



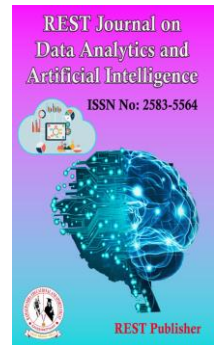
REST Journal on Data Analytics and Artificial Intelligence

Vol: 2(1), March 2023

REST Publisher; ISSN: 2583-5564 (Online)

Website: <https://restpublisher.com/journals/jdaai/>

DOI: <https://doi.org/10.46632/jdaai/2/1/11>



Evaluate the Performance of Best Employees in Human Resources (HR) Working Using TOPSIS Method

Sheetal V. Hukkeri

JAIN (Deemed-to-be University), Bengaluru, India.

*Corresponding Author Email: sheetal.hukkeri@jainuniversity.ac.in

Abstract. An organization cannot be separated from the role of human resources (HR) working within it. The quality of human resources is one of the necessary factors for improving the performance of an organization. Therefore, a company should evaluate the performance of its employees to understand their potential and the importance of evaluating their abilities and qualities. This evaluation allows for judgments on the worst qualities and the significance of employees. Employees are the foundation of a strong and enduring organization, regardless of their level. Their strength, commitment, dedication, and emotional connection with the organization cannot be measured solely in monetary value. What is Research Methodology? Research methodology refers to the specific procedures or techniques used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section enables the reader to critically evaluate the overall validity and reliability of the study. In this study, the TOPSIS method analyzes the ranking of Mercedes-Benz EQS as first, Audi e-tron GT as fourth, Porsche Taycan as fifth, Audi e-tron as third, Audi RS e-tron GT as second, and Mercedes-Benz EQC as sixth. Although the concept of EB is implicit within some organizations, it often appears vague. The underlying trend in the responses suggests that high skills and development were most important in consulting firms and investment banks, as well as large-scale industrial and manufacturing firms, where individuality of employees was less visible."

Keywords: Marketing communication, brand management, employer branding, best employer studies

1. INTRODUCTION

An organization cannot be separated from the role of human resources (HR) within it. The quality of human resources is one of the necessary factors for improving the performance of an organization. Therefore, a company should evaluate the performance of its employees to understand their potential, the importance of evaluating employee performance, and the significance of assessing their abilities and qualities. Evaluation is an attempt to make judgments about the quality of employees. Human resources, one of the fundamental pillars of organizations, strongly contribute to achieving the organization's goals. Without the human element, an organization cannot effectively work towards its vision and mission. Human resource management is one of the most important management functions, as those responsible for the organization's most valuable resource—the human element—are highly influential in productivity. Human resource management aims to enhance organizational capacity and attract and develop the necessary skills to overcome challenges. Human resources are crucial in any organizational unit, as they increase the aspirations and desires of individuals to have a better life and take responsibility for their own development. Therefore, individuals should continuously pursue work goals while maintaining a balance between their interests and the organization's interests. Employee retention is defined as a company's ability to retain employees within an organization. In a global competitive environment, companies face challenges related to employee retention. A recent survey of HR professionals in the UK and US revealed that companies encounter difficulties in retaining key talent. 60% of the surveyed leaders reported that their retention strategies were insufficient (Jute et al., 2013). Human resources professional bodies in Malaysia, Hong Kong, and Singapore hold different views on employee retention, but the problem is widespread and similar across countries, despite differing cultures (Asia Pacific Management News, 2012). Employee retention has garnered significant attention from management experts and academics in recent years, as they recognize the

need to strengthen financial performance and competitiveness (Eshiteti et al., 2013). Organizations invest time and money in grooming newly hired employees through learning and skill development to retain valuable and skilled personnel (Ferreira, 2014). Retaining employees helps organizations avoid the costs associated with training and recruiting new employees (Hwang and Chang, 2008). To retain employees, organizations must satisfy their needs. The right employees are responsible, reliable, and dependable. They seek help when needed, encourage others to excel, and do not require excessive supervision. **Key Takeaway:** Send an employee introduction email to the entire organization, including a photo if possible. In 300 to 400 words, describe the new employee's title, responsibilities, professional and academic achievements, and share some fun facts about them.

