Empirical investigation of influencers of employee turnover from Indian perspective, part II

Pravesh Soti¹, Vivek Kr. Pathak², Madhu Kumar R³, Nirmal S Kumar⁴, P Nirmal James⁵

¹Associate Professor, Krupanidhi Group of Institutions, Bangalore, India
²Research Mentor, Accendere Knowledge Management Services, CL Educate Ltd., India
³, ⁴, ⁵MBA Student, Krupanidhi Group of Institutions, Bangalore, India

¹praveshsoti@gmail.com, ²pathak.v@accendere.co.in

Corresponding Author: Vivek Kr. Pathak

Abstract

Relying on the fact that expenses on managing employee turnover costs a lot to the organizations, understanding on the contributors of high turnover becomes crucial. The present paper is focussed on this fact and progresses with an objective to explore the relevant factors influencing employee turnover and put forth their ranking based on their strength of influence. The study successfully concluded four reliable factors – personal, job influencers, environment & working conditions and benefits & welfare measures, as factors influencing employee turnover in the industries selected as sample. The responses of the respondents from manufacturing, mining and services sectors from North east India, were analysed for its reliability and data reduction using SPSS package software. The study further applied Grey Relational analysis method for prioritizing the explored factors for meaningful conclusions. Based on the analysis, the study concludes that statements belonging to employee benefits and welfare measures factor were ranked above all as major influencers for employee turnover in the sample organization represented in the study. The study suggests a roadmap to determine which factors guide towards higher employee turnover and turnover in an organization. They should concentrate on the items for better improvement plans facilitating retention in future.

Keywords: Employee Turnover, Employee Attrition, Manufacturing, Services, Employee retention, India

I. Introduction

Organization is built by good governance and its people. People are the crucial ingredients of any organization’s success but they need to be satisfied with the offerings of the firm. These people referred as employees can create a turmoil if are not monitored and supported. In the contemporary context of increasing domain
competition, the distressing apprehension for each organization across industry
terms in India is employee turnover. It has always been very important by way of
its direct relation to the manpower and their crusade form one organization to
another. When intensity of the manpower movement across organization is frequent it
will lead to higher employee turnover rate sometimes also referred as attrition rate.
Correspondingly, on the knowledge asset part, knowledge and intelligence leave
whenever any employee leaves an organization. The knowledge base and expertise,
which often is referred to the USP of an organization, also gets vulnerable. Therefore,
the current scenario reflects, considering the value and significance of employees,
high consideration is given on understanding and exploring the important factors
affecting employee turnover. The key purpose of the present study is to identify
diverse factors affecting employee turnover across industry verticals. Identifying the
factors of employee turnover will not be a solution for any industry unless there is a
roadmap for their remedial counter measures. This study, hence, has attempted an
investigation on finding out the precedence of the factors of employee turnover. If the
most contributed factors are prioritized then it will help the human resource manager
to formulate the relevant counter measures effectively of any industry.

Further, the present study has been conducted in two phases all together for a better
generalization of the findings in decision making. This integrated attempt would
enhance the applicability of these methods over their separate usage (Sahney, 2011).
The first phase of the series has attempted to discover various factors influencing the
employee turnover in Indian companies and then prioritized them using RIDIT
analysis. The second phase will include induction of another algorithm known as
Grey Relational Analysis (GRA) to rank the identified factors to verify its’ robustness
for decision making. This phase will attempt to conclude a list of comprehensive
factors influencing the employee turnover. This phase will have a comparative
analysis of the two methods for facilitating the influential decision making. The
present paper is the second one of the series and will display the identified factors
influencing the turnover and its prioritization using GRA method followed by a
detailed discussion on the analysis of the two phases. Even though the present study
is a part of a series, the paper attempts to include all the steps of data analysis for the
sake of researchers who intend to know exclusively about the method used in this
phase.

II. Literature Review

The word employee turnover has become a buzz across Indian industry verticals
of all nature in current times. The main reason for this elevated employee turnover,
discussions on employee turnover and the researches done on employee turnover is
because of the economic changes of industry and industrial philosophies. Every
organization has its own long-term vision & mission that helps in measuring
organization’s performance not only financial but human capital assets too.
Organizations formulates strategies for a higher growth relying on its current
conditions and status. Anything going beyond the standards is likely to hamper its
long-term goals and degrades the performance level all together. Employee turnover
is considered one of the crucial processes of an organization that has always been a
centre point of all concerns by the management of the organization. The employee
The turnover process defines as a process of decrease in the total human capital of an organization and when the employee turnover rate shoots up, the organization is likely to get its performance below the standardized level. High employee turnover rate in the organization may hamper the shareholder’s wealth and market value of the organization (Dobhal & Nigam, 2018). If it is not well accomplished by the human resource department of the organization, it will surely raise concerns on the sound position of the organization, employee morale and the motivational aspects of the employees.

Many researches have been done concerning employee turnover and its remedy known as retention strategies diagonally various industry verticals. To illustrate, Indian manufacturing industries (Latha, 2013), ITES, Indian banking & Telecommunication sector (Saini & Subramanian, 2014), Information & Technology and ITES sector of India (Adhikari, 2009) along with service industry of Malaysia (Ho et al., 2010). A summary of limited relevant studies, hence, exploring and discussing the factors influencing the turnover in an organization is projected in Table 1. Studies that have been explored in the extensive literature review, all have strenuous on exploring the turnover/attrition factors and deliberating their remedial measures by means of successive retention strategies. Previous studies also focussed on the relevance of continuing employee turnover research over the industry verticals and all over the world that helps in formulating the comprehensive retention strategies for an improved surveillance and to curb the attrition in the organization.

