

Evaluation of Factors Influencing Employee Turnover in Manufacturing SMEs by Employed IF-TOPSIS Approach- An Indian Scenario

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Abstract— Small & medium enterprises (SMEs) are spine of Indian economy. Due to employment turnover, manufacturing SMEs are facing tremendous difficulties as because of firms spend lot of wealth and assets to train their employees. Several studies have been conducted on causes of turnover, sources of turnover and employee retention in construction industries, healthcare industries, retail industry and hospitality industry. It is found in literature that quantum of research work that focus on employee turnover in manufacturing SMEs is not proportionate. Hence, this study strives to bridge the gap by examine the influencing factors of employee turnover in manufacturing sectors of SMEs through employed IF-TOPSIS approach. Critical factors have been identified from the literature and experts were asked to rank these critical factors from most influencing to least influencing factors that motivating employee turnover in manufacturing firms. The finding of the study suggests that limitation in remuneration flexibility, work dissatisfaction and job security are one of those factors which highly influence the motive of employee towards turnover. This study imparts key insights to the policy makers to identify and eradicate the critical factors on priority basis.

Keywords— Human resource management, Employment turnover, Employee retention, Critical factor, India, Manufacturing, MCDM, IF-TOPSIS.

1. INTRODUCTION

Small and medium enterprises are making substantial contribution to country's economy. Worldwide, SMEs are playing fundamental role in driving the regional development as well as economic growth (Piyush Jaiswal & Kumar, 2018). In India, SMEs occupy a leading position in the growth of economy so it's becoming the backbone of Indian economy. The future economic growth of India is highly depending upon SMEs (KPMG & CII, 2015). The contribution of SMEs is about 38% of GDP and approximately 40% share of exports (Mahajan & Sidhu, 2020). About 40% employment is provided by SMEs in India and contributing 45% to manufacturing sector output. It is seen that Indian manufacturing SMEs are facing enormous problems due to employee turnover in recent years (Kar, Sharma, & Borah, 2011). There is a huge investment of organization on their human resources in terms of induction, training, development and retention. Therefore, it becomes necessary for the human resources department to reduce the turnover of employees in their organization (Ongori, 2007).

Employee turnover refers the movement of employees among organization, jobs, occupations, employment and unemployment (Kenneth & Abbassi, 2000). The two dimensions of employment turnover are voluntary turnover and involuntary turnover however; voluntary turnover can further be classified into four categories i.e. Functional, Dysfunctional, Avoidable and Unavoidable turnover (Hom et al. 2019). Employees are considered as a prime resource for any organization and due to rapid employee turnover, performance of the organization i.e. operational, financial and business performance of SMEs are directly affected and it has negative impacts on the brand image of the organization. So, it is highly requisite to identify and eradicate the critical factors that are influencing the employee turnover in Indian manufacturing SMEs. Hence, an apposite approach is needed that will facilitate the manufacturing firms to identify critical factors that influence employee turnover in their organizations. This research study utilized the integrated intuitionistic fuzzy and technique for order of preference by similarity to ideal solution (IF-TOPSIS) tactic to rank the identified factors. The factors are identified from the past literature and by validating the content with experts, 21 influencing factors have chosen for this study. This approach offers a complete package to rationalize the ambiguity and hesitation of expert's estimation in multi criteria decision making (MCDM). The distinctiveness of this research study is that it explores the factors which are highly influential towards employee turnover in Indian manufacturing SMEs.

2. LITERATURE REVIEW

An overview of research on employee turnover is presented in this section. A range of studies have been carried out to explore the reasons of employee turnover, relationship of human resource management (HRM) practices and employee turnover and reduction in employee turnover with various retention strategies. Huselid (1995) evaluated relationship between work practices for high performance and firm's financial performance. They also found that high investment in HRM practices reduce employee turnover and increase productivity. Guimaraes (1997) determined employee turnover intentions before and after total quality management (TQM). Lack of organizational support and commitment, ambiguity of performance assessment method, lack of consensus on job functions have found as factors of turnover. The findings of this empirical research shows that after adoption of TQM practices, employees reported higher job involvement, job satisfaction, intention to stay with the organization and committed towards the company.

Kenneth & Abbassi (2000) discussed the consequences of turnover in Public and Private sectors in their case study. Toxic workplace environment, lack of recognition and lack of competitive compensation system were found as the reasons of turnover. Johnson, Griffeth, & Griffin, (2000) developed the criteria of turnover range of capabilities i.e. role ambiguity, role conflict, eagerness, analysis of job alternatives and intention to abandon are the antecedents associated with turnover frequency that discriminates among different groups of high and low performing stayers and quitters. Hom & Kinicki (2001) employed structural

equation modeling to describe how job dissatisfaction stride into turnover. The findings of the study shows that inter-role conflict and job avoidance influence turnover indirectly however, unemployment rates directly affect the turnover. Firth, Mellor, Moore, & Loquet (2004) developed a model that shows the job dissatisfaction, lack of commitment for organization and job stress largely influence employee intention to attrition. However, managers can trigger these factors for reducing intention to quit. Winterton (2004) developed a conceptual model related to labour turnover and retention. They divided the model into four stages which are encouraging job satisfaction, constructing organizational commitment, changing employee perception of alternative employment opportunity and lessening ease of movement which provides potential solutions to reduce the turnover rate and increase retention rate of skilled labour.

Smith, Daskalaki, Elger, & Brown (2004) examined the problem of labour turnover and management strategies for retention in new manufacturing plants by conducting case study on Japanese TNCs (Transnational Companies). This study highlights the union voice, high pay and developed accommodation strategies as main factors for employee retention. C. H. Lee, Hsu, & Lien (2006) conducted a study on Taiwanese manufacturing industry to identify the impact of benefit plans on employee turnover in which four types of benefit plans were examined. These four plans are retirement fund, pension fund, severance pay and fringe benefits. The results of the studies show that retirement fund, pension fund and fringe benefits are negative with respect to employee turnover rate, however, severance pay is positive. Ongori (2007) examined the sources of employee turnover and effects of employee turnover at organization. They also highlighted some strategies to minimize turnover in organization in his review paper. Job related stress, lack of commitment in the organization, job dissatisfaction, sense of ineffectuality, locus of control and personal control, financial reasons, lack of job role clarity, ambiguity of performance evaluation methods and extensive job pressures were discussed as job related factors for turnover. Organizational inefficiency, stability of organization, lack of information sharing, minimal empowerment chances, poor personal policies, insufficient recruitment policies, modest supervisory practices, unsatisfactory grievance procedure and lack of motivation have found as organizational factors for high turnover (Ongori, 2007).