2. MATERIALS AND METHODS

The employee selection process includes **comparing candidates based on various traits such as knowledge, ability, work ethics, skilset, experience, etc.** The candidates who lack the job prerequisites like experience, ability, and skills are eliminated through the selection process. Both internal and external recruitment may use **interviews, application forms, aptitude tests, group tasks, presentations and role-playing tasks** to help select the best candidates for the job. The study participants were presented with several statements to assess the perceived importance of people and people management for organisational competitiveness. Participants were requested to show how strongly they agreed with these statements on a 5-point Likert scale. In focusing on employee empowerment, the participants were presented with several proposed best practices and were asked to assess their applicability and criticality for a successful people management system. For the purpose of the study, the practices proposed were considered validated as 'best practices' if 75% of the respondents either agreed or strongly agreed with the statement and less than 5% 'strongly disagreed'. The reasoning behind this choice of 75% point was that the concepts being proposed were exploratory in nature. They were practices suggested for future success, and have only been applied by pioneers [best performers in their fields], or suggested in the literature to date. Thus they would be new to most organisations questioned, and would present a change from the norm. If 75% agreed that they are 'best practices' and none disagreed, then it could be concluded that most of the remaining respondents do not hold any strong opinions [for or against] probably due of lack of experience with the idea. The data used in this study is a public dataset retrieved from Kaggle data repository with "people analytics" query. The dataset is about employees track record on a company which used to determine whether the employee is on their best performance or not. The data consist of 29 data attributes and 1 class label with 22005 instances. The information is various, from the demographic information such as, age, gender, and marital status into more professional characteristics such as, job duration on current level, the job level, employee type, person level, annual and sick leaves, and the achievement meter which shows each employee personal achievement on the job. To explore the topics outlined above, I studied NetCo (pseudonym), an integrated information services firm based in the European Union. NetCo can be described as an integrated network of 11 information technology services firms, that is, a knowledge intensive company. As discussed above, knowledge-intensive companies are those organizations where most of the work is of an intellectual nature and is performed by highly educated employees (Starbuck, 1992). That description applies to this case, in which most professionals have been educated as engineers. The organization also exhibits the major characteristics of knowledge-intensive firms: There is a heavy reliance on self-determination, hierarchy is kept to a minimum, structure is of a networked type, and problem solving occurs through extensive communication (Alvesson, 2000). Structurally speaking, the company describes itself as "a network of specialists." It operates as a developer and provider of information and communication technology services. Its activities range from the development of new technologies to software Cunha / THE BEST PLACE TO BE 483 Downloaded from jab.sagepub.com at PENNSYLVANIA STATE UNIV on March 4, 2016 implementation, which makes it a curious blend of two of the most common types of knowledge-intensive firms: professional services and high tech.

Step 1: The decision matrix X , which displays how various options perform concerning certain criteria, is created.

$$x_{ij} = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix} \quad (1)$$

Step 2: Weights for the criteria are expressed as

$$w_j = [w_1 \dots w_n], \text{ where } \sum_{j=1}^n (w_1 \dots w_n) = 1 \quad (2)$$

Step 3: The matrix x_{ij} 's normalized values are computed as

$$n_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}} \quad (3)$$

Weighted normalized matrix N_{ij} is calculated by the following formula

$$N_{ij} = w_j \times n_{ij} \quad (4)$$

Step 4: We'll start by determining the ideal best and ideal worst values: Here, we must determine whether the influence is "+" or "-." If a column has a "+" impact, the ideal best value for that column is its highest value; if it has a "-" impact, the ideal worst value is its lowest value.

Step 5: Now we need to calculate the difference between each response from the ideal best,

$$S_i^+ = \sqrt{\sum_{j=1}^n (N_{ij} - A_j^+)^2} \text{ for } i \in [1, m] \text{ and } j \in [1, n] \quad (5)$$

Step 6: Now we need to calculate the difference between each response from the ideal worst,

$$S_i^- = \sqrt{\sum_{j=1}^n (N_{ij} - A_j^-)^2} \text{ for } i \in [1, m] \text{ and } j \in [1, n] \quad (6)$$

Step 7: Now we need to calculate the Closeness coefficient of i_{th} alternative

$$CC_i = \frac{S_i^-}{S_i^+ + S_i^-} \text{ where } 0 \leq CC_i \leq 1, i \in [1, m] \quad (7)$$

The Closeness Coefficient's value illustrates how superior the alternatives are in comparison. A larger CC_i denotes a substantially better alternative, whereas a smaller CC_i denotes a significantly worse alternative.

