

Factors Affecting Talent Acquisition among Employees: A Data Mining Approach

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Abstract- Talent management refers to the skills of attracting highly skilled workers, of integrating new workers, and developing retaining current workers to meet current and future business objectives. This research is qualitative in nature and identifies the factors responsible for dissatisfaction among employees. In this research work, data is collected by mean of a questionnaire. Questionnaire has many attributes which are studied or analyzed based on attributes which are rated by the employees. Data collected is analyzed with the help of Rapid Miner Studio 7.3. For data analysis, two clustering techniques are used i.e. agglomerative clustering, flatten clustering. Twenty three attributes are taken into consideration for analysis, out of which twelve attributes are found which are disagreed by the dissatisfied employees. This information is extracted with the help of scatter graph between various attributes and id. By taking more consideration on the twelve factors playing major role in dissatisfaction of employees, we can use the talent of dissatisfied employees more efficiently.

INTRODUCTION

Data Mining can also be called as Knowledge Discovery from Data (KDD) which involves following steps of iterative sequence [1]: Data Cleaning: Fill missing values, Smooth out noise, Correct Inconsistent. Data Integration: Check redundancy, duplicity and combine multiple sources. Data Selection: Select data relevant to analysis task. Data Transformation: Convert data into forms appropriate for mining[6]. Data Mining: Essential process where we extract data patterns. Pattern Evaluation: Identify truly interesting patterns. Knowledge Representation: Visualization and Representation way to present.

Talent acquisition is the process of finding and acquiring skilled human labor for organizational needs and to meet any labor requirement. When used in the context of the recruiting and HR profession, talent acquisition usually refers to the talent acquisition department or team within the Human Resources department. The talent acquisition team within a company is responsible for finding, acquiring, assessing, and hiring candidates to fill roles that are required to meet company goals and fill project requirements[2]. Clustering[3] deals with grouping together objects that are similar to each other and dissimilar to the objects belonging to other clusters. It is a technique for extracting information from unlabeled data and can be very useful in many scenarios e.g. in a marketing application we may be interested in finding clusters of customers with similar buying behavior. During research process, three clusters were formed which represented groups of satisfied, non satisfied and indecisive employees with respect to satisfaction.

Two type of clustering is used during the research; one is agglomerative clustering. It is a part of hierarchical clustering which is a method of cluster analysis which builds a hierarchy of clusters. It is based on idea of objects being more related to nearby objects than to objects farther away. As such, these algorithms connect objects to form clusters based on their distance. A cluster can be described largely by the maximum distance needed to connect parts of the cluster[4]. At different distances, different clusters will form, which can be represented using a dendrogram. This algorithm forms clusters in a bottom-up manner. Initially, put each example in its own cluster. Among all current clusters, pick the two clusters with the smallest distance. Replace these two clusters with a new cluster, formed by merging the two original ones. Repeat the above two steps until there is only one remaining cluster.

Another clustering used is flatten clustering. Flat clustering creates a flat set of clusters without any explicit structure that will relate clusters to every alternative[5]. Hierarchical clustering creates a

hierarchy of clusters. Flat clustering is efficient and conceptually easy, but it has a number of drawbacks. These algorithms come back a flat unstructured set of clusters; require a pre-specified number of clusters as input which is nondeterministic. Hierarchical clustering outputs a structure that is more informative than the unstructured set of clusters returned by flat clustering.

The core idea of the research is based on the talent acquisition using clustering techniques. The benefit of the research is to use the talent of satisfied and dissatisfied employees properly or efficiently for the betterment of the organization.

DATA ANALYSIS

The data was collected by mean of questionnaire. The questionnaire included various attributes out of which only twenty three were chosen for further analysis. These attributes are related to satisfaction or dissatisfaction on the basis of employee benefit and policies, customer focus, innovation, team work and last one was the engagement. List of such attributes is shown in table 1.

Table 1: Representing the Attributes Used for Analysis.