Post, DiTomaso, Farris, & Cordero (2009) used cross sectional research design to explore the effect of work-family clashes and turnover motives among scientists and engineers working in R&D sector. The results of the study suggested that organization can reduce the turnover intentions by providing help to their workforces to manage family interference with work on job dissatisfaction and job related stress. Reyhach & Weisberg (2009) developed structure equation model to evaluate the impacts of specific and implicit knowledge sharing on employee's reward, performance and plan to relinquish the service. Findings of the study suggested that increase in knowledge sharing have positive impact at individual level. Heilmann (2010) conducted a qualitative case study to give an analysis about employer brand image in a well-known health care organization. Result shows that lack of recruitment strategies, inadequate advertisement of vacancies at educational institutions, minimal uses of data system and internet for recruitment and lack of job rotation policy are the infer of labour shortage in health care organization.

Rose & Gordon (2010) investigated the retention of engineering and technical professional in Australian Public service agency by using data of 670 professional and compare turnover intention, attraction and retention of employees in the organization on the ground of their occupation and age. The results suggested that age and job pattern affect the attraction, intention to stay or leave the job. Better career opportunity found as one of the prime reason to leave the organization. Eady & Nicholls (2011) identified the issues of workforce turnover in Asian firms and evaluate cost of turnover by employed simple costing model. The outcomes suggested that workforce turnover indirectly affects the lower output and increases in the scrap as of new workforces are inexperience.

K. Ito, M. Brotheridge, & McFarland (2013) examined the preference of employee about employer's branding attributes at the time of entry into and exit from the organization. Results showed that there is a difference of level of preference for employer branding attributes from entry to exit. Park & Shaw (2013) conducted meta-analysis of connection between employee turnover rate and performance of the organization. Gamage (2014) examined the relationship between HRM practices and voluntary turnover in manufacturing SMEs in Japan. The outcomes of the study showed a negative but weak relationship between them. Job security, toxic workplace environment and limitation in remuneration flexibility found as main causes of voluntary turnover. Alqahtani & Gadhoom (2016) employed quantitative research method to evaluate the causes and effects of turnover in manufacturing organization of Eastern Saudi Arabia. Employer brand image, lack of career opportunity, lack of competitive compensation system and limitation in remuneration flexibility are main causes of turnover found in his study.

Swid (2016) employed quantitative research design to explore the relationships between work environment and job satisfaction in the gulf banking sectors. Hom, Lee, Shaw, & Hausknecht (2017) conducted a literature review to examine the turnover reduction and control through existing literature, then explained the development of theory till 20th century and also carried out the psychological and attitudinal study of employee related to intention to stay in 21st century. Lathabhavan (2019) employed structural equation modeling to explore the relationships between glass ceiling beliefs and turnover intention through work engagement. Sandhya & Sulphrey (2019) explored the challenges and issues in Indian information technology sector. Varshney (2020) conducted a study in manufacturing sector of India to identify the relationship between perception of employee about their firms as growing organization and job satisfaction. Finding of the study represents that perception of employee in dynamic learning organization has high level of job satisfaction and illustrates high job involvement.

By comprehensive examination of existing literature, it seems that very limited research work has been done to examine the factors that influencing employee turnover in manufacturing SMEs at Indian scenario. Therefore, in this study an attempt is made to fill the literature gap by identification and evaluation of critical factors which influencing employee turnover in manufacturing SMEs at developing nations. From the past literature and consideration of expert's opinion, 21 common factors are selected for the further study which is shown in Table 1.

Table1: The common factors and their advocating authors

S. No.	Notations	The common Factors	References
1	F1	Employer brand Image	(Al-qahtani & Gadhoum, 2016), (K. Ito et al., 2013), (Heilmann, 2010)
2	F2	Job security	(Gamage, 2014), (K. Ito et al., 2013)
3	F3	Lack of career development opportunity	(Al-qahtani & Gadhoum, 2016), (K. Ito et al., 2013), (Eady & Nicholls, 2011), (Guimaraes, 1997)
4	F4	Interdepartmental bureaucracy in promotion and pay	(K. Ito et al., 2013)
5	F5	Experience of job-related stress	(Post et al., 2009), (Firth et al., 2004), (Guimaraes, 1997)
6	F6	Ambiguity of performance assessment method	(Guimaraes, 1997)
7	F7	Lack of consensus on job functions or duties	(Guimaraes, 1997)
8	F8	Lack of Job role clarity	(Ongori, 2007)
9	F9	Stability of organization	(Ongori, 2007)
10	F10	Poor personnel policies	(Ongori, 2007)
11	F11	Lack of motivation	(Ongori, 2007)
12	F12	Lack of recognition	(Abbasi & Hollman, 2000)
13	F13	lack of competitive compensation system	(Al-qahtani & Gadhoum, 2016), (Glagola & Nichols, 2001), (Abbasi & Hollman, 2000)
14	F14	Toxic workplace environment	(Barpanda & Unnithan, 2019), (Gamage, 2014), (Abbasi & Hollman, 2000)
15	F15	Readiness for a new experience	(Eady & Nicholls, 2011)
16	F16	Work family conflict	(Post et al., 2009)
17	F17	Lack of support from supervisor and colleague at work	(Al-qahtani & Gadhoum, 2016), (Post et al., 2009), (Guimaraes, 1997)
18	F18	Limitation in remuneration flexibility	(Al-qahtani & Gadhoum, 2016), (Gamage, 2014), (K. Ito et al., 2013), (Eady & Nicholls, 2011), (Glagola & Nichols, 2001)
19	F19	Lack of benefit plans for employee	(Eady & Nicholls, 2011), (C.-H. Lee, Hsu, & Lien, 2006)
20	F20	Work dissatisfaction	(Varshney, 2020), (Post et al., 2009), (Firth et al., 2004)
21	F21	Lack of organizational support and commitment	(Guimaraes, 1997)

3. THE PROPOSED FRAMEWORK

The framework of this research work is depicted in Fig. 1, to rank the factors that influence the employee turnover in manufacturing firms at Indian scenario by utilizing integrated IF-TOPSIS approach. The framework in this study is divided into three phases. The phase 1, embodies the factors identification with the help of literature and expert's opinions. In phase 2, questionnaire developed and data collected from the five decision makers on five different perspectives i.e., small industry perspective, medium industry perspective, academic perspective, employee perspective, government perspective and simultaneously IF-TOPSIS methodology is employed to evaluate the critical factors. Phase 3 includes the results discussion and validation of results through response of expert's and existing literature.

