

Main Building Refurbishing Project at NIM

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The case under discussion describes a situation where an ongoing project is evaluated after a month from its beginning of execution and there is a risk of delay for the completion of the project arising out of deployment of less number of resources compared to the planned deployment of resources. The case then revolves around to design a suitable plan by evaluating different alternatives for timely completion of the project. At the time of redesigning the project execution plan, the project manager is in a confusion to determine if there was anything which he missed out in the initial phase of the planning, the number of resources (teams) to be deployed for different activities, the earliest time possible time to finish the work and if an investment for additional scaffolding towards implementing parallel work fronts is justified.

The case begins by stating that the project called Main Building Refurbishing Project (MBRP) aiming at removing the sand stones at main building's external surface and refurbishing it had been awarded to Mid-India Construction Company (MICC) at a tendered cost of Rs. three crores on November 21, 2012 with a time limit of 8 months to complete the project. Timely completion of the project was critical since it involved work in the classroom blocks needed to be operational from the subsequent academic term to be started from July, 2013. The project would also involve work in 3 faculty blocks and 2 academic blocks apart from 4 classroom blocks. As per the information stated in the case, even though MICC gained expertise in technical skills and gathered experience in executing many building renovation projects, it lacked requisite project management skills which resulted in delay in some projects undertaken by the company.

The case also narrates how Narmada Institute of Management (NIM) has assumed a leadership role in spreading management education in central India by achieving a phenomenal growth in terms of building huge infrastructure to cater to different groups of participants enrolled in various management

programmes within a very short span of time by virtue of its willingness to innovate and excel.

Since MICC has to deliver the project within a stipulated period of 8 months, it chalked out an initial plan to finish the project with 1 month to spare. It divided the total work content of 28000 square meter (sqm) into 14 equal work fronts of 2000 sqm each. Accordingly, it made a planning of deploying required number of resources (teams) for each activity so that the work for 2 work fronts can be finished in 1 month keeping in view the work rates for different activities as experienced from past projects. It is rational to make this assumption in the context of the case that MICC must have done proper cost benefit analysis keeping in view various cost components (direct labour, material cost and other costs) associated with various activities and the clause of possible financial losses for non achievement of different milestones within stipulated time period prior to coming up with the plan regarding deployment of workforce.

After being asked by the Director of NIM, Rao, the project manager at NIM held a meeting with Sharma, a project manager at MICC to get a report regarding the current status of advancement of the project and found that the project was running at a slow pace because of insufficient deployment of work force. Sharma, after analysing the situation with Rao, agreed upon engaging more work force and promised to start the painting activities simultaneously. It was also suggested by Rao to work on many work fronts parallelly to expedite the project. Rao thought himself that working on 4 work fronts simultaneously would result in completion of the project in three months.

The information provided in the case along with relevant data creates a potential for discussing the problem. The case invokes concepts such as CPM (critical path method). From the point of view of MICC, the case also leaves a scope of discussion for designing a minimum-cost schedule so that it can achieve timely completion of the project by adhering to the time limit for each milestone. The company should also explore the possibility to expedite all or some activities in order to lessen the time required to complete each work front

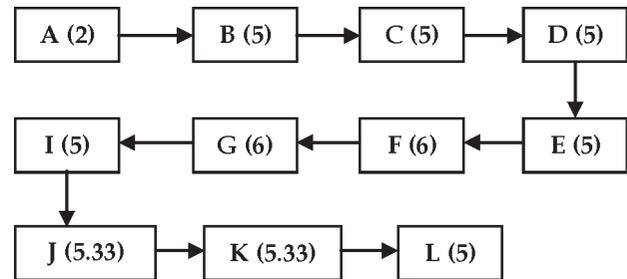
and estimate the cost per day for the same. The company as well as Rao may carry out a what if analysis by considering all the possibilities (Running different no. of parallel work fronts) and the implications of all these alternatives by determining the estimated time of completion of the project for each alternative and the associated cost with all these alternatives. Then both MICC and NIM may agree to go with one such alternative acceptable to both of them.

The project described in the case is consisted of 16 activities (From A to P). Analysing the interdependence of the activities, one can come up with the following critical path for a single work front of the aforesaid project.

Table 1: Calculation for no. of Days Required for Each Activity for a Single Work Front

Activity	Work rate* (sqm/team/day)	Work Content (Sqm)	Planned Resources (No. of teams)	No. of days required
A	250.00	2000	4	2
B	36.36	2000	11	5
C	36.36	2000	11	5
D	40.00	200	1	5
E	40.00	200	1	5
F	41.67	2000	8	6
G	41.67	2000	8	6
H	400.00	2000	5	1
I	33.33	2000	12	5
J	62.50	2000	6	5.33
K	62.50	2000	6	5.33
L	40.00	2000	10	5
M	41.50	1743	7	6
N	51.26	1743	5	6.8
O	51.26	1743	5	6.8
P	41.50	1743	6	7

Referring to Exhibit 3 of the case and Table 1, given below is the critical path and its length.



Therefore, the length of the critical path for a single work front is $54.66+14=68.66$ (since, "Activity-I can be started only after fourteen-day curing period from the completion of activity-G"). It may be observed that M, N, O and P do not fall on the critical path and they form a different path. Hence, these activities can be started simultaneously following their internal independence. Therefore, Sharma's decision to start painting activities simultaneously is absolutely justified. But it can be proved that with the above critical path, the initial plan of MICC to finish the work for 2 work fronts in a month was not justified, because it would have taken much longer time with the planned set of resources. All the available alternatives (any possible number of parallel work fronts) can be evaluated with respect to the above critical path and a conclusion may be reached.

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