Six BEVs selected as alternatives are “Mercedes-Benz EQS, Audi e-tron GT, Porsche Taycan, Audi e-tron, Audi RS e-tron GT and Mercedes-Benz EQC”. Technical specifications, such as “battery capacity, range, top speed, quick charge time, acceleration and purchasing price” are taken as evaluation parameters.

3. ANALYSES AND DISCUSSION

TABLE 1. Evaluation parameter

C1	Communications
C2	Self-motivation
C3	Interpersonal skills
C4	Decision making
C5	Knowledge / Skill
C6	Career development
C7	Management

Table 1 shows the evaluation parameter C1 Communications, C2 Self-motivation, C3 Interpersonal skills, C4 Decision making, C5 Knowledge / Skill, C6 Career development, C7 Management.

TABLE 2. Best Employees

	C1	C2	C3	C4	C5	C6	C7
Employees 1	23.24	27.42	17.42	39.53	15.42	29.15	22.05
Employees 2	29.12	39.40	12.46	42.97	58.43	33.69	27.30
Employees 3	43.12	35.42	24.08	22.58	36.12	26.13	22.13
Employees 4	34.75	27.43	25.16	28.28	32.14	28.73	24.13
Employees 5	28.13	33.33	27.12	36.41	43.12	19.43	29.43
Employees 6	23.14	29.43	31.08	25.12	48.15	18.43	27.13

Table 2 shows the best employees in Technique for Order of Preference by Similarity to Ideal Solution Employees 3 is showing in the highest value in communicating and Employees 6 showing the lowest value. Employees 2 is showing in the highest value in Self-motivation and Employees 4 showing the lowest value and Employees 6 is showing in the highest value in Interpersonal skills and Employees 2 showing the lowest value and Employees 1 is showing in the highest value in Decision making and Employees 3 showing the lowest value and Employees 2 is showing in the highest value in Knowledge / Skill and Employees 1 showing the lowest value AND Employees 2 is showing in the highest value in Career development and Employees 6 showing the lowest value and Employees 5 is showing in the highest value in Management. and Employees 4 showing the lowest value.

TABLE 3. Normalized data of best employees

Normalized Data							
	C1	C2	C3	C4	C5	C6	C7
Employees 1	0.3209	0.3786	0.3551	0.5085	0.1983	0.3749	0.2836
Employees 2	0.4020	0.5440	0.2540	0.5527	0.7516	0.4333	0.3511
Employees 3	0.5953	0.4890	0.4908	0.2904	0.4646	0.3361	0.2846
Employees 4	0.4798	0.3787	0.5128	0.3638	0.4134	0.3695	0.3104
Employees 5	0.3884	0.4602	0.5528	0.4683	0.5546	0.2499	0.3785
Employees 6	0.3195	0.4063	0.6335	0.3231	0.6193	0.2371	0.3490

Table 3 shows the best employees in Normalized data of best employees

TABLE 4. Weight

Weight						
0.25	0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25	0.25

Table 4 show the weight ages is the same values for best employees

TABLE 5. Weighted normalized decision matrix

Weighted normalized decision matrix							
Employees 1	0.0802	0.0946	0.0888	0.1271	0.0496	0.0937	0.0709
Employees 2	0.1005	0.1360	0.0635	0.1382	0.1879	0.1083	0.0878
Employees 3	0.1488	0.1223	0.1227	0.0726	0.1161	0.0840	0.0712
Employees 4	0.1199	0.0947	0.1282	0.0909	0.1034	0.0924	0.0776
Employees 5	0.0971	0.1150	0.1382	0.1171	0.1387	0.0625	0.0946
Employees 6	0.0799	0.1016	0.1584	0.0808	0.1548	0.0593	0.0872

Table 5 shows Weighted normalized decision matrix in best employees

TABLE 6. Positive Matrix

Positive Matrix							
Employees 1	0.1488	0.1360	0.1382	0.1382	0.1879	0.1083	0.0946
Employees 2	0.1488	0.1360	0.1382	0.1382	0.1879	0.1083	0.0946
Employees 3	0.1488	0.1360	0.1382	0.1382	0.1879	0.1083	0.0946
Employees 4	0.1488	0.1360	0.1382	0.1382	0.1879	0.1083	0.0946
Employees 5	0.1488	0.1360	0.1382	0.1382	0.1879	0.1083	0.0946
Employees 6	0.1488	0.1360	0.1382	0.1382	0.1879	0.1083	0.0946

Table 6 shows the Positive Matrix values in best employees 0.1488, 0.1360, 0.1382, 0.1382, 0.1083, 0.0946 maximum values.

