J. Basic. Appl. Sci. Res., 3(1s)536-538, 2013
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ISSN 2090-4304
Journal of Basic and Applied Scientific Research
www.textroad.com

A Research upon the Timing Program of IT Projects by a New Technique

Zahra Yaghoubi[1] and Kourosh Motevalli[2]
[1] Member of Scientific Board, Industrial Engineering Faculty, Islamic Azad University, South Tehran Branch, Tehran, Iran,
[2]Member of Scientific Board, Applied Chemistry Department, Islamic Azad University, South Tehran Branch, Tehran, Iran,

Received: June 3 2013
Accepted: July 7 2013

ABSTRACT

Accurate timing program of the project activity has special importance, especially in IT projects that has more complexity in comparison with the other projects. Failure extent of IT projects is considerable and many difficulties are formed in performing those. We can mention, the most important challenges, is uncertainty in timing the activities of these projects. Therefore, in this article first some explanation are given about CCPM method. Then, an initiative algorithm is proposed for timing program of IT projects by using the buffers concept in the CCPM method and also for increasing the certainty of timing program and therefore success of these project.
KEYWORDS: information technology (IT), buffer, CPM, CCPM

1. INTRODUCTION

Management and project control are trying to acquire the timing optimum program, budget and project aims. But unfortunately, this knowledge was defeated for getting into it's aims. On the other hand, all of the advancement of this knowledge, has been relates to the time before the Gant chart invention in 1910, until the past decade, Dr. Goldrat invented his method for the project control system by issuing his article entitled "chain critical", and then, the critical chain project control system was formed. In comparison with the other projects, identification and analysis of the difficulties and hazards related to the IT programming projects, is very necessary both for performers and for the employers intending to describe these projects. The study of Standish group, shows that only %16 of all IT projects in the started time and budget are done [1]. We can mention that beyond the feet estimation of the time of activities as the main reasons of the defeat in software projects [3].

The traditional method of project programming (CPM) isn't the responsible for the IT projects. For the IT projects difficulties and on the other hand, the CCPM method isn't useable in this form for these projects. Therefore, In this article, a novel algorithm is presented for the timing program of the IT projects with capturing idea from the Goldrat method. This algorithm is more flexible than Goldrat method, with considering the different properties of any activity, and also lowers the serious difficulty of uncertainty in predicting the time in these projects.

1.1. CCPM method and it's advancement

Presently, with passing more than 10 years from the time of the first issue of attitude by Goldrat in 1975, this theory has advanced rapidly and Goldrat in 2007 has published some matters about tree strategy and tactic. At present, CCPM plays a significant role in advancement of project management in the world. S&T guide presents a more complete executive model in relation with the execution solution of CCPM that is much effective especially in relation with controlling the affairs and lasting advancement of the activities [4]. For example, Sadeghi et. al. (2009), in their research, have presented a new conceptual framework for improvement of the EPC projects [6].

In this research, on the basis of CCPM concepts, buffer management has been not noted as an effective mechanism for reducing the uncertainty [6].

Crisis chain management is a management method which is able to shorten the time needed for completely a project on the basis of theory of constraints (TOC). In this research, a buffer management method in CCPM is presented [5]. CCPM, improves the project program with certainty of being safe and possible resulted from the logical change of common factor and do this work by establishing the uncertainty in the buffers of finishing the activity paths [2].

On the other hand although CCPM has valuable concepts but it doesn't give complete answer to the project management necessities. So the organizations must acct very slowly instead of the costumed methods of project management [7].

Corresponding Author: Zahra Yaghoubi, Department of Industrial Engineering, South Tehran Branch, University of Islamic Azad, Iran, Email address: z_yaghoubi@azad.ac.ir

1.2. Buffers and buffer management in critical chain method

One of the most important steps of timing according to critical chain method, is determining the buffer size. Buffer, is a device that critical chain project control system, by that resist against the unpredicted changes and absorbs that. Different buffers are presented that are [11]:

- Project buffer (PB): project buffer is planned for protecting the project against critical chain activities changes. This buffer contains %50 total time of the project as the certain surface in order to provide the sufficient supply and reaches to the end of the project.
- Feed buffer (FB): first, Goldrat has explained the feed buffer. The feed buffer size of the highest non critical chain that reaches to the end of non critical path [9].
- Resource buffer (RB): critical chain project management needs a mechanism for precaution from delaying initiation of critical chain activities or precaution action from the lasting of their time, because of the lack of resources. The used mechanism, is RB, that is used for informing to critical chain resources [8].

1.3. Management in critical chain CCPM

In the CCPM method, theory of constraints was used. So as to exiting identifications of limitations and gates and also along with the directing more resources to process, the limitations and Pharynxes can be removed. Direction of forming a schedule program in CCPM, is a backward direction of the project and program date. While, in CPM, the activities are programmed upon the earliest possible time of the starting date for project program. This, causes the programming of the time of doing activities be near to the starting date of project. Therefore, the work volume will be increased and many of activities will be delayed because of the limited resources. On the other hand, in CCPM method, the work volume is reduced at the starting time of the project which leads to lowering the postponement amount, extra ordinarily. In this technique, the project postponements can be reduced to high extent and remove the need of redoing the activities. Also, this method cause the prohibition of multitasking and postponing the works [10].