A	SATISFACTION WITH THE EMPLOYEE BENEFITS AND POLICIES
A1	Accuracy of Job Description
A2	Salary Review
A3	Medical Insurance Package
A4	Retirement Plan
A5	Holiday Entertainment
B	CUSTOMER FOCUS
B1	We know who our most important customers is
B2	We work to understand the need of customer.
B3	We act on customer's Complaints
B4	We constantly look for better ways to serve our customers.
B5	We objectively measure Customer's satisfaction
C	INNOVATION
C1	There is an Encouragement from superiors for creating new ideas in the job.
C2	Within the department we search for new ways to work and do business.
C3	Within the department new ideas are effectively implemented
C4	Within the department generating new ideas is Recognized.
D	TEAM WORK
D1	Immediate supervisor encourages teamwork.
D2	We share the personal objectives with the colleagues.
D3	Within the department we work effectively as a team
D4	Within the department we look proactively for opportunities to cooperate with others.
E	ENGAGEMENT
E1	I get the feeling of personal accomplishment, from the work.
E2	I'm satisfied with the organization Place to work.
E3	I recommend the organization to others as a good place to work.
E4	I will not leave the organization to shift a new organization in future.
E5	I'm proud to be a part of my organization.

The questionnaire was filled by the employees of the basis of the extent to which they were satisfied or dissatisfied and agree or disagree by indicating the opinion toward the following statements and marking in the appropriate column which represented strongly agree, agree, neutral, disagree and strongly disagree. Moreover, the data collected was analyzed by using Rapid Miner Studio7.3. Rapid Miner Studio is a code-free environment for designing advanced analytic processes with machine learning, data mining, text mining, predictive analytics and business analytics. Rapid Miner Studio is a powerful visual design environment for rapidly building complete predictive analytic workflows. This all-in-one tool features hundreds of pre-defined data preparation and machine learning algorithms to support all your data science projects.

The cluster 0 may be defined as the satisfied and cluster 1 may be defined as the non-satisfied and cluster 2 may be defined as neutral.

Cluster 0 consists of 198 elements.

Cluster 1 consists of 3 elements.

Cluster 2 consists of 1 element.

A scatter graph had been drawn on id verses cluster and verifies the information written above. The scatter graph is shown in the figure 1

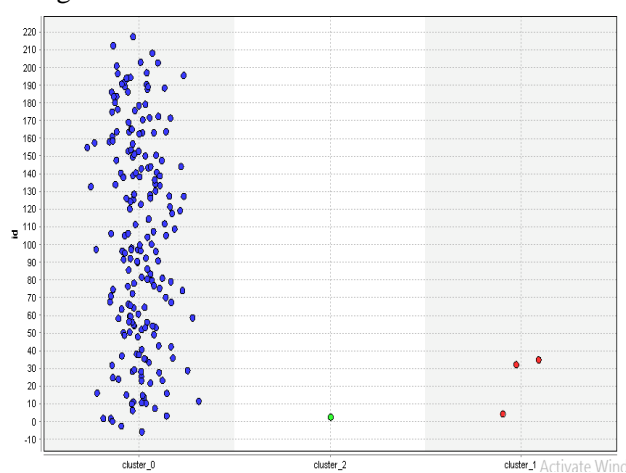


Figure 1: Showing the scatter graph on id verses cluster.

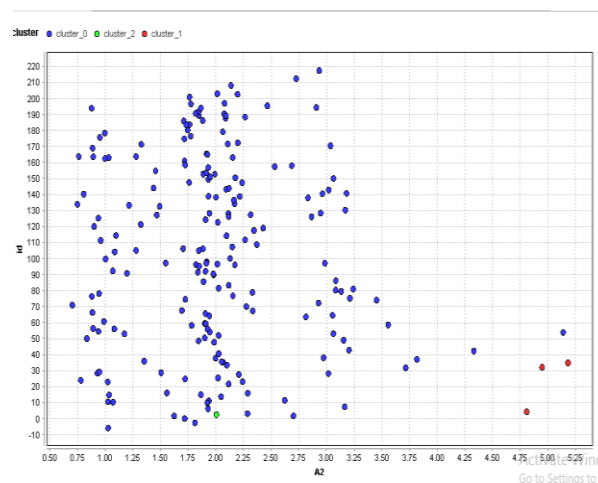


Figure 2: Scatter Graph of id verses A2.

Moreover, the salary review played an important role for dissatisfied employees. Majority of satisfied employees had the range from 1 to 3 i.e. agreeing or neutral on the decision. The scatter graph of id verses A2 is shown in figure 2.

