

Hard rock cafe



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Critical Path Method s This paper researches the Critical Path Method (CPM) on the example of RockFest project. Besides research aims to find the fastest and easiest ways to fulfill all requirements to project management. It analyzes project's duration and critical path. There is a description of ways to solve problems with which a project manager might face and tries to solve them by crashing a project. The essential technique for using Critical Path Method according to Kelley (1961) is to construct a model of the project that includes the following: 1. A list of all activities required to complete the project (typically categorized within a work breakdown structure), 2. The time (duration) that each activity will take to completion, and 3. The dependencies between activities. With help of this CPM a manager can easily see the overall progress and which operations are to be crashed in order to complete a project in time. The total duration of the project is a sum of operations durations on the Critical path. Critical path is the sequence of activities which add up the longest overall duration. An additional parallel path through the network with the total durations shorter than the critical path is called a sub-critical or non-critical path (" Critical Path Method", 2011). In the case of Rockfest, critical path is found using MS Project, Figure 1. In the first column there is the operations description, in the second, operations duration. There is Gantt diagram on the scheme with red marked critical path. Therefore, the overall duration of the project should be 23 weeks (the critical path duration). Crashing a project means shortening some operations to fulfill project's time requirements. If activity B (Selection local printer) would take 5 weeks instead of planned 3 weeks we must crash some operations because activity B is on the Critical Path. The crashing time should be $5-3= 2$ weeks. For crashing a project we must find Crash cost per period and Critical

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path. I have used MS Excel to find Crash cost per period, Table 1. There is a formula to find the indicator: $\text{Crash cost per period} = (\text{Normal cost} - \text{Crash cost}) / (\text{Normal time} - \text{Crash time})$. It shows which operation's week is the cheapest to crash. To short overall duration of the project we must firstly crash critical path operations. From the table 1 we can see that Crash cost per period is the lowest in operation B - \$300 and F - \$500. There is no any information about the Crash time and cost of lengthened operation B. There is an assumption that the operation's Crash and Normal time difference stays the same - 1 week and prices stay stable. Therefore, we can crash operations B and F to achieve original duration of 23 weeks. After crashing a project I have faced another problem. There are two critical pathes now, Figure 2. This means that manager must care about two operations at the same time to make a project in time. This kind of problems might occur in any project with many sub-critical pathes. Consequently, I have identified a critical path of RockFest, found the duration of the project. In the second part, I have faced with the problem of crashing the project. To do this some indicators were found such as Crash Cost per period and Critical path. The next step was identifying the cheapest operations to crash. Finally, I have found that the crashed Rockfest project has two critical pathes. Besides, I discovered that using MS Project is very helpful in planning this kind of projects. It helps to put many tasks on one page. Figure 1. Ganth diagram for Rockfest project. Figure 2. Ganth diagram for Rockfest project revised. Table 1 Crashing a project.

Activity Description	Normal Time (weeks)	Normal Cost	Crash Time (weeks)	Crash Cost	On Critical Path	Crash cost per period
A Finalize site and building contracts	7	7500	4	11500	Yes	1333, 333
B Select local printer	3	500	2	800	Yes	300
C Hire production manager	3	1200	2	1700		

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No 500 D Design promotional Web site 5 6000 3 9000 Yes 1500 E Set TV deal 6 4000 4 6500 Yes 1250 F Hire director 4 1200 3 1700 Yes 500 G Plan for TV camera placement 2 500 2 500 Yes N/A H Target headline entertainers 4 2000 3 3500 No 1500 I Target support entertainers 4 2000 3 3500 No 1500 J Travel accommodations for talent 10 9000 7 16000 No 2333, 333 K Set venue capacity 2 300 1 400 No 100 L Ticketmaster contract 3 1400 2 1900 No 500 M On-site ticketing 8 7000 6 11000 No 2000 N Sound and staging 6 9000 5 12000 No 3000 O Passes and stage credentials 7 4000 5 5800 Yes 900 P Travel accommodations for staff 20 15000 15 23000 No 1600 Q Hire sponsor coordinator 4 600 3 800 No 200 R Finalize sponsors 4 1000 3 1400 No 400 S Define/place signage for sponsors 3 3000 2 4200 No 1200 T Hire operations manager 4 1200 2 1800 No 300 U Develop site plan 6 6000 5 8500 No 2500 V Hire security director 7 1500 5 3000 No 750 W Set police/fire security plan 4 1000 3 1600 No 600 X Power plumbing AC toilet services 8 4000 6 7000 No 1500 Y Secure merchandise deals 6 6000 3 7500 No 500 Z Online merchandise sales 6 5000 4 7500 No 1250 Works Cited

Critical Path Method. (20 Jan. 2011). In Wikipedia. Retrieved March 11, 2011, from Kelley, James. (May-June, 1961) Critical Path Planning and Scheduling: Mathematical Basis. Operations Research, Vol. 9, No. 3. Samuel L. Baker (2005) University of South Carolina, Health Services Policy and Management Courses.