

Selecting Best Leader on the Basis of Leadership Score using Decision Theory

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Abstract: Management and leadership has, over the years, become the critical ingredient in organizational theory and practice. This paper reviews and emphasizes on major important leadership qualities such as work experience (WE), ability to delegate (ATD), innovation (I), commitment (CO) and communication skills (CS). In all industries, choosing a leader is a highly necessary task, and deep care and precaution should be taken before making the final decision. In this paper, we have developed ways and parameters to scrutinize a resume and decide whether the candidate is suitable to be a leader or not, depending on various pre-decided parameters. This task can be accomplished using Decision Theory - a vital topic of Operational Research. It is an integration of various MIS and OPT concepts to show how the different theories and lines of research fit together to bring out the best results for the task being performed.

Keywords: Management, Leadership, Decision Theory, MIS: Management Information System, OPT: Optimization Principles And Techniques

1. INTRODUCTION

The heart of any organization is data. Be it of its employees, clients, suppliers, or prospective customers. Conversion of this relevant data into information, storing extra data for future use, updating the system with new data instantaneously, are all functions of a Management Information System.

1.1. MIS

From a technical perspective, an information system gathers, stores, and distributes information from an organization's environment and internal operations to support organizational functions and decision making, communication, coordination, control, staffing, directing and analysis. Information systems transform raw data into meaningful information using 3 basic principles of Input, Processing, and Output.

From a business perspective, an information system provides an optimized solution to a problem faced by a firm and represents a combination of management, organization, and

technology elements. The management dimension of information system involves issues such as leadership, strategy and management behavior. The technology dimension consists of computer hardware, software, data management and networking technology. The organization dimension of information systems involves issues such as the organization's hierarchy, functional specialties, business processes, culture, people and political interests groups.

MIS are typically computer systems used for managing. They have five components, each for, hardware, software, data, procedures and people. MIS highlights company's strengths and weaknesses in the form of reports, acts as a communication and planning tool, helps in obtaining feedback and gives a company a competitive edge. An MIS in effect, describes a company and its resources. Hence, inculcation of MIS in a business is a must in today's time.

1.2. Need for Good Leaders

Leadership is the most influential and critical element of all businesses. Effective leaders have the necessary tools and skills to inspire and impact their teams, allowing firms to run competently and smoothly. A good leader understands the mission statements, objectives, actions, plans and goals of the company, to lead the workforce into realizing them. Taking necessary actions and making necessary changes in the procedure, depending on unexpected complications, adapting to different situations, handling the client so as to maintain the company's reputation etc, are all the functionalities of a leader. A leader plays a vital role in determining the company's success or failure. Hence we require great leaders and utmost care must be taken while selecting them.

2. THE PROBLEM

To understand this need for effective leaders, we consider an example of a company, Alpha Numero, which needs to hire a capable and efficient leader, to help the company reach new heights. For this purpose, the highest level authorities have been observing quite a few of their top notch employees, from

which they would like to promote one as the new Head of Department. They shortlisted five of the best employees. They also predetermined five major qualities they needed in their selected leader, which included work experience, ability to delegate, innovation, communication skills and commitment, in this order of importance. Each of these five had to give an aptitude test and had to submit their resumes.

3. SOLUTION

This problem can be solved by calculating Leadership Score of all the candidates using some mathematical tools of **Operation Research**. The best leadership score can be find out using **Optimization Principles and Techniques** and the candidate satisfying the all the criteria can be chosen as the leader.

Operations Research is a scientific approach to problem solving for executive decision making which requires the formulation of mathematical, economic and statistical models.

Optimization Principles and Techniques falls under the domain of "**Operations Research**".

Decision Making is an integral part of any business organization. The process involves selecting the best among several decisions through a proper evaluation of the parameters of each decision environment. It basically revolves around 3 main functions: **Goal, Criteria, and Alternatives**.

Since the coefficients of our objective function are constants and the decision alternatives can be interrelated by well defined mathematical linear functions, the optimal solution can be calculated under **Decision under Certainty** category. This section presents a different approach for the situations in which ideas, feelings, and emotions are quantified to provide a numeric scale for prioritizing decision alternatives. The approach is known as the **Analytic Hierarchy Approach (AHP)**.

3.1. Tables

Table 1. Collected Data

	A	B	C	D	E
WE	7	4	9	6	8
ATD	37	46	24	50	32
I	14	32	23	17	26
CS	7	7	5	9	3
C	9	2	7	3	6

3.2. Leadership Score Calculations

Table 2. Work Experience (WE)

WE	A	B	C	D	E	PR
A	1	4	1/3	2	1/2	0.1702
B	1/4	1	1/6	1/3	1/5	0.0502
C	3	6	1	4	2	0.4330
D	1/2	3	1/4	1	1/3	0.2640
E	2	5	1/2	3	1	0.2740

Table 3. Ability To Delegate (ATD)

AD	A	B	C	D	E	PR
A	1	1/3	4.33	1/4.33	1.66	0.1248
B	3	1	7.33	1/1.33	4.66	0.3274
C	1/4.33	1/7.33	1	1/8.66	1/2.66	0.0380
D	4.33	1.33	8.66	1	6	0.4312
E	1/1.66	1/4.66	2.66	1/6	1	0.2090

Table 4. Innovation (I)

I	A	B	C	D	E	PR
A	1	1/9	1/4.5	1/1.5	1/6	0.0418
B	9	1	4.5	7.5	3	0.5206
C	4.5	1/4.5	1	3	1/1.5	0.1540
D	1.5	1/7.5	1/3	1	1/4.5	0.0580
E	6	1/3	1.5	4.5	1	0.2248

