APPRAISEMENT AND EVALAUTION OF HRM USING GREY APPROACH

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Abstract:
In today's scenario, evaluation of the most appropriate human resource has become one of the key factors for sustaining the organization/ manufacturing sectors/production units at competitive market place. So, Multi Criteria Decision Making (MCDM) provides the help to the manager to evaluate and select the best human resource from available alternatives. In MCDM, due to inherent ambiguity, vagueness and inconsistency associated with subjective information against indices (measures); the assessment of expert panels has acquired for the preferred alternative in linguistic terms and transformed in to the data from the consequence. Grey theory has become a very effective m0ethod of solving uncertainty problems under discrete data and incomplete information. So, in this context, we have effectively introduced the grey number concept coupled with MCDM and its operator role to evaluate the best alternative from preferred alternatives under the group decision making environment.

Keywords: Human Resources, Grey Number, Group Decision Making, Subjective Criterions.

Introduction:

The competitiveness of any manufacturing industry is determined by its ability to respond quickly to the rapidly changing market Ayag (2007). In modern manufacturing enterprises, human resources evaluation and selection play a momentous role to convey the schedule production task and achieve the targeted goal of organization such as satisfactory of consumer, better product quality, enhancing productivity and minimize the loss (maximize profit). Human resources evaluation and selection play momentous role for acquiring high production at least cost. At the macro-level, HR is in charge of overseeing organizational leadership and culture. HR also ensures compliance with employment and labor laws, which differ by geography, and often oversees health, safety, and security. Based on the geographic location, there are various laws in place. There are several federal laws that are crucial for HR managers to be familiar with in order to protect both their company and its employees. Important federal laws and regulations include The Fair Labor Standards Act, which includes establishing a minimum wage and protecting the right for certain workers to earn overtime. The Federal Civil Rights Law protects against discrimination and prohibits making any hiring or firing decision based on race, age, sex, and gender. The Family and Medical Leave Act gives eligible employees up to twelve weeks of unpaid leave for family and medical reasons. Ensuring the company is compliant with all laws and regulations is an important aspect of HR and will protect the company from any sort of 'legal liability'.[21] In circumstances where employees desire and are legally authorized to hold a collective bargaining agreement, HR will typically also serve as the company's primary liaison with the employee's representatives (usually a labor union). Consequently, HR, usually through representatives, engages in lobbying efforts

with governmental agencies (e.g., in the United States, the United States Department of Labor and the National Labor Relations Board) to further its priorities.

There are half a million HR practitioners in the United States and millions more worldwide. The Chief HR Officer or HR Director is the highest ranking HR executive in most companies. He or she typically reports directly to the Chief Executive Officer and works with the Board of Directors on CEO succession.

Within companies, HR positions generally fall into one of two categories: generalist and specialist. Generalists support employees directly with their questions, grievances, and work on a range of projects within the organization. They "may handle all aspects of human resources work, and thus require an extensive range of knowledge. The responsibilities of human resources generalists can vary widely, depending on their employer's needs. Specialists, conversely, work in a specific HR function. Some practitioners will spend an entire career as either a generalist or a specialist while others will obtain experiences from each and choose a path later. The position of HR manager has been chosen as one of the best jobs in the US, with a #4 ranking by CNN Money in 2006 and a #20 ranking by the same organization in 2009, due to its pay, personal satisfaction, job security, future growth, and benefit to society.

Human resource consulting is a related career path where individuals may work as advisers to companies and complete tasks outsourced from companies. In 2007, there were 950 HR consultancies globally, constituting a US$18.4 billion market. The top five revenue generating firms were Mercer, Ernst & Young, Deloitte, Watson Wyatt (now part of Towers Watson), Aon (now merged with Hewitt), and PwC consulting. For 2010, HR consulting was ranked the #43 best job in America by CNN Money.[32] Some individuals with PhDs in HR and related fields, such as industrial and organizational psychology and management, are professors who teach HR principles at colleges and universities. They are most often found in Colleges of Business in departments of HR or Management. Many professors conduct research on topics that fall within the HR domain, such as financial compensation, recruitment, and training.

Multi Criteria Decision Making:

MCDM is concerned with structuring and solving decision and planning problems involving multiple criteria. The purpose is to support decision makers facing such problems. Typically, there does not exist a unique optimal solution for such problems and it is necessary to use decision maker’s preferences to differentiate between solutions. Solving can be interpreted in different ways. It could correspond to choosing the "best" alternative from a set of available [Source: alternativeshttp://en.wikipedia.org/wiki/Multi-criteria_decision_analysis].

Group Decision Making:

Group decision making is process which is convey to evaluate and determine the final choice. In GDMP, a group of several fellows are invited and subjective information is evaluated from the group of fellows against the uncertain criterions. In MCDM, group decision making is being involved to making the decision under the minimum time and economic circumstances.

Stat of Art:

Ayag (2007) expressed types and number of machines required generally depends on the factors such as job type, machine cost and

expected demand. Onutet al. (2008) delivered a hybrid fuzzy approach by conjunction fuzzy AHP and fuzzy TOPSIS. The fuzzy AHP was used to evaluate the criteria weights and fuzzy TOPSIS used for comparing the alternatives. Chuu (2009) proposed a new fusion method of fuzzy information to managing the information assessed in different linguistic scales (multi-granularity linguistic term sets) and numerical scales. The flexible manufacturing system adopted in the Taiwanese bicycle industry to demonstrate the computational process of the proposed method. Tsai et.al (2010) showed that how to determine the valuable criteria for selecting machine tools from the vast amount of specifications of DNC machine tools along with consulting the experts with abundant mold manufacturing experiences and also demonstrated the multi-criteria decision making (MCDM) method towards efficient selections of DNC machine tools that would satisfy the needs of an organization.