Though, bulk resources and research studies on turnover and retention are available, still there is an infrequent resource available in prioritizing these explored turnover factors so as to get an understanding that which factor to prioritize and needs immediate attention and another may be dealt with later. The ranking method of the factors which is used will lead the human resource managers to rank their efforts in dealing with the turnover issue and hence, controlling these issues in an organized manner without disturbing any other process of the organization. The present study hence taken forward these objectives to reconnoitre a comprehensive list of factors which are affecting turnover rate across industry verticals and accomplish a prioritization analysis to set forth a significant conclusion for the human resource managers.

| Sl No | Author & Year         | Factors identified as reasons driving turnover across industries                                                                 |
|-------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 1     | Arthur, 1994          | rewards and recognition                                                                                                         |
| 2     | Magner et al., 1996  | involvement in the decision making process                                                                                      |
| 3     | Herman, 1999          | Insufficient support, incompatible corporate culture, unsatisfactory relationships with coworkers, dissatisfaction with compensation offered, and inadequate opportunities for growth |
| 4     | Sahu and Gupta, 1999 | Length of service, expectation reality match, turnover perception and outside career opportunities                                 |
III. Methodology

The present study used extensive literature reviews to prepare a preliminary set of 22 items influencing employee turnover and 6 items as retention strategies which were relevant in Indian context. In order to validate the explored factors, the study devised a survey involving the employees various sectors. The sample were identified based on convenience and used snow ball method so as to capture representation from different industry/sectors. It was made sure that all the respondents showed their willingness to contribute in the survey. In total 12 companies were considered for data collection from manufacturing, mining and services sectors from north-east India. The questionnaires were sent to the participants through e-mail along with a cover letter explaining the purpose of the study and assurance of the privacy of their information shared to the researcher. Finally, 181 out of 300 distributed e-questionnaires were received through Google document receiver with a response rate of 60.33%, which is acceptable for analysis (Nulty, 2008). All 181 responses were screened and 8 were found to be non-usable and were excluded (Sekaran&Bougie, 2016). The collected data was ensured to have included students with different industry domain experience so that a robust conclusion can be made. Finally, 173 usable filled up e-questionnaires were used for further analysis of the data fulfilling the minimum requirement of sample size between 100-500 observations (Hair, Black, Babin, Anderson &Tatham, 2010). The research instrument was divided into two
sections, first included nine (9) questions about socio-demographic profile of the respondents and the second included twenty eight statements on employee turnover and retention. The respondents were asked to rate the statements according to their order of importance and intensity. Further analysis were performed on these twenty eight items for the relevant conclusions. Each Likert-type scale item comprised five opinions ranging from 1 (strongly disagree) to 7 (strongly agree), as 7-point Likert scale is optimum and effective scale in such studies. The questionnaire was pretested to ensure that the wordings, sequencing and length of questions and range of scale were proper or not.

IV. Data Analysis and Results

Cronbach alpha (α) was computed for reliability test of the items and overall α was found to be 0.912 (Table 2), indicating good consistency among items (Nunnally & Bernstein, 1994). Principal Components Analysis (PCA) was used selecting varimax rotation and Kaiser Normalization to get twenty eight (28) elements (Table 6) culminated into five factors which represented 71.537 % of the explained variance (Table 3). All the five factors have shown more than 0.5 loading values of all the items and therefore all the five factors were maintained. The factors also showed high internal consistency as it showed acceptable score of Cronbach’s alpha (α), which is used to test the factor reliability. The alpha coefficient ranges from 0.693 to 0.923 which is higher than the recommended threshold (Nunnally & Bernstein, 1994).

Table 2: Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .912             | 28         |

Table 3: Total Variance Explained

| Component | Initial Eigenvalues | Extraction Sums of Squared Loadings | Rotation Sums of Squared Loadings |
|-----------|---------------------|-------------------------------------|----------------------------------|
|           | Total               | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1         | 9.8                 | 35.218       | 35.218       | 9.8   | 35.218       | 35.218       | 5.7    | 0.01         | 20.359       |
|           | 61                  |              |              | 61    |              |              | 01     |              | 20.359       |
| 2         | 4.2                 | 15.296       | 50.514       | 4.2   | 15.296       | 50.514       | 4.3    | 0.06         | 15.737       |
|           | 83                  |              |              | 83    |              |              | 06     |              | 15.737       |
| 3         | 2.6                 | 9.588        | 60.103       | 2.6   | 9.588        | 60.103       | 4.2    | 0.41         | 15.148       |
|           | 85                  |              |              | 85    |              |              | 41     |              | 15.148       |
| 4         | 1.6                 | 5.947        | 66.049       | 1.6   | 5.947        | 66.049       | 3.2    | 0.07         | 11.455       |
|           | 65                  |              |              | 65    |              |              | 07     |              | 11.455       |
| 5         | 1.5                 | 5.488        | 71.537       | 1.5   | 5.488        | 71.537       | 2.5    | 0.75         | 9.198        |
|           | 37                  |              |              | 37    |              |              | 75     |              | 9.198        |
Extraction Method: Principal Component Analysis.