TABLE 7. Negative matrix

Negative matrix							
Employees 1	0.0802	0.0946	0.0635	0.0726	0.0496	0.0625	0.0709
Employees 2	0.0802	0.0946	0.0635	0.0726	0.0496	0.0625	0.0709
Employees 3	0.0802	0.0946	0.0635	0.0726	0.0496	0.0625	0.0709
Employees 4	0.0802	0.0946	0.0635	0.0726	0.0496	0.0625	0.0709
Employees 5	0.0802	0.0946	0.0635	0.0726	0.0496	0.0625	0.0709
Employees 6	0.0802	0.0946	0.0635	0.0726	0.0496	0.0625	0.0709

TABLE: 7 shows the negative Matrix values in best employees 0.0802, 0.0946, 0.0635, 0.0726, 0.0496, 0.0625, 0.0709 minimum value.

TABLE 8. Plus, and Si negative

	SI Plus	Si Negative
Employees 1	0.17	0.068
Employees 2	0.089	0.167
Employees 3	0.105	0.118
Employees 4	0.112	0.1
Employees 5	0.09	0.129
Employees 6	0.115	0.143

TABLE: 8 shows the Plus and Si negative best employees the best employees in Technique for Order of Preference by Similarity to Ideal Solution Employees 6 is showing in the highest value in si plus and Employees 5 showing the lowest value Employees 1 is showing in the highest value in si negative and Employees 4 showing the lowest value

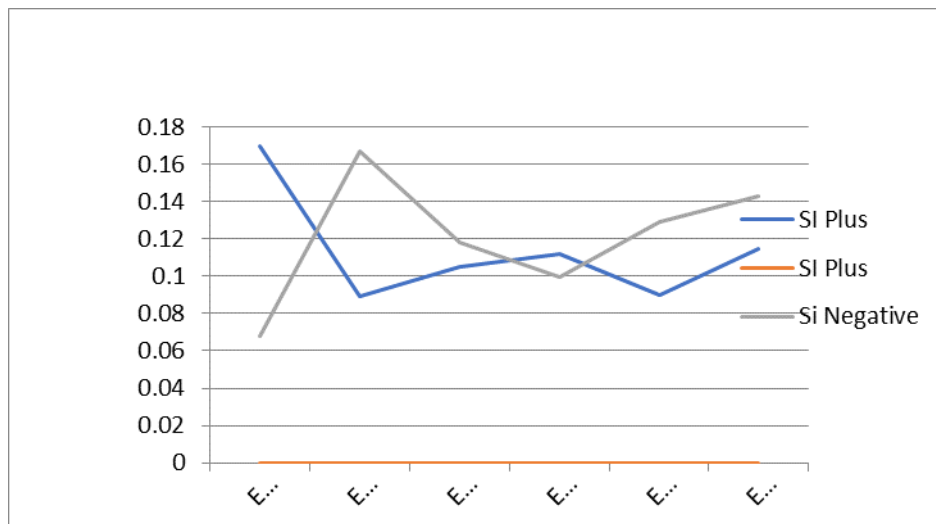


FIGURE 1. SI Plus, Si Negative

Figure 1. shows the Plus and Si negative best employees the best employees in Technique for Order of Preference by Similarity to Ideal Solution Employees 6 is showing in the highest value in si plus and Employees 5 showing the lowest value Employees 1 is showing in the highest value in si negative and Employees 4 showing the lowest value

TABLE 9. Rank

Rank	
Employees 1	6
Employees 2	1
Employees 3	4
Employees 4	5
Employees 5	2
Employees 6	3

Table 9 shows the rank final result in analysis using in the topsoil method Employees 2 is showing in the highest value rank and Employees 4 showing the lowest value

