

Everyone's Smart University

Project (Spring 2021)

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Section

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Instructions:

- اخر موعد للتسليم هو يوم الخميس 20-05-2021 في تمام الساعة ٩ مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الإنجليزية.
- يتم تسليم المشروع في صيغة ملف . pdf مع الالتزام نموذج الجامعة ولن تقبل أي مستندات أخرى.
- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion، وأخيراً المراجع References . وان كان هناك ملحقات Appendices يتم إضافتها)
- يجب الالتزام بـ Theme موحد كما يلي:
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Microsoft Project as a tool for Scheduling of the Renovation of the laundry facility in Botkyrka Bus depot in Sweden

1. Introduction

Project Management is the Application of knowledge, skills and Techniques to project activities to meet project requirements. It is a strategic ability to do something successfully for organizations, enabling them to patch the project results to Organizational goals and thus, better compete in their markets. It can be also defined as the process and activity of planning, organizing, inspiring, and controlling resources, procedures and protocols to achieve specific goals in scientific or daily problems.

Owing to this the purpose of dealing with the project should not be only execution but effective and efficient execution of project is essential which is needed to be highlighted.

Botkyrka bus depot located in Stockholm city-Sweden and generally consists of a workshop of approximately 4,677 sq.m., a laundry hall of approximately 625 sq.m., offices of approximately 1466 sq.m., 109 bus parking spaces and approximately 110 staff car parks.

The laundry facility in Botkyrka bus depot will be rebuilt and expanded with a new laundry hall. The new laundry hall will be built next to the existing one. A new fan room will be placed on top of the new laundry room and will serve both the new and the old laundry hall. In connection with the construction of a new laundry hall, the existing laundry hall will also be renovated and the adjacent workshop will be rebuilt into technology spaces.

Daily ordinary operation take place on a full scale 24 hours a day, 7 days a week during the construction period.

As a scheduler in the project organization and with using the Microsoft Project which designed to assist the Project team in developing a plan, assigning resources to tasks, tracking progress, managing the budget, and analyzing workloads to achieve the four main objectives in this project, namely:

1. Reduction of the duration of the project.
2. Lowering of the cost associated with the project
3. Scaling down the resources required for the project.
4. Minimize the interference and disturbance between the daily operation in the depot and the construction project.

2. Literature Review

In the recent past many authors, have successfully used scheduling methods to calculate the time, resources and cost required for various projects and events.

R. Prabhakar and G. Ravichandran (2014) analyzed that; Construction planning is an important part of the overall management process. The planning and management includes organizing the work, executing the work, correlating plan and progress information and controlling the work, the three inter-related factors of time, money and quality need to be managed in a proper way. Completion of many of the projects nowadays is not in estimated duration. This will direct to an increase in overheads as well as various other factors. It will not only reduce the expected revenues but also will affect the reputation of the contractor. Scheduling is one of the vital functions in construction project to determine the sequence of activities necessary to complete a project.

Okmen, Ö (2013) presents a procedure for critical path method-based (CPM) scheduling in linear construction projects that have repeating activities. The procedure concurrently provides the utilization of resources without interruption and preservation of network relationships between successive units. With this procedure it is possible to represent activities by variable production rates through consecutive units and assign any kind of relationship type with lag time.

Hoang, Nhat Minh Shrestha, Swostik (2014) hinted that the main function of a software is to offer help, and enhance the quality of output with less effort than manual ways. A project has disparate requirements and the aim of the adopted software is to fulfill those requirements effectively in terms of time and cost. In addition, the issues of scheduling, tracking and physical element must be considered while adopting the project management software.

Vittal Anantatmula (2010) found out that Similar to a traditional project, managing an academic degree is related to the triple constraints of time, cost, and scope. It is concluded that by applying project management concepts, tools, and techniques, undergraduate degree program advising and planning can be improved after comparing the planning aspects of a conventional business project with the planning of an academic degree. Author also helps to explain the application of project planning techniques to manage the multiple constraints and the complexity associated with academic advising and planning.

Aftab Hameed Memon and Ismail Abdul Rahman (2014) suggested that time is the biggest element that every contractor has to deal with while practicing the construction activities.

Variety of approaches and tools has been introduced over the past decades to cherish the management of the projects. Author identified commonly used techniques and software of time management together with their effectiveness level in large construction projects. Data was collected from the construction organization that deals with huge projects. Relative Importance Index calculation was employed to assess the level of effectiveness for time management techniques and software packages adopted in the construction project. The results depicts that most common and effective time management technique and software Package are CPM and Microsoft Project respectively. Although this techniques are brought into practice but practitioners did not accomplished the goals of respective organization.