Samvedi et al. (2011) combined the fuzzy analytic hierarchy process (AHP) and grey relational analysis approaches for the selection of a machine tool from a given set of alternatives.

Theory of Grey Numbers: Mathematical Basis:

Grey theory has become a very effective method of solving uncertainty problems under discrete data and incomplete information. Grey theory has now been applied to various areas such as forecasting, system control, and decision-making and computer graphics. Here, we give some basic definitions regarding relevant mathematical background of grey system, grey set and grey number in grey theory Deng (1998). Grey number deal with known information and unknown information conjunctively which finally consequences the incomplete information so, it is explore to remove or cover the uncertainty of subjective criterion under the group decision making scenario.

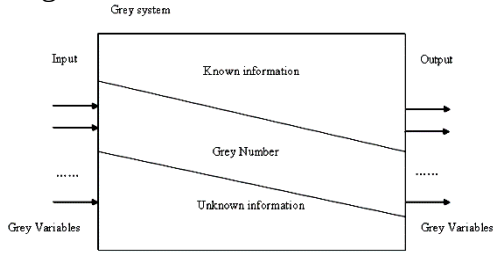

Fig. 1. The concept of a grey system

Definition 1: A grey system (Xia, 2000) is defined as a system containing uncertain information presented by grey number and grey variables. The concept of grey system is shown in Fig. 1.

Definition 2: Let X be the universal set. Then a grey set G of X is defined by its two mappings

$$\begin{cases} \overline{\mu}_G(x):\ x \to [0,1] \\ \underline{\mu}_G(x):\ x \to [0,1] \end{cases}$$

$\overline{\mu}_G(x) \geq \underline{\mu}_G(x), x \in X,\ X = R,\ \overline{\mu}_G(x)$ and $\underline{\mu}_G(x)$ are the upper and lower membership functions in G respectively. When $\overline{\mu}_G(x) = \underline{\mu}_G(x)$, the grey set G becomes a fuzzy set. It shows that grey theory considers condition of fuzziness and can flexibly deal with the fuzziness situation.

Definition 3: A grey number is one of which the exact value is unknown, while the upper and/or the lower limits can be estimated. Generally grey number is written as $\left(\otimes G = G\Big|_{\underline{\mu}}^{\overline{\mu}}\right)$.

Definition 4: If only the lower limit of G can be possibly estimated and G is defined as lower limit grey number.

$\otimes G = [\underline{G}, \infty]$

Definition 5: If only the upper limit of G can be possibly estimated and G is defined as lower limit grey number.

$\otimes G = [-\infty, G]$

Definition 6: If the lower and upper limits of G can be estimated and G is defined as interval grey number.

$\otimes G = [\underline{G}, \overline{G}]$ (4)

Definition 7: The basic operations of grey numbers $\otimes x_1 = [\underline{x}_1, \overline{x}_1]$ and $\otimes x_2 = [\underline{x}_2, \overline{x}_2]$ can be expressed as follows:

$$\left.\begin{aligned} \otimes x_1 + \otimes x_2 &= [\underline{x}_1 + \underline{x}_2, \overline{x}_1 + \overline{x}_2] \\ \otimes x_1 - \otimes x_2 &= [\underline{x}_1 - \underline{x}_2, \overline{x}_1 - \overline{x}_2] \\ \otimes x_1 \times \otimes x_2 &= [\underline{x}_1 \underline{x}_2, \overline{x}_1 \overline{x}_2] \\ \otimes x_1 \div \otimes x_2 &= [\underline{x}_1, \overline{x}_1] \times \left[\frac{1}{\underline{x}_2}, \frac{1}{\overline{x}_2}\right] \end{aligned}\right\}$$

Whitened value: The whitened value of an interval grey number, $\otimes x$, is a deterministic number with its value lying between the upper and lower bounds of interval $\otimes x$. For a given interval grey number $\otimes x = [\underline{x}, \overline{x}]$ the whitened value $x_{(\lambda)}$ can be determined as follows.

For converting grey interval valued number into measured data or scrip value to ranking and evaluate the final choice/option/alternative amongst available alternatives.

$$x_{(\lambda=0.5)} = \frac{1}{2}(\underline{x} + \overline{x})$$

In above, we mentioned description regarding grey number and its operators *(Equ. 5)* remarked that aggregation of evaluated linguistic information from expert panel and some operator which help to evaluate the final decision and *(Equ. 6)* described the how the aggregated number can converted in to scrip value to chosen best and ranking order the alternative amongst available alternatives.

Conclusion:

Multi-criteria analysis under the group decision making process provides an effective framework for ranking and selecting of most feasible human resources. This approach can also be fruitfully applied at several hierarchical platforms which involve uncertainty as well as vagueness due to subjectivity in subjective criterion. It can also be applied in several fields where the decision is convey on the basis of assessment of decision making whenever they will have incomplete information regarding subjective criterion for chosen alternatives.

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