Table 5. Communication Skills (CS)

CS	A	B	C	D	E	PR
A	1	1	3	1/3	5	0.2018
B	1	1	3	1/3	5	0.2018
C	1/3	1/3	1	1/5	3	0.0888
D	3	3	5	1	7	0.4636
E	1/5	1/5	1/3	1/7	1	0.0436

Table 6. Commitment (CO)

CO	A	B	C	D	E	PR
A	1	8	3	7	4	0.4914
B	1/8	1	1/6	1/2	1/5	0.0404
C	1/3	6	1	5	2	0.2424
D	1/7	2	1/5	1	1/4	0.0600
E	1/4	5	1/2	4	1	0.1656

4. OPTIMIZATION

Table 7. Priority Table

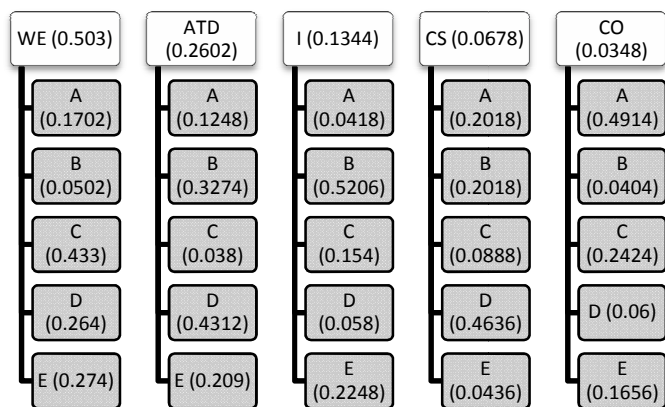
	WE	ATD	I	CS	CO	PR
WE	1	3	5	7	9	0.5030
ATD	1/3	1	3	5	7	0.2602
I	1/5	1/3	1	3	5	0.1344
CS	1/7	1/5	1/3	1	3	0.0678
CO	1/9	1/7	1/5	1/3	1	0.0348

4.1. Hierarchy Criteria

Goal : Selecting the best leader

Criteria : Work Experience, Ability To Delegate, Innovation, Communication Skills and Commitment.

Alternatives : Candidate A, B, C, D and E.



Leadership Score = (0.503V + 0.2602W + 0.1344X + 0.0678Y + 0.0348Z) x 100

- Where V = Priority of Work Experience of Candidate
- W = Priority of Ability To Delegate of Candidate
- X = Priority of Innovation of Candidate
- Y = Priority of Communication Skills of Candidate
- Z = Priority of Commitment of Candidate

5. CASE STUDY

After calculating the Leadership Score of the shortlisted five candidates, we now take 3 case studies: Best case, Average case and Worst case

5.1. Best Case

The leadership score of Candidate D comes to be 28.63 which is highest when compared with his contemporaries. With extraordinary values in Ability To Delegate and Communication Skills, and average values in Work Experience and Innovations, Candidate D fulfills all the criteria of the company in the most effective manner(both by analysis and leadership score), and hence gets selected as the rightful Leader.

5.2. Worst Case

The leadership score of Candidate A comes to be 15.45, which proves to be the least among the fellow candidates. Despite of having extraordinary value in the Work Experience category, Candidate C holds no chance in the selection process, because of the relatively poor and average performance in some of high priority categories like Ability to Delegate, Innovations and Communication Skills.

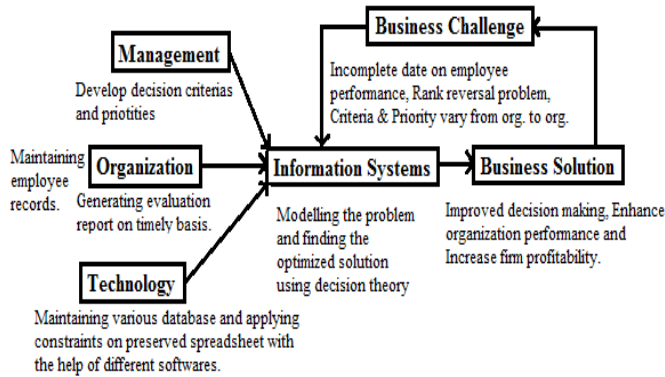
5.3. Average Case

The leadership score of Candidate E comes to be 23.11 which turn out to be an average score. With extraordinary performances in Commitment category, average in Work Experience, Ability to Delegate and Communication Skills and below average Innovations, the overall performance gets balanced out, keeping in mind the priorities and requirements of the company.

6. CONCLUSION

Rather than prescribing a "correct" decision, the AHP helps decision makers find one that best suits their goal and their understanding of the problem. It provides a comprehensive and rational framework for structuring a decision problem, for representing and quantifying its elements, for relating those elements to overall goals, and for evaluating alternative solutions. The hierarchical modeling of the problem, the possibility to adopt verbal judgments and the verification of the consistency are its major assets. However, it has some limitations too. It is very difficult to analyze and optimize non-quantifiable factors like soft skills. The performance needs to be measured objectively in such cases which can prove to be very difficult to put in numerical terms. Rank Reversal can also create a problem. Another important disadvantage of the AHP method is the artificial limitation of the use of the 9–point scale. Sometimes, the decision– maker might find difficult to distinguish among them and tell for example

whether one alternative is 6 or 7 times more important than another.



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