3. Project Management and different Approaches in the Construction Sector

Project gets started at the right way but as it proceeds further, gets off the track. It's important to manage the activities in the right way, thus project management plays a vital role in arranging the critical activities of the project which is called as task to function in the appropriate way.

Construction Firms usually construct the Projects in a Traditional ways, this sometimes proves Uneconomical & Tedious too. Traditional way also proves to be Time Consuming and Confusing.

In order to get the clear view about the difference between the traditional way of Project Management and Modern way of managing the project with the help of software called as Microsoft Project the presented work will provide a clear observation about the difference between the Microsoft Project (MSP) and the Traditional Planning Techniques which speeds up Construction and also make the Project Cost Effective with Proper Planning with the help of the case study on the Botkyrka bus depot.

3.1 Traditional Approach

A traditional approach identifies a sequence of steps to be completed. Five developmental components of a project can be distinguished:

- Initiation
- Planning & Designing
- Execution and Construction
- Monitoring and controlling systems
- Completion

Not all projects will have every stage, as projects can be aborted before they reach completion. Some projects do not follow a hierarchical planning or supervising the process. And some projects will go through steps 2, 3 and 4 multiple times.

It has been found that most of small scale construction organization uses Microsoft Excel with the main Categories of summaries of activities shown. Unique colors are chosen for representing the process of the activities, this lead to the confusion and complexity in execution of main substructures and super structure activities.

3.2 Microsoft Project program

Microsoft Project is designed to assist a project manager in developing a plan, assigning resources to tasks, tracking progress, managing the budget, and analyzing workloads. Project creates budgets based on assignment work and resource cost. The execution of the scheduled task work based on the resource availability as defined in the resource calendars. All resources can be defined in Work, Material and Cost. The application creates critical path schedules, and critical chain and event chain methodology third-party plug-ins are also obtainable. Schedules can be resource leveled, and task networks are visualized in a Gantt chart.

Additionally, Microsoft Project can identify divergent classes of the users. These different classes of users can have differing access levels to projects, views, and other data. Customization of aspects in Microsoft Project such as calendars, views, tables, filters, and fields are stored in an enterprise global which is accessible by all users.

4. Methodology and Research project

Basically this research will conduct an exploratory study on implementation of Microsoft Project in every aspect of a project which comprise of Planning and Scheduling stage followed by the Monitoring and Controlling stage.

4.1 Interview

The interview was arranged with the Project Manager of the project to identify the Problem they had occurred during the actual execution of the project like Duration, Resource Over allocation, Labour fatigue due to overtime of the work due the interfacing problem with the operating in the depot etc. Also to know the arrangement of activities they had used while executing a building project.

4.2 Data Collection

Data like the Activities Starting Date, Finish Date, Duration of Activities and their Delays, Relationship of Activities and task, Amount of Resources used for the Activities etc. was collected from the Project scheduler to analogize the data and make the data use in the Microsoft Project with the proper changes were made.