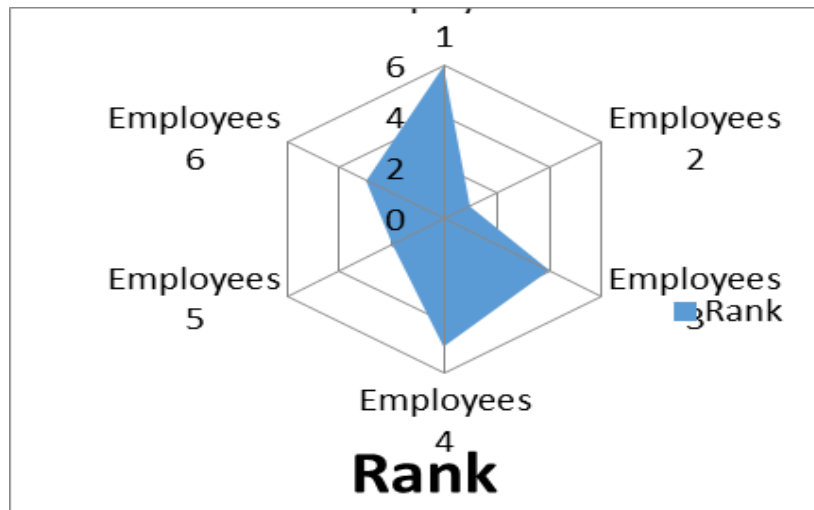


FIGURE 2. Rank

Figure 2. shows the rank final result in analysis using in the topsoil method Employees 2 is showing in the highest value rank and Employees 4 showing the lowest value

4. CONCLUSION

Although the EB concept is implicit within some organizations, it appears to be vague. The underlying trend in the responses was that high skills and development were most important to, e.g., consulting firms and investment banks, large-scale industrial and manufacturing firms, where individuality of employees was less visible. This echoes Kotler and Armstrong³⁶, who found relationship marketing more appropriate for situations with high profit margins and fewer customers, e.g., consulting firms and investment banks. The other major leverage factor in most spider webs is technology. Electronics allows more diverse, geographically dispersed, intellectually specialized talent to be brought together on a single project than ever before. . Because public telecommunications networks allow interconnection almost anywhere, the key to effective network systems usually lies in software that provides a common language and database for communications. t captures important factual data about external environments, helps players find knowledge resources (typically electronic menus, web browsers such as Netscape, or bulletin boards) and allows for interactive sharing and problem solving. Each node will of course have its own specialized analysis software. But networking, groupware, and interactive software—a culture and encouragement for sharing—are key to success in these settings. This research emphasizes the discovery of a classification system that can do a better job for the dataset. Several classification methods have been tried and have produced very different results. The best result carried out by Random Forest, Bagging and Stacking method with 88% accuracy score. The future work of this research is to check out the class distribution to measure the potential imbalanced dataset situation and overcome if it is any of that situation occurred.