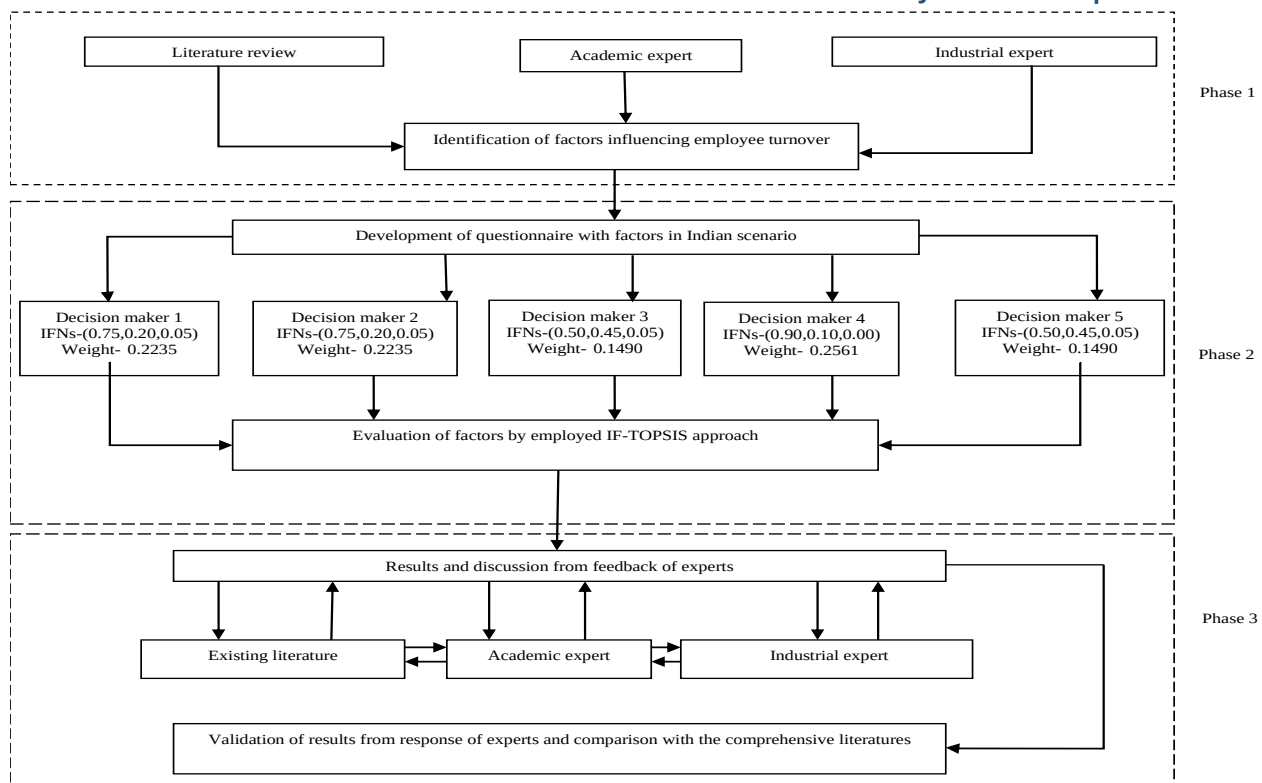


Figure 1: The framework of the study

4. Application of Framework

This section constitutes the application of framework which demonstrates all three phases to evaluate the critical factors that influencing employee turnover in Indian manufacturing SMEs.

4.1. Phase 1: Identification of Factors

To identify the factors, systematic literature review methodology is followed. The span of search was 2000 to 2020 in the electronic database such as “EBSCO”, “Web of science”, “Scopus”, “Google scholar”, etc., and in the search strings the terms “Employee turnover”, “Manufacturing”, “Voluntary turnover”, “Labor turnover”, “Employee retention”, “Critical success factors”, “SMEs”, “India” has been investigated.

4.2. Phase 2: Application of IF-TOPSIS Approach

TOPSIS methodology was proposed by Hwang in the year 1981, which is a fairly easy and useful approach to elucidate multi criteria decision making (MCDM) problem(Hwang & Yoon, 1981). It's basic idea is that the optimal choice or factors should have the shortest distance from positive ideal solution (PIS) and have a longest distance from negative ideal solution (NIS)(P. Jaiswal, Kumar, & Gupta, 2018). This approach used the distance of factors from PIS and NIS parallelly to identify the order of preference as per the relative closeness coefficient. Owing to intricacy in decision making practices, fuzzy sets are initially employed by the experts to trim down the vagueness and ambiguity (Piyush Jaiswal & Kumar, 2018). Atanassov in year 1986 developed an extended version fuzzy set i.e. intuitionistic fuzzy set (IFS)that handles vagueness and hesitation by incredible way in ambivalent environments (Atanassov, 1986).

