

Project Planning & Control

Lesson 8

Applying Improvement Factor - Illustration

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Applying Improvement Factor - Illustration

A	2	2													
B			1	1	1										
C						6	6	6	6						
D						4	4	4	4						
E						4	4								
F										2	2				
G												2	2	2	
H									1	1	1				
I															1
	2	2	1	1	1	14	14	10	11	3	3	2	2	2	1

$$IF_{A,d} = r \left(\sum_1^m x_i - \sum_1^m w_i - mr \right)$$

IF(D,1): $r=4$, $x=14$, $w=3$, $m=1$
 $= 4*(14-3-1*4) = \mathbf{28 > 0}$

IF(D,5): $r=4$, $x=14+14+10+11$, $w=3+2+2+2$, $m=4$
 $= 4*(49-9-4*4) = \mathbf{128 > 0 \text{ BEST OPTION}}$

IF(D,2): $r=4$, $x=14+14$, $w=3+3$, $m=2$
 $= 4*(28-6-2*4) = \mathbf{56 > 0 \text{ \& Better than option 1}}$

IF(D,3): $r=4$, $x=14+14+10$, $w=3+3+2$, $m=3$
 $= 4*(38-8-3*4) = \mathbf{72 > 0 \text{ \& Better than option 1 \& 2}}$

IF(D,4): $r=4$, $x=14+14+10+11$, $w=3+3+2+2$, $m=4$
 $= 4*(49-10-4*4) = \mathbf{124 > 0 \text{ \& Better than option 1 \& 2\& 3}}$

Applying Improvement Factor - Illustration

A	2	2												
B			1	1	1									
C						6	6	6	6					
D						4	4	4	4					
E						4	4							
F										2	2			
G												13	13	13
H								1	1	1				
I														1
	2	2	1	1	1	14	14	11	11	3	2	13	13	13

$$IF_{A,d} = r \left(\sum_1^m x_i - \sum_1^m w_i - mr \right)$$

IF(H,1): $r = 1$, $x = 11$, $w = 2$, $m = 1$
 $= 1 \cdot (11 - 2 - 1 \cdot 1) = \mathbf{8 > 0}$



IF(H,2): $r = 1$, $x = 11 + 11$, $w = 2 + 13$, $m = 2$
 $= 1 \cdot (22 - 15 - 2 \cdot 1) = \mathbf{5 > 0 \text{ \& Worst than option 1}}$

IF(H,3): $r = 1$, $x = 11 + 11 + 3$, $w = 2 + 13 + 13$, $m = 3$
 $= 1 \cdot (25 - 28 - 3 \cdot 1) = \mathbf{-6 < 0 \text{ \& Increase in Moment!!}}$

IF(H,4): $r = 1$, $x = 11 + 11 + 3$, $w = 13 + 13 + 13$, $m = 3$
 $= 1 \cdot (25 - 39 - 3 \cdot 1) = \mathbf{-17 < 0 \text{ \& Greater increase in Moment!!}}$

Stepwise Procedure
for Minimum Moment Algorithm
&
Exercises

(Handout)

Summary

1. Profiling resources to meet project requirements is an important part of schedule development
2. When multiple resources have to be scheduled the problem is complex. Multiple project adds more complexity & custom profile even more complexity!!!
3. Lecture covered leveled single resource case only.
4. MMA is a heuristic approach – does not guarantee best solution for resource leveling for a given problem.
5. Work on use of sophisticated optimization techniques to address this problem has been a core part of project management research

DISCUSSIONS