The individual Cronbach’s alpha (Table 4) of the factor Personal Factors (PF) is 0.899, Factors Influencing Job (FIJ) is 0.921, Company Environment & Working Conditions (CW&WC) is 0.795, of Employee Benefits & Welfare Measures (EB&WM) is 0.930, and of Retention Strategies (RS) is 0.908. Eigen values of all the factors are greater than or equal to 1.0 which facilitated in deciding the factors for analysis as recommended by Gorsuch (1990). The communalities of the attributes were in the range of 0.517 – 0.859 indicating that all the items have an adequate amount of shared variance with other items (MacCallum, Widaman, Zhang & Hong, 1999).

### Table 4: Reliability Statistics of Individual Variables

| Variable                                      | Cronbach’s Alpha | N of Items |
|-----------------------------------------------|------------------|-----------|
| Personal Factors (PF)                         | 0.899            | 4         |
| Factors Influencing Job (FIJ)                 | 0.921            | 6         |
| Company Environment & Working Conditions (CE, WC) | 0.795            | 4         |
| Employee Benefits & Welfare Measures (EB, WM) | 0.930            | 8         |
| Retention Strategies (RS)                     | 0.908            | 6         |

The present study utilizes the Bartlett’s test and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy with the intention to test and confirm the suitability of the sample data for exploratory factor analysis (EFA). The result of both the tests were satisfactory with the KMO score of 0.888 (Table 5) and score of Bartlett’s test of Sphericity as \( \chi^2 = 3887.612, df = 378, p < 0.000 \) (Table 5). The result of KMO score in the present study was above 0.80 and hence it is supported that the variables are considerably interrelated and they share common factors (Kaiser, 1974). In addition to this, the Bartlett’s test of sphericity confirms that the data can be proceeded for principal component analysis or in other words for structure detection (Field, 2009). The results of the two tests also fulfil the requirements of the factor analysis feasibility and hence, it shows that the data were suitable in all respect for factor analysis (Hair et al., 2010).
Table 5: KMO and Bartlett's Test

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .888 |
|-----------------------------------------------|------|
| Bartlett's Test of Sphericity                   | 3887.612 |
| Approx. Chi-Square                             |      |
| Df                                             | 378  |
| Sig.                                           | 0.000 |

The five factors identified are as follows: Factor 1 – Employee Benefits & Welfare Measures (EB&WM), Factor 2 – Factors Influencing Job (FIJ), Factor 3 – Retention Strategies (RS), Factor 4 – Personal Factors (PF) and Factor 5 - Company Environment & Working Conditions (CW&WC). Factor 1 consisted of eight elements and explained 35.218 percent of the variance in the data with an Eigen value of 9.861. This factor represented items that were associated with employee benefits and welfare measures as perceived by the employees represented in the sample.

Table 6: Rotated Component Matrix

| Item    | Component 1 | Component 2 | Component 3 | Component 4 | Component 5 |
|---------|-------------|-------------|-------------|-------------|-------------|
| EB_WM01 | 0.846       |             |             |             |             |
| EB_WM02 | 0.815       |             |             |             |             |
| EB_WM03 | 0.802       |             |             |             |             |
| EB_WM04 | 0.784       |             |             |             |             |
| EB_WM05 | 0.771       |             |             |             |             |
| EB_WM06 | 0.75        |             |             |             |             |
| EB_WM07 | 0.746       |             |             |             |             |
| EB_WM08 | 0.711       |             |             |             |             |
| FIJ01   | 0.841       |             |             |             |             |
| FIJ02   | 0.802       |             |             |             |             |
| FIJ03   | 0.788       |             |             |             |             |
| FIJ04   | 0.751       |             |             |             |             |
| FIJ05   | 0.729       |             |             |             |             |
| FIJ06   | 0.693       |             |             |             |             |
| RS01    | 0.923       |             |             |             |             |
| RS02    | 0.888       |             |             |             |             |
| RS03    | 0.888       |             |             |             |             |
| RS04    | 0.802       |             |             |             |             |
| RS05    | 0.785       |             |             |             |             |
Factor 2 represented six items that described the factors that influence employees’ job and this accounted for 15.296 percent of the variance in the data with an Eigen value of 4.283. Factor 3 explained 9.588 percent of the variance with an Eigen value of 2.685 and addressed retention strategies used in the organization. Factor 4 was related to personal factors of employees with variance of 5.947 percent in the data with an Eigen value of 1.665. At last, Factor 5 was related to the company environment and working conditions with variance of 5.488 percent in the data with an Eigen value of 1.537. Table 6, shows rotated component matrix for the data used in determining the constructs of the employees on employee turnover and the factors influencing it. Generally, factor loading represents how much a factor explains to that particular variable. High loading indicates that the factor strongly influences the variables. A thumb rule of factor loading score >0.7 has a high impact on the variables (Hair et al., 2010). On giving a look on Table 6, it was found that among all factor loading scores, one variable from factors influencing job construct is <0.7, which needs immediate attention for improvements by the concerned organizations.