Let assume K is a finite set. Then IFS P in K can be write:

$$P = \{(k, \mu_p(k), \nu_p(k), \pi_p(k)) | k \in K\}$$

Where, $\mu_p(k): k \rightarrow [0.0, 1.0]$ and $\nu_p(k): k \rightarrow [0.0, 1.0]$ are membership function and non-memberships function simultaneously, and values of both functions are lies in between 0 and 1.

$$0 \leq \mu_p(k) + \nu_p(k) \leq 1, k \in K \quad (1)$$

The parameter $\pi_p(k)$ is acknowledged as intuitionistic fuzzy index that represents the hesitation level of $k \in K$ to A and value of function lies in between 0 to 1 i.e., $0 \leq \pi_p(k) \leq 1, k \in K$ which are determined as follows:

$$\pi_p(k) = 1 - \mu_p(k) - \nu_p(k) \quad (2)$$

If P and Q are the two IF set of K , then the multiplication operation is calculated as:

$$P \otimes Q = \{\mu_p(k) \cdot \mu_q(k), \nu_p(k) + \nu_q(k) - \nu_p(k) \cdot \nu_q(k) | k \in K\} \quad (3)$$

The IF-TOPSIS approach involves the following procedure (Piyush Jaiswal & Kumar, 2018):

Step1: Assign the importance to factors, perspectives and decision makers

The linguistic terms and intuitionistic fuzzy (IF) number to evaluate the factors, perspectives and experts are provided in Table 2 and Table 3.

Table 2: The Linguistic terms to evaluate the factors and perspectives

Normal values	Linguistic terms	IFNs
1	Insignificant(I)	(0.100,0.900,0.000)
2	Less significant (LS)	(0.350,0.600,0.050)
3	Significant(S)	(0.500,0.450,0.050)
4	Very significant (VS)	(0.750,0.200,0.050)
5	Most significant (MS)	(0.900,0.100,0.000)

Table 3: The linguistic terms to evaluate experts' weight

S. No.	Linguistic terms	IFNs
1	Extremely low (EL)	(0.100,0.900,0.000)
2	Low (L)	(0.350,0.600,0.050)
3	Medium (M)	(0.500,0.450,0.050)
4	High (H)	(0.750,0.200,0.050)
5	Extremely high (EH)	(0.900,0.100,0.000)

Step2: Obtain the weight of experts or decision makers

Assume that $L_m = [\mu_m, \nu_m, \pi_m]$ be an IF set to rate m^{th} experts. Then the expert's weight is calculated by equation (4) and is shown in Table 4.

$$\lambda_m = \frac{\left(\mu_m + \pi_m \left(\frac{\mu_m}{\mu_m + \nu_m} \right) \right)}{\sum_{m=1}^s \left(\mu_m + \pi_m \left(\frac{\mu_m}{\mu_m + \nu_m} \right) \right)} \quad (4)$$

Where, $m = 1, 2, 3, 4, 5, \dots, s$

Table 4: The importance of decision makers and their weights

	DM1	DM2	DM3	DM4	DM5
Linguistic terms	High	High	Medium	Extremely high	Medium
IFNs	(0.75,0.20, 0.05)	(0.75,0.20,0.05)	(0.50,0.45,0.05)	(0.90,0.10,0.00)	(0.50,0.45,0.05)
Weight	0.2235	0.2235	0.1490	0.2561	0.1490

Step3: Construct intuitionistic fuzzy decision matrix (B)

The linguistic assessment of factors through the decision makers (DM'S) are presented in Table 5.

Table 5: The linguistic evaluation of factors

S. No.	Factors	Perspective 1	Perspective 2	Perspective 3	Perspective 4	Perspective 5
1	F1	(MS)	(VS)	(S)	(VS)	(S)
2	F2	(S)	(VS)	(MS)	(VS)	(VS)
3	F3	(MS)	(VS)	(VS)	(S)	(S)
4	F4	(VS)	(VS)	(S)	(S)	(S)
5	F5	(VS)	(S)	(S)	(VS)	(VS)
6	F6	(VS)	(S)	(VS)	(S)	(VS)
7	F7	(S)	(LS)	(S)	(S)	(S)
8	F8	(S)	(S)	(LS)	(S)	(S)
9	F9	(S)	(VS)	(S)	(VS)	(S)
10	F10	(S)	(S)	(VS)	(S)	(S)
11	F11	(VS)	(S)	(S)	(S)	(VS)
12	F12	(S)	(S)	(VS)	(S)	(VS)
13	F13	(MS)	(S)	(S)	(VS)	(S)
14	F14	(VS)	(S)	(VS)	(VS)	(MS)
15	F15	(S)	(MS)	(VS)	(S)	(S)
16	F16	(S)	(S)	(S)	(VS)	(S)
17	F17	(S)	(S)	(LS)	(S)	(VS)
18	F18	(MS)	(VS)	(VS)	(MS)	(S)
19	F19	(S)	(VS)	(S)	(VS)	(VS)
20	F20	(VS)	(VS)	(VS)	(MS)	(S)
21	F21	(S)	(LS)	(S)	(VS)	(S)

Step4: Obtain collective weight of the perspectives

Suppose that $\phi_j^m = [\mu_j^m, \nu_j^m, \pi_j^m]$ be an IF set assign to perspectives p_j by the m^{th} expert. Afterward the collective weight of the factors is determined through utilizing intuitionistic fuzzy weighted averaging (IFWA) operator through equation (5) and is shown in Table 6.

$$\phi_j = IFWA_{\lambda}(\phi_j^{(1)}, \phi_j^{(2)}, \dots, \phi_j^{(s)})$$

$$\phi_j = \lambda_1 \phi_j^{(1)} \oplus \lambda_2 \phi_j^{(2)} \oplus \lambda_3 \phi_j^{(3)} \oplus \dots \oplus \lambda_s \phi_j^{(s)}$$

$$\phi_j = \left[1 - \prod_{m=1}^s (1 - \mu_j^{(m)})^{\lambda_m}, \prod_{m=1}^s (\nu_j^{(m)})^{\lambda_m}, \prod_{m=1}^s (1 - \mu_j^{(m)})^{\lambda_m} - \prod_{m=1}^s (\nu_j^{(m)})^{\lambda_m} \right] \quad (5)$$

Where, $j = 1, 2, 3, 4, \dots, n$

Table 6: The importance weight of perspective

Notation	Perspective	DM1	DM2	DM3	DM4	DM5	Collective weight
P1	Small Industry perspective	(MS)	(VS)	(VS)	(S)	(S)	0.7306,0.2270,0.0423
P2	Medium Industry perspective	(S)	(MS)	(VS)	(S)	(S)	0.6855,0.2772,0.0372
P3	Academic perspective	(S)	(S)	(MS)	(VS)	(VS)	0.7091,0.2587,0.0321
P4	Employee perspective	(VS)	(MS)	(MS)	(MS)	(VS)	0.8596,0.1257,0.0146
P5	Government perspective	(S)	(S)	(VS)	(S)	(MS)	0.6454,0.3184,0.0361

