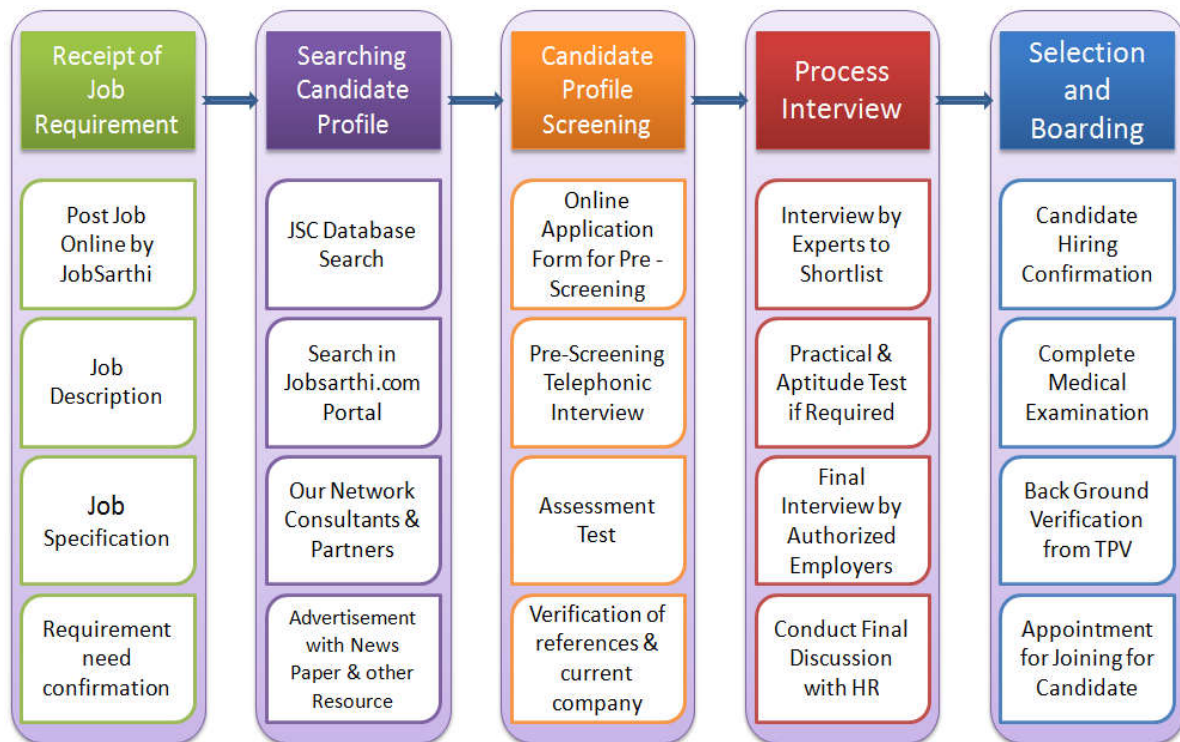**Fig. 1. Phases in Data Mining of Product**

Fig. 2. Phases in Recruitment of Candidates in an Organization

Now considering both aspects as a clear follow up we can understand that a proper survey is carried before the deployment of a product to the customers while as no prior check is considered on the employee before the recruitment which results in inefficient Hiring and lacking the suited talent.

Problem

Actually the Problem does not lie only in the recruitment process but also in its after Phases which include "Staffing" A study shows that in 2016 the number of employees who left their jobs due to improper staffing was 40% globally.

In order to understand the Problem more clearly let us consider some facts:

Statistics

- A research done by NBRI has shown that the 66% of employers said they confronted negative effects of bad hires in 2012. Of these employers, 37% said the bad hire negatively affected employee morale. Another 18% said the bad hire negatively impacted client relationships. And 10% said the bad hire caused a decrease in sales. (A study from the National Business Research Institute)

- 43% of the respondents from the same study cited the need to fill the positions quickly as the main reason that bad hires are made.
- According to the study done by Robert Half 36% of 1,400 executives surveyed claimed that the leading factor of a failed hire, aside from performance problems, is a poor skills match. The second leading factor which made up the 30% result space was unclear performance objectives.
- 75% of the demand to hire new employees is simply to replace workers who have left the company.
- The number of American online job seekers has doubled since 2005.
- 47% of small businesses cannot find qualified applicants for open positions
- The use of social media for recruitment has grown 54% in the past 5 years. A recent SHRM study found that 84 percent of organizations are now recruiting on social media; while only 56 percent of companies were hiring on social media in 2011. (SHRM)
- Almost half of employers (45 percent) said that the time to fill open positions has grown since 2014. (DHI)

From the above stats it becomes clear that there exists a need of proper recruitment and staffing methodology for maintaining the efficient workforce and to maintain a proper balance between the times they stick to a particular Job and the hiring Period. As quoted by Sir Albert Einstein "If you keep on judging a fish by its ability to climb walls , it will spend its life time feeling that it is stupid and will never recognize its true potential."