**Prioritization of the factors leading to employee turnover using GRA**

Grey system theory emerged as a system theory in 1980s following the shortcomings and inability of existing theories to respond comprehensively to the modern day problems (Liu & Lin, 2006; Liu et al., 2012). Early in 1982, Professor Julong Deng introduced the grey system theory, which was capable of effectively solving the problems with limited information, limited sample size, uncertainty in a system etc. This system was acknowledged to be suitable in solving complex problems having complicated interrelationships among the multi-factors and variables effectively through the relational analysis (Wu, 2007; Moran et al., 2006). This result in obtaining a single grey relational grade, from very complicated multi-factor characteristics, to further get accurate view of the problem and performing comparisons (Beriha et al., 2011). It has been strongly putforward that in the prevailing situation of management role, there are many practical decision-making situations which possess inadequate information and occur with uncertainty (Deng,

|                  |     |        |
|------------------|-----|--------|
| RS06             |     | 0.704  |
| PF01             |     | 0.853  |
| PF02             |     | 0.83   |
| PF03             |     | 0.731  |
| PF04             |     | 0.728  |
| CE_WC01          |     | 0.791  |
| CE_WC02          |     | 0.789  |
| CE_WC03          |     | 0.711  |
| CE_WC04          |     | 0.709  |

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 6 iterations.
1982; Beriha et al., 2011). Therefore, to deal with these situations, grey systems theory is extensively used for data analysis across research domains. The subsequent sections will show and discuss the computation using GRA algorithm for the collected sample data. The calculations using GRA is summarised in the subsequent sections will show and discuss the computation using GRA algorithm for the collected sample data. The calculations using GRA is summarised in the subsequent sections will show and discuss the computation using GRA algorithm for the collected sample data. The calculations using GRA is summarised in the subsequent sections will show and discuss the computation using GRA algorithm for the collected sample data.

Table 7: Difference data series of employee turnover

| Δ1 | Δ2 | Δ3 | Δx | Δx | Δ9 | Δ10 | Δ11 | Δ12 | Δ13 | Δ14 | Δ15 | Δ16 | Δ17 | Δ18 | Δ19 | Δ20 | Δ21 | Δ22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | - | - | 1 | 0 | 0 | 0 | 0 | 0 | - | - | 3 | 4 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | - | - | 3 | 1 | 0 | 0 | 0 | 0 | - | - | 1 | 1 | 0 | 0 | 0 | 0 |
| 2 | 2 | 1 | - | - | 2 | 2 | 1 | 1 | 1 | - | - | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 3 | 3 | 1 | - | - | 3 | 1 | 1 | 1 | 1 | - | - | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 3 | 3 | 3 | - | - | 3 | 1 | 1 | 1 | 1 | - | - | 3 | 3 | 5 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | - | - | 1 | 0 | 0 | 0 | 0 | 0 | - | - | 1 | 1 | 0 | 0 | 0 | 0 |
| 3 | 3 | 3 | - | - | 1 | 0 | 1 | 1 | 1 | - | - | 1 | 3 | 0 | 0 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | 3 | 4 | - | - | 3 | 2 | 4 | 5 | 1 | - | - | 5 | 3 | 6 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 1 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | - | - | 0 | 1 | 0 | 0 | 0 | 0 | 0 | - | 1 | 1 | 0 | 0 | 0 | 0 |
| 1 | 1 | 3 | - | - | 2 | 1 | 0 | 1 | 0 | - | - | 4 | 3 | 1 | 2 | 0 | 1 | 5 |
| 2 | 0 | 1 | - | - | 2 | 1 | 1 | 2 | 0 | - | - | 0 | 1 | 5 | 1 | 1 | 1 | 0 |
| 2 | 2 | 3 | - | - | 1 | 1 | 3 | 3 | 1 | - | - | 2 | 3 | 0 | 2 | 1 | 1 | 1 |
| 2 | 1 | 1 | - | - | 2 | 1 | 1 | 3 | 3 | - | - | 2 | 3 | 5 | 1 | 1 | 1 | 0 |
| 0 | 1 | 0 | - | - | 1 | 2 | 1 | 1 | 1 | 1 | - | - | 4 | 3 | 0 | 0 | 1 | 0 |
| 0 | 0 | 0 | - | - | 0 | 1 | 0 | 1 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 4 | 4 | - | - | 1 | 2 | 3 | 3 | 3 | - | - | 6 | 6 | 5 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 1 | 1 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 | 1 | 3 | 3 | 0 |
| 1 | 1 | 2 | - | - | 2 | 1 | 0 | 2 | 2 | - | - | 2 | 2 | 1 | 2 | 3 | 1 | 0 |
| 2 | 3 | 2 | - | - | 2 | 1 | 0 | 1 | 1 | - | - | 2 | 2 | 2 | 1 | 1 | 1 | 4 |

Source: Author’s Compilation
Table 8: Grey Relational Grade for employee turnover