Step5: Develop collective weight intuitionistic fuzzy decision matrix

The collective weight intuitionistic fuzzy decision matrix (B) is obtained by the equation (6) and (7) which is shown in Table 7.

$$\pi_{p_i, \phi}(k) = 1 - \nu_{p_i}(k) - \nu_{\phi}(k) - \mu_{p_i}(k) \cdot \mu_{\phi}(k) + \nu_{p_i}(k) \cdot \nu_{\phi}(k) \quad (6)$$

$$B \otimes \phi = \left\{ \langle K, \mu_{p_i}(k) \cdot \mu_{\phi}(k), \nu_{p_i}(k) + \nu_{\phi}(k) - \nu_{p_i}(k) \cdot \nu_{\phi}(k) \rangle \mid k \in K \right\} \quad (7)$$

Table 7: The collective weight intuitionistic fuzzy decision matrix

S. No.	Factors	Perspective 1	Perspective 2	Perspective 3	Perspective 4	Perspective 5
1	F1	(0.6575,0.3043,0.0682)	(0.5141,0.4217,0.0642)	(0.3545,0.5922,0.0533)	(0.6447,0.3005,0.0548)	(0.3227,0.6251,0.0522)
2	F2	(0.3653,0.5748,0.0599)	(0.5141,0.4217,0.0642)	(0.6381,0.3328,0.0291)	(0.6447,0.3005,0.0548)	(0.4840,0.4547,0.0613)
3	F3	(0.6575,0.3043,0.0682)	(0.5141,0.4217,0.0642)	(0.5318,0.4069,0.0613)	(0.4298,0.5191,0.0511)	(0.3227,0.6251,0.0522)
4	F4	(0.5479,0.3816,0.0705)	(0.5141,0.4217,0.0642)	(0.3545,0.5922,0.0533)	(0.4298,0.5191,0.0511)	(0.3227,0.6251,0.0522)
5	F5	(0.5479,0.3816,0.0705)	(0.3277,0.6024,0.0699)	(0.3545,0.5922,0.0533)	(0.6447,0.3005,0.0548)	(0.4840,0.4547,0.0613)
6	F6	(0.5479,0.3816,0.0705)	(0.3277,0.6024,0.0699)	(0.5318,0.4069,0.0613)	(0.4298,0.5191,0.0511)	(0.4840,0.4547,0.0613)
7	F7	(0.3653,0.5748,0.0599)	(0.2399,0.7108,0.0493)	(0.3545,0.5922,0.0533)	(0.4298,0.5191,0.0511)	(0.3227,0.6251,0.0522)
8	F8	(0.3653,0.5748,0.0599)	(0.3277,0.6024,0.0699)	(0.2481,0.7034,0.0485)	(0.4298,0.5191,0.0511)	(0.3227,0.6251,0.0522)
9	F9	(0.3653,0.5748,0.0599)	(0.5141,0.4217,0.0642)	(0.3545,0.5922,0.0533)	(0.6447,0.3005,0.0548)	(0.3227,0.6251,0.0522)
10	F10	(0.3653,0.5748,0.0599)	(0.3277,0.6024,0.0699)	(0.5318,0.4069,0.0613)	(0.4298,0.5191,0.0511)	(0.3227,0.6251,0.0522)
11	F11	(0.5479,0.3816,0.0705)	(0.3277,0.6024,0.0699)	(0.3545,0.5922,0.0533)	(0.4298,0.5191,0.0511)	(0.4840,0.4547,0.0613)
12	F12	(0.3653,0.5748,0.0599)	(0.3277,0.6024,0.0699)	(0.5318,0.4069,0.0613)	(0.4298,0.5191,0.0511)	(0.4840,0.4547,0.0613)
13	F13	(0.6575,0.3043,0.0682)	(0.3277,0.6024,0.0699)	(0.3545,0.5922,0.0533)	(0.6447,0.3005,0.0548)	(0.3227,0.6251,0.0522)
14	F14	(0.5479,0.3816,0.0705)	(0.3277,0.6024,0.0699)	(0.5318,0.4069,0.0613)	(0.6447,0.3005,0.0548)	(0.5808,0.3865,0.0327)
15	F15	(0.3653,0.5748,0.0599)	(0.6169,0.2994,0.0837)	(0.5318,0.4069,0.0613)	(0.4298,0.5191,0.0511)	(0.3227,0.6251,0.0522)
16	F16	(0.3653,0.5748,0.0599)	(0.3277,0.6024,0.0699)	(0.3545,0.5922,0.0533)	(0.6447,0.3005,0.0548)	(0.3227,0.6251,0.0522)
17	F17	(0.3653,0.5748,0.0599)	(0.3277,0.6024,0.0699)	(0.2481,0.7034,0.0485)	(0.4298,0.5191,0.0511)	(0.4840,0.4547,0.0613)
18	F18	(0.6575,0.3043,0.0682)	(0.5141,0.4217,0.0642)	(0.5318,0.4069,0.0613)	(0.7736,0.2131,0.0133)	(0.3227,0.6251,0.0522)
19	F19	(0.3653,0.5748,0.0599)	(0.5141,0.4217,0.0642)	(0.3545,0.5922,0.0533)	(0.6447,0.3005,0.0548)	(0.4840,0.4547,0.0613)

		599	642)	533)	548)	613)
20	F20	(0.5479,0.3816,0.0705)	(0.5141,0.4217,0.0642)	(0.5318,0.4069,0.0613)	(0.7736,0.2131,0.0133)	(0.3227,0.6251,0.0522)
21	F21	(0.3653,0.5748,0.0599)	(0.2399,0.7108,0.0493)	(0.3545,0.5922,0.0533)	(0.6447,0.3005,0.0548)	(0.3227,0.6251,0.0522)
	IFPIS	(0.6575,0.3043,0.0682)	(0.6169,0.2994,0.0837)	(0.6381,0.3328,0.0291)	(0.7736,0.2131,0.0133)	(0.5808,0.3865,0.0327)
	IFNIS	(0.3653,0.5748,0.0599)	(0.2399,0.7108,0.0493)	(0.2481,0.7034,0.0485)	(0.4298,0.5191,0.0511)	(0.3227,0.6251,0.0522)