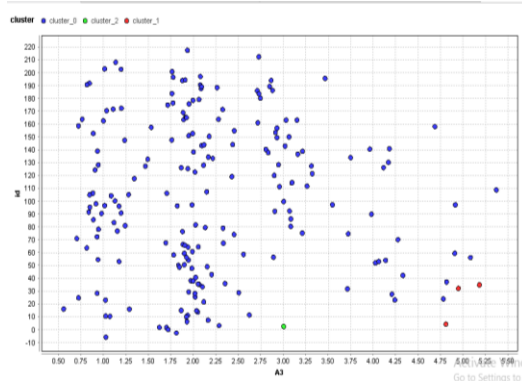


Figure 3: Scatter Graph of id verses A3.

Similar to salary review, medical insurance package also played an important role and results of attributes A2 and A3 verse id were same, as in case of A3 verses id, the satisfied employees had the range from 1 to 3 i.e. agreeing or neutral on the decision, Moreover, it will become clear from the figures below. The scatter graph of id verses A3 is show in figure 3.

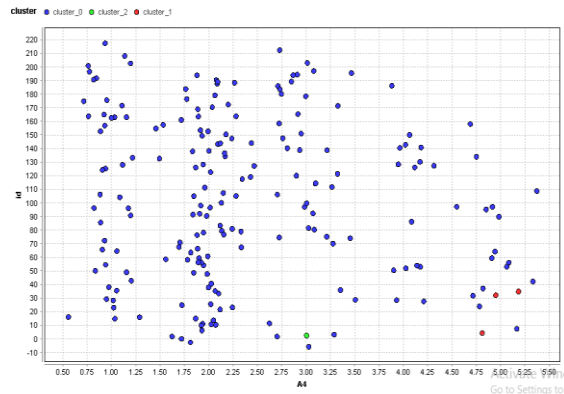


Figure 4: Scatter Graph of id verses A4.

The dis-satisfied employees were not happy with the retirement plan whereas the majority of employees were either agreeing or strongly agreeing with retirement plan. However, cluster 1 employees were distributed throughout the range 1 to 5. The scatter graph of id verses A4 is shown in figure 4.

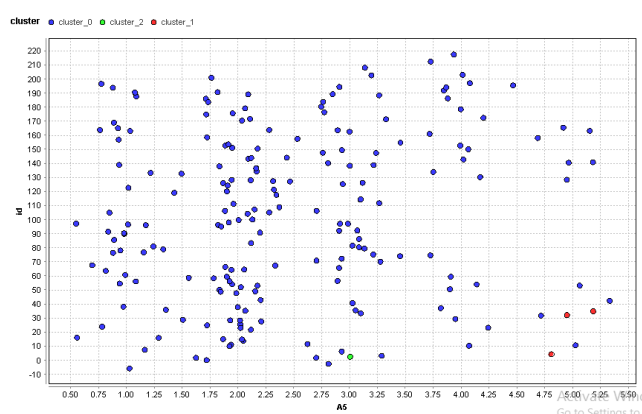


Figure 5: Scatter graph of id verses A5.

The scatter graph of id verses A5 is shown in figure 5. The holiday entertainment also played an important role for dissatisfied employees. But majority of satisfied employees had the range from 1 to 3 i.e. agreeing, strongly agreeing and neutral.

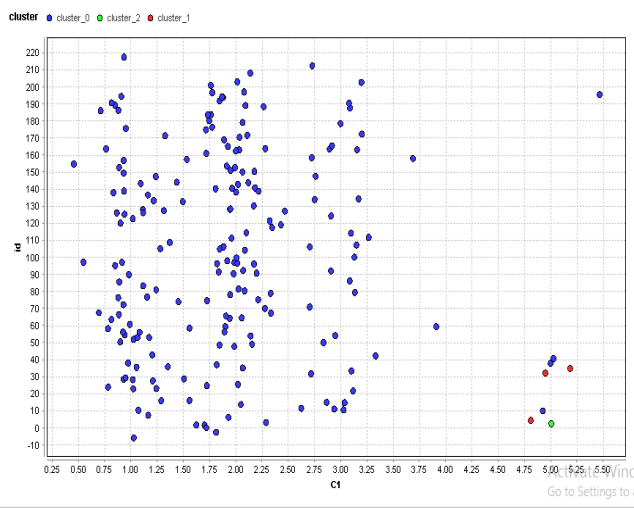


Figure 6: Scatter graph of id verses C1.