| Y1  | Y2  | Y3  | Y4  | Yx  | Yx1 | Yx2  | Yx1  | Yx2  | Yx1  | Yx2  | Yx1  | Yx2  | Yx1  | Yx2  | Yx1  | Yx2  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0   | 0   | 1   | 0   | -   | -   | 1   | 0   | 1   | 0   | -   | -   | 3   | 4   | 0   |     |     |
| 1   | 1   | 1   | 1   | -   | -   | 1   | 0   | 0   | 0   | -   | -   | 1   | 1   |   0 |     |     |
| 3   | 2   | 1   | 1   | -   | -   | 2   | 2   | 1   | 1   | -   | -   | 0   | 1   |   0 |     |     |
| 3   | 2   | 1   | 1   | -   | -   | 2   | 2   | 1   | 1   | -   | -   | 0   | 1   |   0 |     |     |
| 1   | 1   | 1   | 3   | -   | -   | 1   | 1   | 1   | 1   | -   | -   | 1   | 1   |   0 |     |     |
| 3   | 3   | 3   | 3   | -   | -   | 3   | 1   | 1   | 1   | -   | -   | 3   | 3   |   5 |     |     |
| 0   | 0   | 1   | 1   | -   | -   | 1   | 0   | 1   | 0   | -   | -   | 1   | 1   |   0 |     |     |
| 3   | 3   | 3   | 3   | -   | -   | 0   | 1   | 1   | 1   | -   | -   | 1   | 3   |   0 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3   | 1   | 3   | 3   | -   | -   | 1   | 3   | 2   | 1   | -   | -   | 2   | 3   |   1 |     |     |
| 3   | 3   | 3   | 3   | -   | -   | 1   | 1   | 1   | 1   | -   | -   | 1   | 1   |   0 |     |     |
| 4   | 1   | 1   | 1   | -   | -   | 2   | 1   | 1   | 1   | -   | -   | 0   | 1   |   0 |     |     |
| 1   | 1   | 2   | 1   | -   | -   | 1   | 3   | 1   | 1   | -   | -   | 1   | 0   |   1 |     |     |
| 5   | 0   | 0   | 1   | -   | -   | 1   | 3   | 2   | 1   | -   | -   | 0   | 0   |   0 |     |     |
| 3   | 3   | 4   | 4   | -   | -   | 4   | 3   | 4   | 4   | -   | -   | 2   | 1   |   2 |     |     |
| 3   | 3   | 3   | 3   | -   | -   | 2   | 2   | 1   | 1   | -   | -   | 3   | 4   |   1 |     |     |
| 0   | 0   | 0   | 0   | -   | -   | 1   | 0   | 0   | 0   | -   | -   | 0   | 0   |   0 |     |     |
| 3   | 1   | 0   | 1   | -   | -   | 1   | 1   | 1   | 0   | -   | -   | 0   | 1   |   0 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 0   | 0   | 1   | -   | -   | 1   | 1   | 1   | 0   | -   | -   | 1   | 1   |   0 |     |     |
| 3   | 3   | 3   | 3   | -   | -   | 3   | 1   | 1   | 1   | -   | -   | 1   | 1   |   0 |     |     |
| 3   | 3   | 3   | 3   | -   | -   | 1   | 3   | 3   | 3   | -   | -   | 1   | 1   |   5 |     |     |
| 2   | 2   | 2   | 3   | -   | -   | 1   | 3   | 1   | 1   | -   | -   | 0   | 1   |   0 |     |     |
| 4   | 4   | 6   | 0   | -   | -   | 1   | 4   | 1   | 3   | -   | -   | 3   | 3   |   6 |     |     |
| 3   | 3   | 3   | 3   | -   | -   | 3   | 1   | 1   | 1   | -   | -   | 1   | 1   |   0 |     |     |
| 3   | 4   | 4   | 4   | -   | -   | 0   | 3   | 2   | 3   | -   | -   | 3   | 3   |   5 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 0   | 4   | 0   | -   | -   | 1   | 1   | 0   | 1   | -   | -   | 0   | 0   |   0 |     |     |
| 4   | 4   | 4   | 4   | -   | -   | 2   | 3   | 3   | 3   | -   | -   | 6   | 6   |   5 |     |     |
| 0   | 0   | 0   | 1   | -   | -   | 0   | 0   | 0   | 0   | -   | -   | 1   | 1   |   0 |     |     |
Table 9: The GRA scores and ranks of employee turnover items

| Variable No. | Variable Code | Grey Score | Lower Bound | Upper Bound | Priority Ranking |
|--------------|---------------|------------|-------------|-------------|-----------------|
| 1            | FIJ03         | 0.6749     | 0.5900      | 0.7599      | 21              |
| 2            | FIJ01         | 0.6849     | 0.6064      | 0.7634      | 20              |
| 3            | FIJ06         | 0.6956     | 0.6072      | 0.7839      | 17              |
| 4            | FIJ02         | 0.6861     | 0.6026      | 0.7695      | 19              |
| 5            | FIJ05         | 0.6623     | 0.5821      | 0.7424      | 22              |
| 6            | FIJ04         | 0.6909     | 0.6151      | 0.7667      | 18              |
| 7            | CE_WC01       | 0.7549     | 0.6848      | 0.8250      | 10              |
| 8            | CE_WC03       | 0.7622     | 0.6940      | 0.8304      | 5               |
| 9            | CE_WC04       | 0.7491     | 0.6805      | 0.8176      | 11              |
| 10           | CE_WC02       | 0.7592     | 0.6891      | 0.8293      | 7               |
| 11           | EB_WM03       | 0.7568     | 0.6714      | 0.8422      | 8               |
| 12           | EB_WM05       | 0.7599     | 0.6833      | 0.8365      | 6               |
| 13           | EB_WM08       | 0.7673     | 0.6904      | 0.8443      | 4               |
| 14           | EB_WM01       | 0.7562     | 0.6804      | 0.8320      | 9               |
| 15           | EB_WM02       | 0.7463     | 0.6669      | 0.8257      | 12              |
| 16           | EB_WM06       | 0.7876     | 0.6993      | 0.8758      | 3               |
| 17           | EB_WM04       | 0.8107     | 0.7223      | 0.8990      | 1               |
| 18           | PF04          | 0.7458     | 0.6640      | 0.8276      | 13              |
| 19           | PF03          | 0.7429     | 0.6649      | 0.8209      | 14              |
| 20           | PF01          | 0.7414     | 0.6565      | 0.8263      | 16              |
| 21           | PF02          | 0.7415     | 0.6526      | 0.8305      | 15              |
| 22           | EB_WM07       | 0.7921     | 0.6896      | 0.8947      | 2               |