Step6: Obtain intuitionistic fuzzy positive ideal solution (IFPIS) and intuitionistic fuzzy negative ideal solutions (IFNIS) through mathematical equation (8) and (9).

$$A^- = (\tilde{b}_1^-, \tilde{b}_2^-, \tilde{b}_3^-, \dots, \tilde{b}_n^-) = (\mu_{p_i, \phi}^-(k_j), \nu_{p_i, \phi}^-(k_j), \pi_{p_i, \phi}^-(k_j)), j=1, 2, 3, 4, 5, \dots, n \quad (8)$$

$$A^* = (\tilde{b}_1^*, \tilde{b}_2^*, \tilde{b}_3^*, \dots, \tilde{b}_n^*) = (\mu_{p_i, \phi}^*(k_j), \nu_{p_i, \phi}^*(k_j), \pi_{p_i, \phi}^*(k_j)), j=1, 2, 3, 4, 5, \dots, n \quad (9)$$

Where,

$$\mu_{p_i, \phi}^*(k_j) = \{\max_i \mu_{p_i, \phi}(k_j) \mid j=1, 2, 3, \dots, n\}$$

$$\nu_{p_i, \phi}^*(k_j) = \{\min_i \mu_{k_i, \phi}(k_j) \mid j=1, 2, 3, \dots, n\}$$

$$\nu_{k_i, \phi}^-(k_j) = \{\max_i \mu_{k_i, \phi}(k_j) \mid j=1, 2, 3, \dots, n\}$$

$$\mu_{k_i, \phi}^-(k_j) = \{\min_i \mu_{k_i, \phi}(k_j) \mid j=1, 2, 3, \dots, n\}$$

Step7: Determine the distance among the factors and IFPIS as well as IFNIS, correspondingly by mathematical equation (10) and (11).

$$S^+ = \sqrt{\frac{1}{2n} \sum_{j=1}^n (\mu_{p_i, \phi}(k_j) - \mu_{p_i, \phi}^*(k_j))^2 + (\nu_{p_i, \phi}(k_j) - \nu_{p_i, \phi}^*(k_j))^2 + (\pi_{p_i, \phi}(k_j) - \pi_{p_i, \phi}^*(k_j))^2} \quad (10)$$

$$S^- = \sqrt{\frac{1}{2n} \sum_{j=1}^n (\mu_{k_i, \phi}(k_j) - \mu_{k_i, \phi}^-(k_j))^2 + (\nu_{k_i, \phi}(k_j) - \nu_{k_i, \phi}^-(k_j))^2 + (\pi_{k_i, \phi}(k_j) - \pi_{k_i, \phi}^-(k_j))^2} \quad (11)$$

Step8: Calculate the relative closeness coefficient of individual factor with respect to ideal solution by utilizing equation (12).

$$C_i = \frac{S_i^-}{S_i^* + S_i^-} \quad (12)$$

$$\text{Where, } 0 \leq C_i^* \leq 1; (i=0, 1, 2, 3, 4, 5, \dots, n)$$

Step 9: Calculate the priorities as per downwards order of C_i^* that is presented in Table 8.

Table 8: The separation measures and the relative closeness coefficient of factors

Factor	S^*	S^-	C_i^*	Rank
F1	0.1797	0.2087	0.5373	5
F2	0.1501	0.2684	0.6413	3
F3	0.1949	0.2205	0.5308	6
F4	0.2300	0.1591	0.4089	15
F5	0.1956	0.1915	0.4947	8
F6	0.2096	0.2044	0.4937	9
F7	0.3093	0.0487	0.1360	20
F8	0.3100	0.0446	0.1258	21
F9	0.2197	0.1662	0.4307	13
F10	0.2625	0.1372	0.3433	16
F11	0.2387	0.1652	0.4090	14
F12	0.2408	0.1863	0.4362	12
F13	0.2175	0.1723	0.4420	11
F14	0.1541	0.2579	0.6260	4
F15	0.2266	0.2192	0.4917	10
F16	0.2515	0.1173	0.3181	17
F17	0.2919	0.1336	0.3140	18
F18	0.1292	0.2644	0.6717	1
F19	0.1933	0.2086	0.5190	7
F20	0.1362	0.2471	0.6447	2
F21	0.2773	0.1084	0.2810	19

4.3. Phase 3: Results and Discussion

This research study evaluates the priority of factors that influencing employee turnover in manufacturing SMEs by utilizing IF-TOPSIS approach with the help of five expert's having ample experience and profound knowledge in the field human resource and employee turnover. The ranking of factors is based on values of relative closeness coefficient (RCC). The results of this study show that F18 (Limitation in remuneration flexibility) is the most critical factors that influence the motive of employee towards turnover with score 0.6717. Organization having rigid policies of paying remuneration may suffer high turnover. Inadequate deductions in salary, low increment, poor compensation and complex process of remuneration receiving are the driving forces of employee turnover. In construction sector, where there is supremacy of small or medium sized firms, the main reasons of labour turnover are cash flow and capital constraints (Ayodele, Chang-Richards, & González, 2020). Remuneration flexibility to the employees can reduce these motives and help for retention (Gamage, 2014). F20 (Work dissatisfaction) is the second most influencing factor with gaining RCC score 0.6447. (Gamage, 2014) found that employees quit their job if they feel unsatisfied with the current job profile and they have other job option with them. Job satisfaction and turnover are complementary to each other (Arokiasamy, 2013). Job satisfaction is an expression which an employee feels resulting to sense of achievement. The reflection of perception and feeling for a job shows its level of satisfaction (Varshney, 2020). The third top most critical factor is F2 (Job security) having RCC score 0.6413. Organizations offering job security are more likely attractive. Job security is now a days a need for every employee. (Trevor & Nyberg, 2008) investigated that there is a positive relationship between downsizing rate and voluntary turnover rate which shows as the organizational, individual and societal implications of downsizing enormously motivates voluntary turnover. (Huselid, 1995) reported that job security is the influential determinant of employee turnover. F8 (Lack of job role clarity), F7 (Lack of consensus on job functions and duties), F21 (Lack of organizational support and commitment) and F17 (Lack of support from supervisor and colleague at work) are the least influencing factor with RCC score 0.1258, 0.1360, 0.2810 and 0.3140 respectively. Based on the RCC values, ranking of the factors are as follows: F18>F20>F2>F14>F1>F3>F19>F5>F6>F15>F13>F12>F9>F11>F4>F10>F16>F17>F21>F7>F8. The factors F18, F20, F2, F14, F1 are the top five most influential factors that stimulate to employee turnover in manufacturing SMEs at Indian scenario.