The satisfied employees agreed or strongly agreed with the encouragement from superiors for creating new ideas in the jobs, where as the dissatisfied employee were strongly disagree with the fact as shown in the scatter graph of id verses C1 in figure 6.

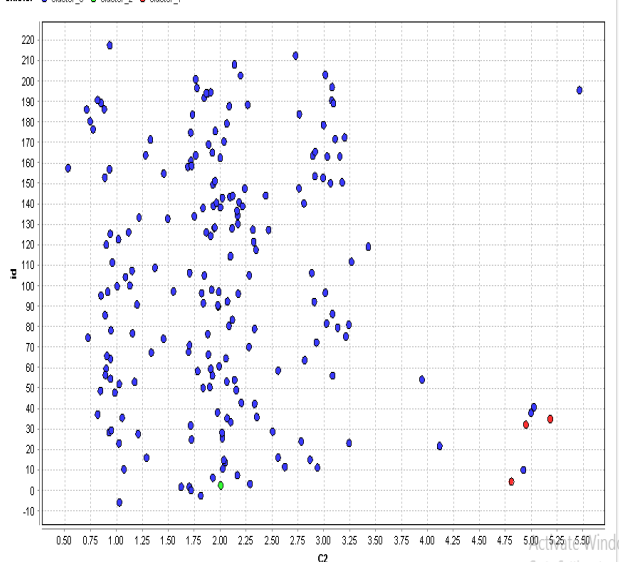


Figure 7: Scatter graph of id verses C2.

The satisfied employees agreed or strongly agreed that within the department they search for new ways to work and do business, where as the dissatisfied employee were strongly disagree with the fact as shown in the scatter graph of id verses C2 in figure 7. Also, some of the employee had neutral view over it.

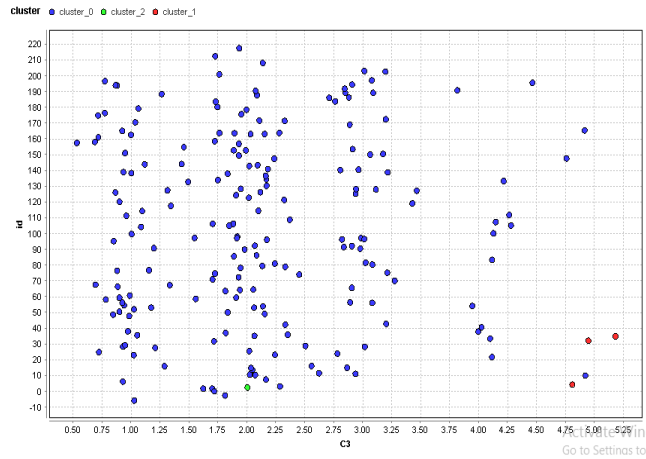


Figure 8: Scatter graph of id verses C3.

The satisfied employees agreed or strongly agreed and had neutral view that within the department new ideas are effectively implemented, where as the dissatisfied employee were strongly disagree with the fact as shown in the scatter graph of id verses C3 in figure 8.

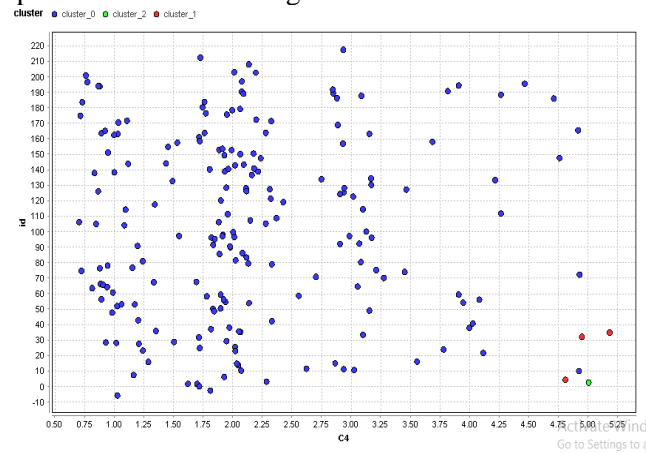


Figure 9: Scatter graph of id verses C4.