Source: Author’s Compilation
The Kruskal-Wallis Test \((W)\) was performed in order to verify that the sample included the responses from the same distribution. It was calculated to be 161.6768, based on the calculation process as below:

\[
W = 12 \sum_{x=1}^{m} n_x (\bar{\rho}_x - 0.5)^2
\]

Because the \(W\) (161.6768) is significantly greater than \(\chi^2 (22–1) = 32.671\), it can be surmised that the view about the scale items among the respondents are statistically dissimilar one way or another. This assessment is a rank-based nonparametric assessment that has a fair chance to be implemented in order to establish the existence of statistically significant differences between two or more groups of an independent variable. It does not call for the data to be normal, but instead uses the rank of the data values for the analysis.

From the GRA ranking analysis (Table 9), it was found that out of all the factors influencing employee turnover, Employee benefits & welfare measures item (EB&WM04) – ‘achievements not recognize’, is of the highest priority item followed by (EB&WM07)– ‘leave rules’. The third and fourth priority preference items also emerged to be from the same factor making it the most important factor for managers to immediately look into. The item (EB&WM06) stating – ‘medical and insurance facilities’ and item (EB&WM08) stating – ‘safety measures’ ranked third and fourth in the priority ranking respectively. From other factors, Company environment & Working conditions item (CE&WC03) ranked as fifth item saying – ‘working environment’. Interestingly, in the era of technological developments, the items came in top 10 among the twenty two items in total was found to be from Employee benefits & Welfare measures and Company environment & working conditions factors. It infers that the employees today are more concerned on their benefits and working environment as a deciding factor to stay or leave the organization. It becomes difficult for the HR to identify the reasons of employee leaving the organization as they tend to cite personal and family reasons while quitting. Basically, the organization in many a cases never really knew the actual reason of employee leaving the organization and hence in all such cases the remedial measures got wrongly interpreted. The results of GRA priority index shows that these two factors are the most important and significant dimension in the case of employees employee turnover. Another inference become very important that, employees do not give much importance to the factors influencing job for their decision to quit from the organization. Items such as job stress, peer pressure job status etc. have been highly concentrated areas of HR studies for employee satisfaction. But the present study did not found it to be on the priority reasons while deciding to leave the organization by the sample represented in the study.

Further, the lowest priority ranking among the items was found to be (FIJ05) – ‘nature of job’ from the Factors influencing job. The result clearly shows that the lowest three items (FIJ05, FIJ03 and FIJ01) belongs to the Factors influencing job category of statements. The item (FIJ03) stated – ‘dis-satisfaction with subordinates’ and item (FIJ01) stated – ‘job stresses.'
The present study attempted to understand and explore the various retention strategies being implemented in the organizations across industry verticals to reduce employee turnover. The items discovered from literature are summarised in the Table 9 below along with their descriptive statistics.

**Table 9: Retention Strategies – Descriptive Statistics**

|   | N  | Valid | Missing | Mean   | Std. Deviation | Variance | Minimum | Maximum |
|---|----|-------|---------|--------|----------------|----------|---------|---------|
| RS06 | 173 | 0 | 0 | 5.6069 | 1.31466 | 1.728 | 1.00 | 7.00 |
| RS04 | 173 | 0 | 0 | 5.7052 | 1.07823 | 1.163 | 2.00 | 7.00 |
| RS05 | 173 | 0 | 0 | 5.3988 | 1.24704 | 1.555 | 1.00 | 7.00 |
| RS02 | 173 | 0 | 0 | 5.7225 | 1.11721 | 1.248 | 3.00 | 7.00 |
| RS03 | 173 | 0 | 0 | 5.7052 | 1.08897 | 1.186 | 3.00 | 7.00 |
| RS01 | 173 | 0 | 0 | 5.6647 | 1.11688 | 1.247 | 3.00 | 7.00 |

Source: Author’s Compilation

On analysing the mean values of the retention strategies based on the responses given by the employees, it was found that item (RS02), (RS04) and (RS03) were good strategies in controlling employee turnover. It is inferred that employee motivation through healthy competition and rewards plays an important role in countering employee turnover along with stay interview process and scope for employee career development. Promotion, training and competitive package have not been discarded by the employees but relatively ranked less than the RS02, RS03 and RS04 strategies.

**Comparison of the RIDIT and GRA rankings for the factors influencing employee turnover**

To order to establish the RIDIT ranking observed in the first phase of this study and to make a conclusive judgment about the factors influencing employee turnover, the present study made use of Grey relation analysis technique. Through Grey analysis it was found that a very minute difference is visible in the set of ranking of employee turnover factors as presented in the table below (see Table 10). Items labelled CE_WC02, EB_WM05, CE_WC01, EB_WM03, PF01, PF02, FIJ01 and FIJ02 were ranked sixth (6th), seventh (7th), eighth (8th), tenth (10th), fifteenth (15th), sixteenth (16th), nineteenth (19th), twentieth (20th) respectively in RIDIT score and ranking but stood seventh (7th), sixth (6th), tenth (10th), eighth (8th), sixteenth (16th), fifteenth (15th), twentieth (20th) and nineteenth (19th) respectively in GRA score and ranking. All other factors were positioned in the same ranks by both the techniques, which confirm the RIDIT ranking of the factors influencing employee turnover. A positive correlation (0.992) is confirmed between the outcomes of both the techniques as fourteen out of the total twenty twofactors are of same rankings (see Table 10). Further, there is no significant difference found with rest of the ranks.
Table 10: Summary of sorted comparative scores and rankings for employee turnover factors