METHODS

A business organization is driven by many factors. However one thing that really helps to make the right decision is data mining and analytics. Data-driven business activities have increased over 100% in the past year; that's how important it is becoming to corporations be it large and small. Performance analytics is one of the best ways for a company to use Data Mining. This Method uses available data to assess potential candidates, and also to track current employee productivity and effectively maintaining the work force. Meghan Biro, a Forbes contributor, refers to it as "an incredible predictive tool, a trustworthy future-caster, and HR's own crystal ball."And it is hardly new. According to Harvard Business Review done in 2010, brands such as Google, Best Buy, Sysco, "were just beginning to understand exactly how to ensure the highest productivity, engagement, and retention of top talent, and then replicating their successes." Data analytics and Data Mining are beginning to shape the evolution of the recruitment process. With availability of vast amounts of data aggregated from multiple sources especially social media channels where prospective candidates usually leave their digital 'thought prints' and the ability to transform all that information into intelligence using powerful algorithms, recruiters now have the opportunity to rely more on facts than on intuition before they issue job offers. This new realm of "people analytics" or "Performance Mining" which refers to the use of data analytics for making people-decisions is now contributing to the hiring process including recruitment marketing, filtering prospective candidates, identifying outliers, planning interview questions, and determining who to retain and promote etc. Our model of recruitment also focuses on analysis of the data to squeeze out the best fit candidate for a particular type of job and as a whole for the company. The model uses the method of selecting the candidate which is right and suitable for a particular type of job based on its nature and performance throughout the years of curriculum. It helps to effectively judge the candidates interest and strengths irrespective of the domain the candidate is working in. The main insights that a candidate has to provide are not listed but directly selected from its profile. Using the candidates past performances in different domains and its effective outcomes lets the system to decide how good the candidate is in for a profile and on the basis of this the candidate can get a suitable job which results in increasing the performance of the candidate and in turn of the organization as well as increasing the time a candidate works for the organization in a selected domain.

RESULTS

Our application to this model was among a group of 35 people in an institute, the results were more than expected. Here we tried to analyze the student's area of expertise and the domain he would like to work in and if the candidate actually was performing when kept on similar profiles irrespective of the domain he was studying in. This study and analysis not only fetched good results but also made certain new trends to be established. In our analysis we found some candidates were performing well in the profiles which generally did not belong to their area of study and there were also some people which were not able to satisfy the criteria of their enrolled job profile. This puts up a big question on the process of recruitment that we are actually following without the background analysis of the candidate and the area he would perform best in.

Comparison with general Process

When we compared the job roles provided to candidates by general process of recruitment and by the method of analysis we got some great statistics which are shown as under:
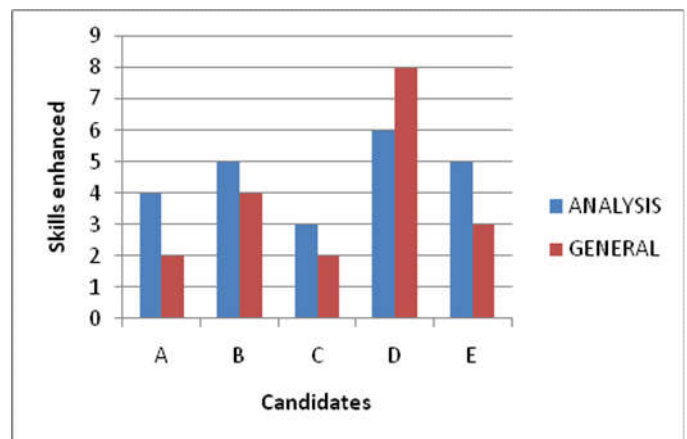

Fig. 3. Comparison of The method with traditional process

The results of this study showed that in most of the cases the job profiles selected for the candidate were much more effectively predicted by the method of analysis than by general method of recruitment. Which suggests that if we continue to develop the platforms that could analyze the candidate and its nature before recruiting process it would prove much more beneficial for the organization as well as the for the individual candidate.

Some typical benefits and use cases of analytics that have been seen are as follows:

- Improve the performance of the organization through high quality talent related decisions
- Forecast workforce requirements and utilization for improved business performance.
- Optimization of talents through development and planning.
- Identify the primary reasons for attrition and identify high-value employees for leaving.
- A source of competitive platform for all the organizations
- Helps the organization to manage applicants in better way on the basis of qualification for a specific position.
- Recognize the factors which turn the employee satisfaction and productivity.

Conclusion

As mentioned before as well though there are currently many analytics options in HR but few of they are really becoming popular these days. One such is Performance analytics; which is more qualitative and is basically for processes from talent management like personal development, recruitment, succession planning, retention etc. It can help organizations to better analyze income, identifying top performers, identifying the gaps and develop the proper training for them. It can also find out reasons for attrition and provide options to take strategic decision for retention as well in near future.

Acknowledgements

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