As shown in the scatter graph of id verses C4 in figure 9, the satisfied employees agreed or strongly agreed and had neutral view that within the department generating new ideas is Recognized, where as the dissatisfied employee were strongly disagree with the fact.

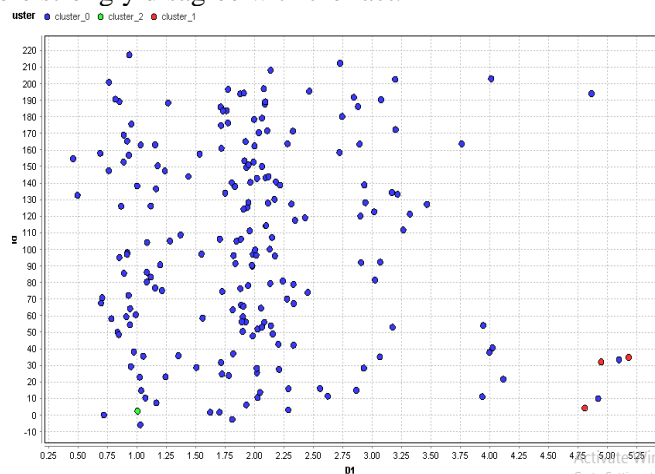


Figure 10: Scatter graph of id verses D1.

Satisfied employees agreed that the immediate supervisor encourages team work and dissatisfied employees strongly disagree with the fact. The scatter graph of id verses D1 is shown in figure 10.

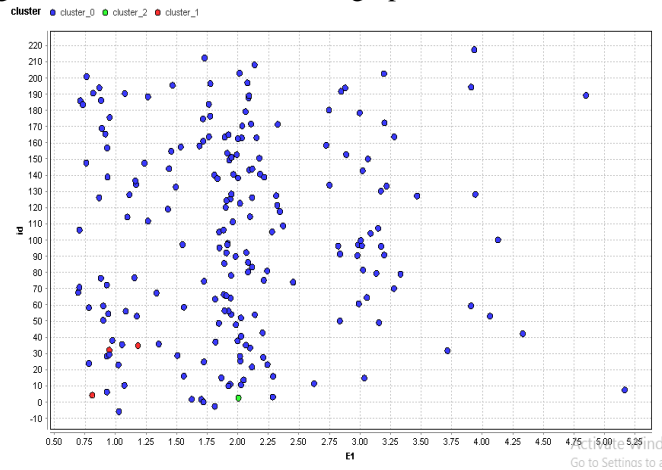


Figure 11: Scatter graph of id verses E1.

Almost all the employees i.e. satisfied, dissatisfied and neutral, from all the clusters agreed on that within the department they got the feeling of personal accomplishment, from the work. Majority of them are in the range from 1 to 3. The scatter graph of id verses E1 is shown in figure 11.

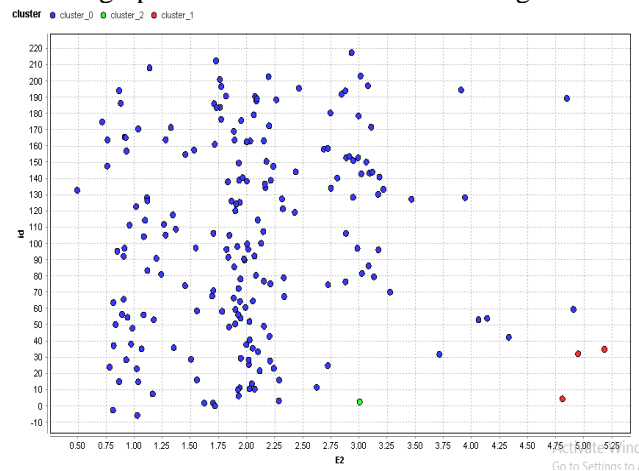


Figure 12: Scatter graph of id verses E2.

Dissatisfied employees were not satisfied with the organization place to work where as the majority of employees were happy with the organizational work place as the range is from 1 to 3, as shown in figure 12 ,the scatter graph of id verses E2.