| RIDIT Score | RIDIT Ranking | Variable  | GRA Ranking | GRA Score |
|-------------|---------------|-----------|-------------|-----------|
| 0.6008      | 1             | EB_WM04   | 1           | 0.8107    |
| 0.5841      | 2             | EB_WM07   | 2           | 0.7921    |
| 0.5687      | 3             | EB_WM06   | 3           | 0.7876    |
| 0.5441      | 4             | EB_WM08   | 4           | 0.7673    |
| 0.5374      | 5             | CE_WC03   | 5           | 0.7622    |
| 0.5332      | 6             | CE_WC02   | 7           | 0.7592    |
| 0.5314      | 7             | EB_WM05   | 6           | 0.7599    |
| 0.5277      | 8             | CE_WC01   | 10          | 0.7549    |
| 0.5277      | 9             | EB_WM01   | 9           | 0.7562    |
| 0.5240      | 10            | EB_WM03   | 8           | 0.7568    |
| 0.5188      | 11            | CE_WC04   | 11          | 0.7491    |
| 0.5105      | 12            | EB_WM02   | 12          | 0.7463    |
| 0.5091      | 13            | PF04      | 13          | 0.7458    |
| 0.5053      | 14            | PF03      | 14          | 0.7429    |
| 0.5018      | 15            | PF01      | 16          | 0.7414    |
| 0.5012      | 16            | PF02      | 15          | 0.7415    |
| 0.4318      | 17            | FIJ06     | 17          | 0.6956    |
| 0.4259      | 18            | FIJ04     | 18          | 0.6909    |
| 0.4179      | 19            | FIJ01     | 20          | 0.6849    |
| 0.4171      | 20            | FIJ02     | 19          | 0.6861    |
| 0.4015      | 21            | FIJ03     | 21          | 0.6749    |
| 0.3801      | 22            | FIJ05     | 22          | 0.6623    |

Source: Author’s Compilation

V. Discussion

The present study fundamentally revolves around the issues of employee turnover, employee turnover rate and its counter retention measures in the industries across different verticals. Based on the fact that, employees are crucial stakeholders in any organization, their knowledge, skills and staying with the organization becomes very important.

The study explored that in Indian industries there exists various factors that influence the employee turnover directly or indirectly that can be interpreted as acute problem area for the overall performance of the organizations. Loyalty of the employees, like of the customers, in this commercialized and competitive world is what every
enterprise is thriving for. Therefore, it is imperative to identify and classify those factors in order to highlight the most important one requiring instant attention. The empirical results of the present study presents an evidence that employee turnover and its rate can reliably be measured with twenty two items representing the problem areas leading to employee leaving an organization. In addition to this, the study also confirms few prevailing retention strategies that have significant importance while attempting to reduce employee turnover.

The study contributes in proposing an appropriate method, the GRA methodology, to assess and prioritize the employee turnover factors to manage superior performance in the industries across different verticals. Prioritization helps in better decision making by HR managers by identifying the most influential factor toward increasing employee turnover rate, among all the explored factors that can be attended on priority to improve the overall retention and performance of the organization. Hence, an independent GRA analysis was done on the employee turnover factors. It was very interesting to note that the items with the two highest values (implying that employees place the most importance on these items) were the two items (EB&WM04 and EB&WM07) in the list of factors affecting employee turnover. On the same note the items (FIJ05 and FIJ03) with least importance by the employees. There is also an approximate similarity between other rankings of items and their cohesiveness and belongingness toward one factor. This necessarily means the groupings of the variables being done by factor analysis under each construct in a way justifies their rankings being done by GRA analysis.

The present study would like to open the gates for academic research to focus on more factors influencing employee turnover in different industry settings, so that the current HR employee turnover and retention literature can be substantiated with their relevant outcome. Effective and efficient retention strategies that can actually reduce employee turnover is the most sought demand in this cut-throat competition by the industries across the globe. The present study tried to substantiate the literature with twenty two factors leading to influence employee turnover and six retention strategies that can be implemented as a counter measure against employee turnover to improve the rate of employee staying with the organization.

VI. Limitations of the Study and Scope for Further Research

Even though the present study makes significant contributions to the literature of employee turnover and retention strategies, it has few limitations. First, the data for this study was collected from the employees of the different industry sectors from the north-east India. Therefore, the results and findings cannot be generalised in as it is basis. In future, the researchers should attempt to extend the geographical area including more locations in India, and increasing the size of samples to get more insight toward generalizing the findings of the present study. Second, the study proposed twenty two primary factors influencing employee turnover, and six retention strategies which may not be pertinent and generic for many other sectors of different industry verticals. Future studies may consider adding or modifying the primary factors of to measure the employees’ employee turnover in the organizations. The future studies should consider different prioritizing techniques to rank the items

Copyright reserved © J. Mech. Cont.& Math. Sci.
Pravesh Soti et al

265
across different industry verticals. Future research should be considered replicating the present study in different cultural and demographical contexts of industries which will serve the purpose necessary for generalising the findings of this study. The study also suggests for more studies in the similar fashion to explore more factors and develop a comprehensive employee turnover model for formulating effective retention strategies.