5. CONCLUSION

Human resources are the asset of the firms. Every organization invest huge amount on their workforce in form of induction, training and retention, so it is essential to make risk free return on investment by implementing best human resource practices that can reduce the turnover of asset (human resource). This study is first of its kind that attempt to evaluate the critical factors which are influencing employee turnover in manufacturing sectors of SMEs. The factors of the study were identified by systematic review of literature. The results of the study explored that "limitation of remuneration flexibility" is one of the most crucial factors in SMEs that motivates turnover. The industry reference in this issue highly affects the results. For further future research can be extended by identifying the interrelationships among the factors and also can employee this methodology with different industry context. Analysis of HR practices for enhancing job satisfaction in SMEs is another possible future research option.

6. MANAGERIAL IMPLICATIONS

Employees usually switch their jobs when they have multiple options and their current job gives them some sort of dissatisfaction. People less likely leave their jobs even though they are dissatisfied if there are less options (Arokiasamy, 2013). Recession report of 2008-09 reported employment rate of -3.03% for 3rd quarter of Oct-Dec 2008 with 0.34 employment elasticity in manufacturing sector and 8.91 percent decline to GDP in relation to 2nd quarter (Government of Indian Labour Bureau, 2011). Many people lost their jobs due to low pay and dissatisfaction, however, economic slowdown in the country increased the unemployment rate for the financial year. Employees are the assets of organization; they need to be maintained and motivated adequately for completion of organizational growth and achievements of goals. To reduce the turnover rate, management need to take necessary actions. Organization can adopt better remuneration policies, leverage system, incentive policies, performance appraisal committee and redressal committee which should be convey to each and every employee. Assessment of job-related stress and dissatisfaction should be there to know the warning signals of intension to quit. Working environment should be positive, healthy and motivating. Key persons of the organization can be retained by relationship building and adequate package. Management need to think ahead of their competitors in all means to formulate retention strategies, recruit suitable and potential employees and retain the valuable ones. Challenges with Indian SMEs in manufacturing sector are usually affected by government policies therefore their organization structure should be molded in such a way that cost control in induction, training and development can be done with high retention and low turnover rate.

REFERENCES

- Abbasi, S. M., & Hollman, K. W. (2000). Turnover: The Real Bottom Line. *Public Personnel Management*, 29(3), 333–342. <https://doi.org/10.1177/009102600002900303>
- Al-qahtani, R., & Gadhoun, Y. (2016). Employee turnover in the manufacturing organization: case of the eastern region of saudi arabia. In *Asia Pacific Journal of Advanced Bussiness and Social Studies* (Vol. 2, pp. 274–296).
- Arokiasamy, A. R. A. (2013). A qualitative study on causes and effects of employee turnover in the private sector in Malaysia. *Middle East Journal of Scientific Research*, 16(11), 1532–1541. <https://doi.org/10.5829/idosi.mejsr.2013.16.11.12044>
- Atanassov, K. T. (1986). Intuitionistic fuzzy sets. *Fuzzy Sets and Systems*, 20(1), 87–96. [https://doi.org/10.1016/S0165-0114\(86\)80034-3](https://doi.org/10.1016/S0165-0114(86)80034-3)
- Ayodele, O. A., Chang-Richards, A., & González, V. (2020). Factors Affecting Workforce Turnover in the Construction Sector: A Systematic Review. *Journal of Construction Engineering and Management*, 146(2), 03119010. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001725](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001725)
- Barpanda, S., & Unnithan, B. L. (2019). Relationship of employee's perception on health and safety measures and job performance: the mediating effects of job satisfaction. *International Journal of Environment*,