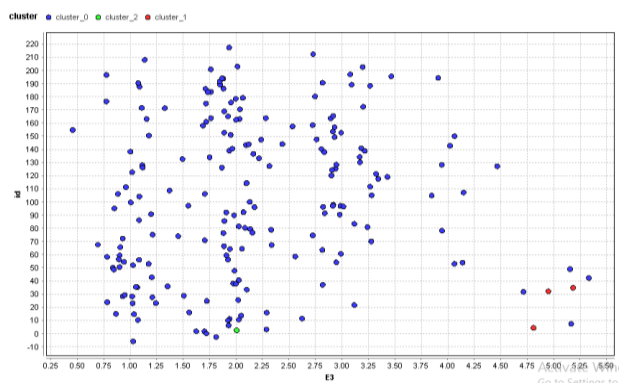


Figure 13: Scatter graph of id verses E3.

Dissatisfied employees were not satisfied as they didn't recommend the organization to others as a good place to work where as the majority of employees were happy with the organizational work place and they would recommend the organization to others, as the range is from 1 to 3. The scatter graph of id verses E3 is shown in figure 13.

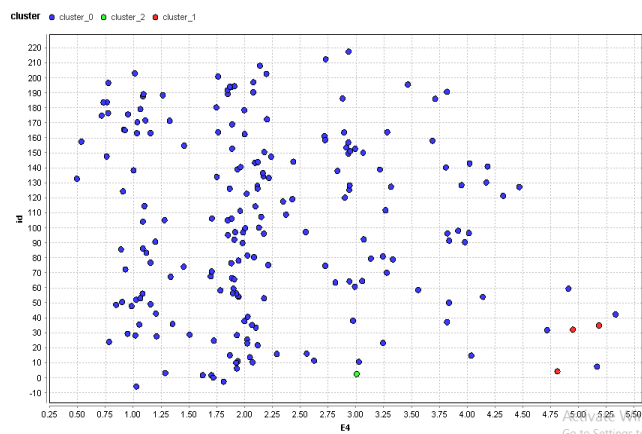


Figure 14: Scatter graph of id verses E4.

Majority of the satisfied employees did not want to leave the organization. But on the other hand, the dissatisfied employees wanted to leave the organization as shown in figure 14, representing the scatter graph of id verses E4.

CONCLUSION

Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains Here, in this research, after data collection and analyzing various scatter graphs of id verses attributes, out of twenty three attributes, twelve are found to affect significantly the overall progress of the organization. These twelve attributes may discover some useful information. We can conclude that the following attributes are to be taken care, which are shown in table 2.

Table 2: Factors Affecting Dissatisfaction among Employees.

A	Satisfaction with the employee benefits and policies
A2	Salary Review
A3	Medical Insurance Package
A4	Retirement Plan
A5	Holiday Entertainment
C	Innovation
C1	There is an Encouragement from superiors for creating new ideas in the job.
C2	Within the department we search for new ways to work and do business.
C3	Within the department new ideas are effectively implemented
C4	Within the department generating new ideas is Recognized.
D	Team work
D1	Immediate supervisor encourages teamwork.
E	Engagement
E2	I'm satisfied with the organization Place to work.
E3	I recommend the organization to others as a good place to work.
E4	I will not leave the organization to shift a new organization in future.

These are the attributes in which the dissatisfied employees are playing an important role. So, by taking more consideration of these attributes, we can manage the talent efficiently so that overall performance of the organization increases.

As shown in the table above, the attributes are related to the categories of employee benefits and policies, innovation, team work and engagement. Moreover, the attributes related to customer focus are strongly agreed or agreed by majority of employees which can be satisfied or dissatisfied ones. By taking more consideration on the above twelve factors, we can use the talent of dissatisfied employees more efficiently.

Moreover, in future, more attributes can be taken into consideration for talent acquisition such as development plan for staff, managing performance, quality commitment, result orientation, other major reasons for business transformation needed in industries, organizational improvement basis on improvement in soft skills, communication, presentation, notation, educate workforce on new and upcoming tools, techniques, practices etc. Data can be collected based on these attributes and the collected data can be analyzed using rapid miner.

References

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