VII. Managerial Implications

There are some managerial implications for the HR managers/decision makers that can be drawn from the present study. First, the study suggests a roadmap to determine which factors guide towards higher employee turnover. They should concentrate on the items for better improvement plans facilitating retention in future. Second, the study put forward a direction for the HR managers/decision makers to formulate an effective retention strategy to gain competitive advantage over others. Third implication of the study is the suggestion to have regular surveys in order to understand and monitor the employees’ intentions on their future staying or leaving decisions. Active meetings/programs will enhance the relationship between the employees and the organization will strengthen the bonding between the two. This regular exercise will augment the chances of employee retention in future.

VIII. Acknowledgement

The authors express their sincere gratitude to The Management, Krupanidhi Group of Institutions for supporting the work through Krupanidhi Research Incubator Centre (K-RIC) program and Accendere: CL Educate Ltd.

References

I. Abbasi, S. and Hollman, K. (2000), “Turnover: the real bottomline”, Public Personnel Management, 29 (3), 333-342.
II. Adhikari, A. (2009). Factors affecting employee attrition: a multiple regression approach. IUP Journal of Management Research, 8(5), 38.
III. Arthur, J. B. (1994). Effects of human resource systems on manufacturing performance and turnover. Academy of Management Journal, 37, 670-687
IV. Beriha, G. S., Patnaik, B., Mahapatra, S. S., & Sreekumar. (2011). Occupational health and safety management using grey relational analysis: an Indian perspective. International Journal of Indian Culture and Business Management, 4(3), 298-324.
V. Deng, J. (1982). System and Control Letter. Control Problems of Grey System, 1(5), 288-94.
VI. Dobhal & Nigam, 2018. Employee Attrition and Employee Satisfaction: A Study of HR, Performance Appraisal & Training Practices in Defence PSUs in India, *IOSR Journal of Business and Management (IOSR-JBM)*, 20(2), 01-27.

VII. Field, A. (2009). Discovering statistics using SPSS. *Sage publications*.

VIII. Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. (2010). Multivariate data analysis. *Pearson*.

IX. Herman, R. E. (1999), “Hold on to the people you need”, *HR Focus Special Report on Recruitment and Retention*, June, Supplement 11.

X. Ho, J. S. Y., Downe, A. G., & Loke, S. P. (2010). Employee attrition in the Malaysian service industry: Push and pull factors. *IUP Journal of Organizational Behavior*, 9.

XI. Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.

XII. Kim, H. and Stoner, M. (2008), “Burnout and turnover intention among social workers: effects of role stress, job autonomy and social support”, *Administration in Social Work*, 32(3), 5-25.

XIII. Latha, K. L. (2013). A study on employee attrition and retention in manufacturing industries. *BVIMSR’s Journal of Management Research (BJMR)*, 5(1), 1-23.

XIV. Liu, S., & Lin, Y. (2006). Grey information: theory and practical applications. *Springer Science & Business Media*.

XV. Liu, S., Forrest, J., & Yang, Y. (2012). A brief introduction to grey systems theory. *Grey Systems: Theory and Application*, 2(2), 89-104.

XVI. MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological methods*, 4(1), 84.

XVII. Magner, N., Welker, R. and Johnson, G. (1996), “The interactive effects of participation and outcome favorability in performance appraisal on turnover intentions and evaluations of supervisors”, *Journal of Occupational & Organizational Psychology*, 69, 135-143.

XVIII. Moran, J., Granada, E., Miguez, J. L., & Porteiro, J. (2006). Use of grey relational analysis to assess and optimize small biomass boilers. *Fuel Processing Technology*, 87(2), 123-127.

XIX. Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: what can be done? *Assessment & evaluation in higher education*, 33(3), 301-314.

XX. Nunnally, J. C., & Bernstein, I. H. (1994). Psychological theory. *New York, NY: MacGraw-Hill*.

XXI. Sahney, S. (2011). Delighting customers of management education in India: a student perspective, part I. *The TQM Journal*, 23(6), 644-658.

XXII. Sahu, A. and Gupta, M. (1999), “An Empirical Analysis of Employee Turnover in a Software Organization”, *Indian Journal of Industrial Relations*, 35(1), 55-73.

XXIII. Saini, P., & Subramanian, V. (2014). Employee attrition in selected industries: ITES, Banking, Insurance and Telecommunication in Delhi & NCR.
XXIV. Saleem M and Affandi H (2014), HR Practices and Employees Retention, an empirical analysis of Pharmaceutical sector of Pakistan, *IOSR Journal of Business and Management*, 16(6).

XXV. Sekaran, U., &Bougie, R. (2016). Research methods for business: A skill building approach. *John Wiley & Sons.*

XXVI. Udechukwu, I.I. and Mujtaba, B.G. (2007), “Determining the probability that an employee will stay or leave the organization: a mathematical and theoretical model for organizations”, *Human Resource Development Review*, 6(2), 164-184.

XXVII. Vinit Singh Chauhan, Druvesh Patel (2013). „Employee Turnover: A Factorial Study of IT Industry”, *Journal of Strategic Human Resource Management*, 2(1):289-297.

XXVIII. Walker, J.W. (2001), “Perspectives”, Human Resource Planning, Vol. 24, pp. 6-10.

XXIX. Wu, C. H. (2007). On the application of grey relational analysis and RIDIT analysis to Likert scale surveys. In *International Mathematical Forum*, 2(14), 675-687.