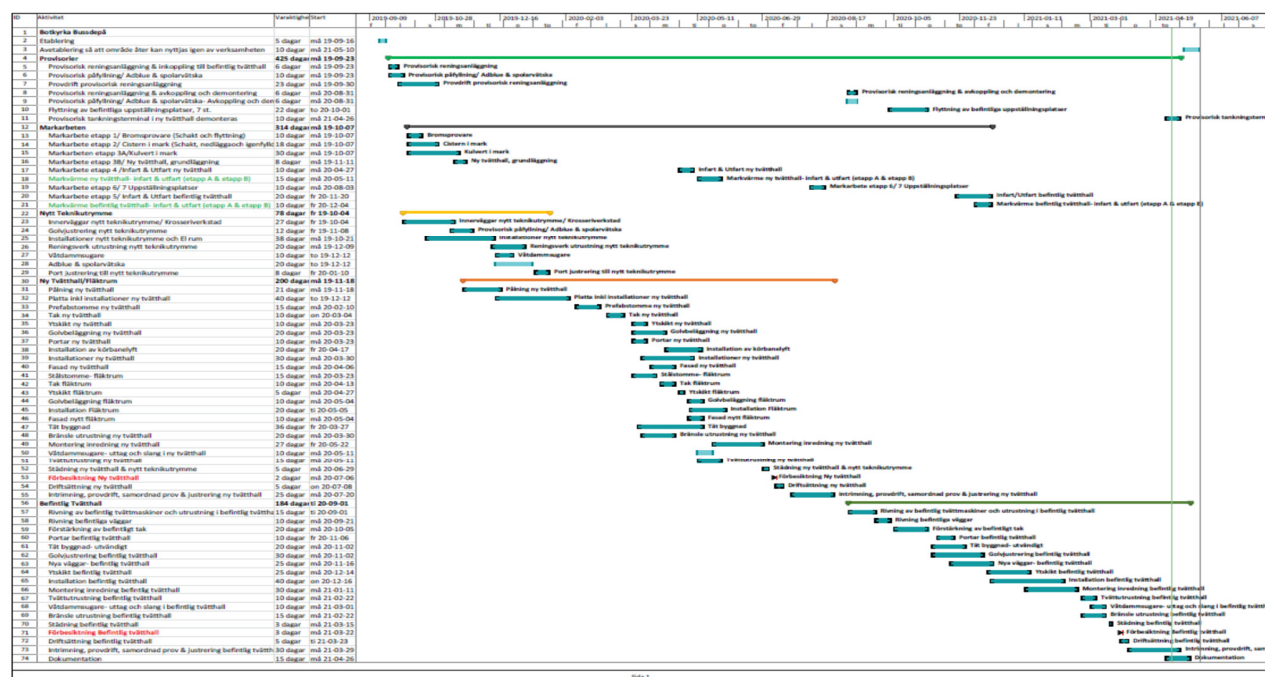
4.3 Data Analysis

The main activities from the data collected from the Project was divided into sub activities for the proper functioning of the project and identification of the Parallel activities, Slacks and crushing of Non-Critical activities was recognized from the given data and appropriate alterations were made to meet the goals of the research.

Botkyrka Bussdepå	sep-19	oct-19	nov-19	dec-19	jan-20	feb-20	mar-20	apr-20	may-20	jun-20	July-20	aug-20	sep-20	oct-20	nov-20	dec-20	jan-21	feb-21	mar-21	apr-21	may-21
Etablering																					
Provisorier																					
Markarbeten																					
Nytt Teknikutrymme																					
Ny Tvättthall/Flåkrum																					
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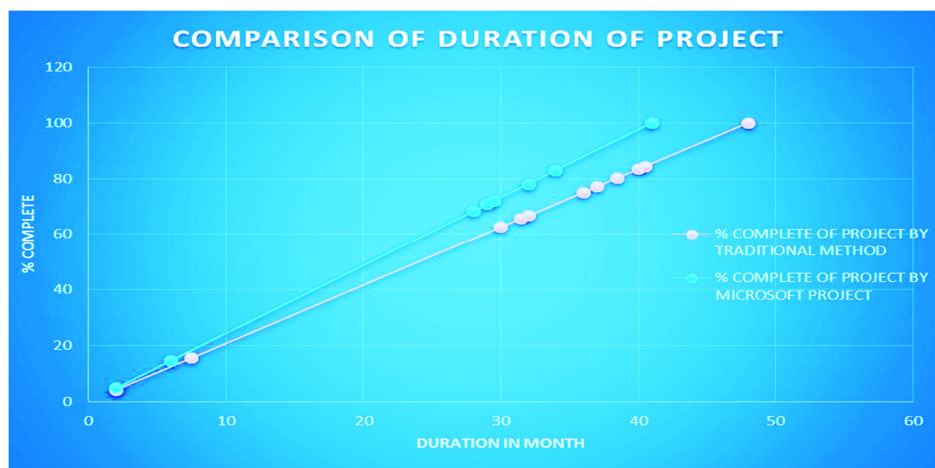
4.4 Scheduling technique for the Project

With the help of Microsoft Project, it's easily to understand and visualize the flow and network of the project. One can easily see the Critical Path which is the Longest Path of the Project, Parallel Activities, and Total Float of the Activity can be visualized, Relation between activities is understood by networking. According to the above there are fewer obligations while executing and project and right measure can be taken easily.



5. Results and Discussion

Microsoft Project gives a clear view to understand the project easily. After making proper alteration by using the slacks of parallel activity and crushing the parallel activities the duration of the project has been shown in Graphical form comparing the day required by traditional way and by use of Microsoft Project. The Graph clear indicates that duration to complete the project by Microsoft Project is less than the Traditional Method, Microsoft Excel.



Proper analysis of the Resources and allocating them without being over allocated is possible using Microsoft Project. By using the fewer Resources where slack time is enough available helps to reduce the cost of the project by 3.5% of overall cost of the Traditional way of Management.

6. Conclusion and Recommendation

Construction of building using Traditional way proves to be uneconomical and consumes more time with many complexity and enormous error which actual execution of the Project. Traditional way of planning doesn't sub divide the main task which future gets the hurdle of over allocation of resources, improper judgment of resources for particular activities etc. Microsoft Project is the modern tool of Project Management that aid to overcome the obstacles faced owing to traditional way of Planning and Management. It helps for the optimum and effective organization of activities which helps to give the vision to complete the project in planned duration and within the Economy.

7. References

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