REFERENCE

- [1]. Alao, D., Adeyemo, A.B.: Analyzing employee attrition using decision tree algorithms. *Comput. Inf. Syst. Dev. Inform. Allied Res. J.* 4 (2013) 756 Y. Zhao et al.
- [2]. Al-Radaideh, Q.A., Al Nagi, E.: Using data mining techniques to build a classification model for predicting employees performance. *Int. J. Adv. Comput. Sci. Appl.* 3, 144–151 (2012)
- [3]. Chang, H.Y.: Employee turnover: a novel prediction solution with effective feature selection. *WSEAS Trans. Inf. Sci. Appl.* 417–426 (2009)
- [4].) 4. Chien, C.F., Chen, L.F.: Data mining to improve personnel selection and enhance human capital: a case study in high-technology industry. *Expert Syst. Appl.* 34, 280–290 (2008)
- [5]. Li, Y.M., Lai, C.Y., Kao, C.P.: Building a qualitative recruitment system via SVM with MCDM approach. *Appl. Intell.* 35, 75–88 (2011)
- [6]. Nagadevara, V., Srinivasan, V., Valk, R.: Establishing a link between employee turnover and withdrawal behaviours: application of data mining techniques. *Res. Pract. Hum. Resour. Manag.* 16, 81–97 (2008)
- [7]. Quinn, A., Rycraft, J.R., Schoech, D.: Building a model to predict caseworker and supervisor turnover using a neural network and logistic regression. *J. Technol. Hum. Serv.* 19, 65–85 (2002)
- [8]. Sexton, R.S., McMurtrey, S., Michalopoulos, J.O., Smith, A.M.: Employee turnover: a neural network solution. *Comput. Oper. Res.* 32, 2635–2651 (2005)
- [9]. Suceendran, K., Saravanan, R., Divya Ananthram, D.S., Kumar, R.K., Sarukesi, K.: Applying classifier algorithms to organizational memory to build an attrition predictor model
- [10]. Tzeng, H.M., Hsieh, J.G., Lin, Y.L.: Predicting nurses' intention to quit with a support vector machine: a new approach to set up an early warning mechanism in human resource management. *CIN: Comput. Inf. Nurs.* 22, 232–242 (2004)
- [11]. Valle, M.A., Varas, S., Ruz, G.A.: Job performance prediction in a call center using a naive Bayes classifier. *Expert Syst. Appl.* 39, 9939–9945 (2012)
- [12]. Haq, N.F., Onik, A.R., Shah, F.M.: An ensemble framework of anomaly detection using hybridized feature selection approach (HFSA). In: *SAI Intelligent Systems Conference (IntelliSys)*, pp. 989–995, IEEE (2015)
- [13]. Punnoose, R., Ajit, P.: Prediction of employee turnover in organizations using machine learning algorithms. *Int. J. Adv. Res. Artif. Intell.* 5, 22–26 (2016)
- [14]. Sikaroudi, E., Mohammad, A., Ghousi, R., Sikaroudi, A.: A data mining approach to employee turnover prediction (case study: Arak automotive parts manufacturing). *J. Ind. Syst. Eng.* 8, 106–121 (2015)
- [15]. McKinley Stacker, I.V.: IBM waston analytics. Sample data: HR employee attrition and performance [Data file]. Retrieved from <https://www.ibm.com/communities/analytics/watson-analytics-blog/hr-employee-attrition/> (2015)
- [16]. Shahshahani, B.M., Landgrebe, D.A.: The effect of unlabeled samples in reducing the small sample size problem and mitigating the Hughes phenomenon. *IEEE Trans. Geosci. R*
- [17]. Abbas, Anas Abdul Basit. Evaluate the performance of employees in public institutions in the Republic of Yemen and its impact on the efficiency of field-study analysis of the air transport sector of Yemen, Ph.D. thesis, Business Administration, Faculty of Economics and Rural Development, the University of the Island, Sudan, 2001.
- [18]. 18. Abbas, Suhaila Mohamed. Human Resources Management strategic entrance, the first edition, Dar Wael for Publishing and Distribution, Amman, Jordan, 2003.
- [19]. 19. Abdul Bali, Selah Al-Din, Muslim, Abdul Hadi, Hassan, narrator. Human Resources Management, the modern university office, Alexandria, Egypt, 2007.
- [20]. 20. Abdul Bali, Selah Al-Din. Human Resource Management practice and science, University House for printing, publishing and distribution, Alexandria, Egypt, 2000.
- [21]. 21. Abdul Raman, Bin Anta. Human Resources Management (Mufahim- Aloes-dimensional strategy), Arabic edition, Dar Yazouri Scientific Publishing and Distribution, Amman, Jordan, 2010.
- [22]. 22. Abu AL-Jaen, Tamer Yourself. 2010. The effect of obstacles EDM on the performance of the municipalities of Gaza-strip as applied to the study of the municipalities of Gaza-strip Gaza Strip, the study of the Master, the Islamic University, Gaza Palestine, 2010.
- [23]. 23. Abu Hate, Musa Mohammed. The reality of the performance of employees and assess its impact on the performance of employees in non-governmental health institutions in the Gaza Strip, the level of "a case study on the Patient's Friends Society charity," the study of the Master, the Islamic University, Gaza, Palestine, 2009.
- [24]. 24. Abu Made, Khalid Made. Impediments to the performance of employees in the Palestinian universities and ways to evaluate the treatment of his master, the Islamic University, Gaza, Palestine, 2007.
- [25]. 26. Abu Nasser SS, Al Shitake MJ, Abu Mauna YM. Knowledge Management Maturity in Universities and its Impact on Performance Excellence Comparative study, *Journal of Scientific and Engineering Research.* 2016; 3(4):4-14.
- [26]. 27. Abu Nasser SS, Al Shitake MJ, Abu Mauna YM. Measuring knowledge management maturity at HEI to enhance performance-an empirical study at Al-Zahra University in Palestine. *International Journal of Commerce and Management Research.* 2016; 2(5):55-62.
- [27]. 28. Sullivan, S. (2004). Making the business case for health and productivity management. *Journal of Occupational and Environmental Medicine,* 46(6), S56-S61.