Workplace and Employment, 5(2), 107. <https://doi.org/10.1504/IJEWE.2019.103009>

- Eady, J. A., & Nicholls, M. G. (2011). Reducing workforce turnover in Asian factories using a mixed-mode modelling approach. *Journal of the Operational Research Society*, 62(4), 651–661. <https://doi.org/10.1057/jors.2010.17>
- Firth, L., Mellor, D. J., Moore, K. A., & Loquet, C. (2004). How can managers reduce employee intention to quit? *Journal of Managerial Psychology*, 19(2), 170–187. <https://doi.org/10.1108/02683940410526127>
- Gamage, A. S. (2014). Employee turnover in manufacturing SMEs in Japan: an analysis of the link with HRM practices. *Sabaragamuwa University Journal*, 13(1), 17. <https://doi.org/10.4038/suslj.v13i1.7668>
- Glagola, C. R., & Nichols, C. (2001). Recruitment And Retention Of Civil Engineers In Departments Of Transportation. *Leadership and Management in Engineering*, 1(1), 30–36. [https://doi.org/10.1061/\(ASCE\)1532-6748\(2001\)1:1\(30\)](https://doi.org/10.1061/(ASCE)1532-6748(2001)1:1(30))
- Government of Indian Labour Bureau. (2011). *Report on Effect of Economic Slowdown on Employment in India*. http://labourbureaunew.gov.in/UserContent/Report_on_EOFEMP_Jan09.pdf Accessed on 28/05/2019
- Guimaraes, T. (1997). Assessing employee turnover intentions before/after TQM. *International Journal of Quality & Reliability Management*, 14(1), 46–63. <https://doi.org/10.1108/02656719710156770>
- Heilmann, P. A. k. (2010). Employer brand image in a health care organization. *Management Research Review*, 33(2), 134–144. <https://doi.org/10.1108/01409171011015829>
- Hom, P. W., & Kinicki, A. J. (2001). Toward a Greater Understanding of How Dissatisfaction Drives Employee Turnover. *Academy of Management Journal*, 44(5), 975–987. <https://doi.org/10.5465/3069441>
- Hom, P. W., Lee, T. W., Shaw, J. D., & Hausknecht, J. P. (2017). One hundred years of employee turnover theory and research. *Journal of Applied Psychology*, 102(3), 530–545. <https://doi.org/10.1037/apl0000103>
- Hom, P., Allen, D., Griffeth, R. (2020). *Employee Retention and Turnover*. New York: Routledge, <https://doi.org/10.4324/9781315145587>
- Huselid, M. A. (1995). The Impact Of Human Resource Management Practices On Turnover, Productivity, And Corporate Financial Performance. *Academy of Management Journal*, 38(3), 635–672. <https://doi.org/10.5465/256741>
- Hwang, C.-L., & Yoon, K. (1981). Methods for Multiple Attribute Decision Making (pp. 58–191). https://doi.org/10.1007/978-3-642-48318-9_3
- Jaiswal, P., Kumar, A., & Gupta, S. (2018). Prioritization of green manufacturing drivers in Indian SMEs through IF-TOPSIS approach. *UPB Scientific Bulletin, Series D: Mechanical Engineering*, 80(2).
- Jaiswal, Piyush, & Kumar, A. (2018). Assessment of drivers to implement integrated lean green manufacturing system in Indian SMEs through IF-TOPSIS approach. *International Journal of Management and Decision Making*, 17(2), 224. <https://doi.org/10.1504/IJMDM.2018.092569>
- Johnson, J. T., Griffeth, R. W., & Griffin, M. (2000). Factors discriminating functional and dysfunctional salesforce turnover. *Journal of Business & Industrial Marketing*, 15(6), 399–415. <https://doi.org/10.1108/08858620010349493>
- K. Ito, J., M. Brotheridge, C., & McFarland, K. (2013). Examining how preferences for employer branding attributes differ from entry to exit and how they relate to commitment, satisfaction, and retention. *Career Development International*, 18(7), 732–752. <https://doi.org/10.1108/CDI-05-2013-0067>
- Kar, B. P., Sharma, A., & Borah, S. B. (2011). Attrition in SMEs: The Causes. *Journal of Business and Management*, 3(5), 5–16.
- Kenneth, H., & Abbassi, S. (2000). “Turnover The Real Bottom Line Consequences of Turnover.” *Public Personnel Management*, 29(3), 333–342. <https://doi.org/doi:10.1177/009102600002900303>
- KPMG & CII. (2015). The new wave Indian MSME An action agenda for growth Confederation of Indian Industry, 30. Retrieved from https://www.kpmg.com/IN/en/IssuesAndInsights/ArticlesPublications/Documents/The_new_wave_Indian_MSME_Low_Res.pdf Accessed on 20/09/2019
- Lathabhavan, R. (2019). Glass ceiling beliefs, performance, and turnover intention through work engagement. *International Journal of Environment, Workplace and Employment*, 5(4), 304. <https://doi.org/10.1504/IJEWE.2019.10029235>
- Lee, C.-H., Hsu, M.-L., & Lien, N.-H. (2006). The impacts of benefit plans on employee turnover: a firm-level analysis approach on Taiwanese manufacturing industry. *The International Journal of Human Resource Management*, 17(11), 1951–1975. <https://doi.org/10.1080/09585190601000154>

- Mahajan, R., & Sidhu, A. S. (2020). Status of Micro , Small and Medium Enterprises (MSMEs) in India : A critical evaluation. *Studies in Indian Place Names*, 40(1), 395–411.
- Ongori, H. (2007). A review of the literature on employee turnover. *African Journal of Business Management*, 049–054.
- Park, T.-Y., & Shaw, J. D. (2013). Turnover rates and organizational performance: A meta-analysis. *Journal of Applied Psychology*, 98(2), 268–309. <https://doi.org/10.1037/a0030723>
- Post, C., DiTomaso, N., Farris, G. F., & Cordero, R. (2009). Work–Family Conflict and Turnover Intentions Among Scientists and Engineers Working in R&D. *Journal of Business and Psychology*, 24(1), 19–32. <https://doi.org/10.1007/s10869-009-9089-1>
- Reyachav, I., & Weisberg, J. (2009). Good for workers, good for companies: How knowledge sharing benefits individual employees. *Knowledge and Process Management*, 16(4), 186–197. <https://doi.org/10.1002/kpm.335>
- Rose, D. M., & Gordon, R. (2010). Retention Practices for Engineering and Technical Professionals in an Australian Public Agency. *Australian Journal of Public Administration*, 69(3), 314–325. <https://doi.org/10.1111/j.1467-8500.2010.00693.x>
- Sandhya, S., & Sulphrey, M. M. (2019). An assessment of contribution of employee engagement, psychological contract and psychological empowerment towards turnover intentions of IT employees. *International Journal of Environment, Workplace and Employment*, 5(1), 22. <https://doi.org/10.1504/IJEWE.2019.097186>
- Smith, C., Daskalaki, M., Elger, T., & Brown, D. (2004). Labour turnover and management retention strategies in new manufacturing plants. *The International Journal of Human Resource Management*, 15(2), 371–396. <https://doi.org/10.1080/0958519032000158563>
- Swid, A. (2016). Unwrapping the relation between work environment and job satisfaction. *International Journal of Environment, Workplace and Employment*, 4(2), 150. <https://doi.org/10.1504/IJEWE.2016.10001460>
- Trevor, C. O., & Nyberg, A. J. (2008). Keeping Your Headcount When All About You Are Losing Theirs: Downsizing, Voluntary Turnover Rates, and The Moderating Role of HR Practices. *Academy of Management Journal*, 51(2), 259–276. <https://doi.org/10.5465/amj.2008.31767250>
- Varshney, D. (2020). Employees’ job involvement and satisfaction in a learning organization: A study in India’s manufacturing sector. *Global Business and Organizational Excellence*, 39(2), 51–61. <https://doi.org/10.1002/joe.21983>
- Winterton, J. (2004). A conceptual model of labour turnover and retention. *Human Resource Development International*, 7(3), 371–390. <https://doi.org/10.1080/1367886042000201967>