2. The research method

In this research, with taking the pattern of CCPM method in planning, programming of the manufacture and the production projects, an algorithm for planning and programming IT projects is presented. In this algorithm, the nature of IT projects is considered.

3. Discussion and presenting the Findings

Although the CCPM method is nearly new, there is difficulties in programming and doing this method yet. The some difficulties which are mentioned in different articles are:

- Taking the %50 estimations isn't easy and persons difficultly that lower their estimations.
- Accompanying with the external suppliers will be difficult, because the CCPM timing is based upon %50 success and can't be pointed out for coming the supplier representative, both external and historical which is difficult in performance.
- Controlling the networks with complex timing will be difficult, because the critical chain may be changed because of postponement, and in this case, the feed buffers must be changed.
- Adding %50 time of project to the calculated time, causes prolonging the project.
- A complete respond to all of the project management requires isn't there.
- The CCPM method is mainly useable for manufacture and production projects and in IT projects are not useable.

With attention to above subjects, an algorithm is presented based upon the CCPM for IT projects.

4. A proposed algorithm for IT projects

In the proposed method of Goldrat, the buffer time considered for all activities is equal (%50 time for that activity). While, in IT projects, all activities don't have the equal conditions necessarily and should be verified separately. This is a subject that is emphasized in this algorithm. The increasing extent of the activities time and also the possibility of doing any activity in longer time towards isn't usual time depends upon the especial condition of that activity. Therefore, for any activity should be verified the time increasing and possibility of doing it in the maximum time, specially. Therefore, first the following parameters are introduced:

d_{ij}: the usual time and expecting for doing activity i-j

D_{ij}: the pessimistic time (the maximum time) for doing activity i-j

D'_{ij}: the maximum time permitted for doing activity i-j

p_{ij}: possibility of doing activity i-j in the pessimistic time
B_{ij}: the extra time (buffer) for doing activity i-j
Then, the algorithm for determining the time buffer in IT projects, is proposed as the following steps:
Step1. Calculation of the program of timing the activities network with the activities usual time and determining the activities of critical path.
Step2. Calculation of buffer of network activities according to this relation:

$$B_{ij} = (D_{ij} - d_{ij})\, p_{ij} \qquad (1)$$

Step3. Calculation of the permitted maximum time of any activity according to this relation:

$$D'_{ij} = (D_{ij} + B_{ij}) \qquad (2)$$

We must notice that in the controlling the project, time of activity i-j, must not be more than D'ij
Step4. Calculation of network buffer, with sum of the activities of critical path in the network according to this relation:

$$B = \sum B_{ij} \qquad (3)$$

5. Conclusion

The results of the researches show that the fault extent of IT projects are higher than physical projects and this is because of being new and novel of IT industry. This problem is occurred mainly because of not being accurate estimation of activity time. With an attention to the lack of prosperity of CPM, in this occasion, using the critical chain management (CCPM), for reducing the project fault number, can be cited. Nevertheless, the mentioned method is encountered with difficulties in programming and doing that is discussed. Therefore, in this article an algorithm was proposed that besides the simplicity perceiving and using that, the predicted time of the completing project will be near to the actual time of doing it and preventing the disorder of supervision and control upon the time of doing project, by using the benefits of the mentioned algorithm. Besides, with attention to the specification of any activity and the condition of doing it by giving the possibility, buffer time is calculated proportional with that. Therefore, using this algorithm, can be effective in increasing the success of IT projects.

REFERENCES

1. Brandon, Dan, 2006, Project management for modern information systems: IRM Press, chapters 2 and 3; An empiral study of CSFs and development for IS projects in China.
2. Larry P. Leach, 1997, Advanced Project Institute: 1577 Delmar Circle, Idaho Falls, Advanced Projects Institute
3. Lorin J. May, 1998. http://www.stsc.hill.af.mil/crosstalk/1998/07/causes.asp
4. Roy Stratton, 2009: Critical Chain Project Management Theory and Practice, Nottingham Business School, Nottingham Trent University,20th Annual Conference Orlando, Florida U.S.A.,1May to 4May
5. Munenori Kasahara, Hirotaka Takahashi, Hiroyuki Goto, On a Buffer Management Policy for CCPM-MPL Representation", International Journal of Computational Science, 2009. Vol. 3, No. 6 (593-600).
6. Sadeghi S.,Samanian H., Moiini F., 2009: planning a new and compressed framework on the basis of SCM and CCPM for improving the performance of EPC projects, the first national conference of performing project in the EPC method.
7. Golgon R., 2008, http: Implementation the CCPM for improving the time management and uncertainty in project, Imam Husein university, Iran, //inen.blogfa.com/
8. Bijanzade A., 2006 : presenting a model UML for the method CCPM, Tarbiat Modarres university, Iran.
9. Lotfi M., acquaintance with the project management new concepts, Yazd university, industrial engineering faculty, Iran.
10. Esmailian M., Laali M., theory of constraints, Tarbiat Modarres university, Iran
11. Mohtashami E., the comparison of CPM timing technique with CCPM new technique, Yazd university, Iran.