



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

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Section

Master

Date

Thursday

18 / 03 / 2021.

Course Code

(PMG506)

Advanced project Management

Instructions:

- اخر موعد للتسليم هو يوم الخميس 2021-05-08 في تمام الساعة 9 مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الانجليزية.
- 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:
- حجم الخط 12.
- نوع الخط Arial.
- لون الخط أسود.
- المسافة بين الأسطر 1.5 line spacing
- عدد صفحات البحث (لا يقل عن ثلاث صفحات ولا يزيد عن ست صفحات).

Instructor's Name: ~~Eng. Amaal Aburumman~~ **Eng. Dr. Akram M. S. Ali**

Project:

You are required to document your role in administering a project. The project may be set in a business, social, sporting, or family environment but must be of a significant size and scale. If you do not have an actual project to write about you may complete the project hypothetically.

This report will be between three to six pages in length. This is a significant research project.

Your report must address ~~each~~ **ONE** of the following issues:

1. Identify and describe the purpose, scope, and objectives of the project. **Display this information using an appropriate tool.**
2. Describe how the team is given an outline of the project.
3. Describe the strategies that are going to be set up to maintain communication with the team members.
4. Describe the tools that are going to be used to monitor the goals, time frames or milestones.
5. Identify project milestones and activities. **Display this information using an appropriate tool.**
6. Create a budget and link the costs to the key milestones for a project.
7. Describe how you are going to divide tasks and resources amongst a project team. **Display this information using an appropriate tool.**
8. Briefly describe how the progress will be monitored.
9. How are current project records maintained? Who has responsibility for this? provide some recommendations on how this process could be improved.
10. Describe the current procedure for finalizing projects. Create your own procedure and identify how you will evaluate the success of the project.
11. Legislation that may affect the project including health and safety, and anti-discrimination legislation.

Best of luck...

المشروع:

مطلوب منك توثيق دورك في إدارة مشروع. قد يتم تعيين المشروع في بيئة تجارية أو اجتماعية أو رياضية أو عائلية ولكن يجب أن يكون بحجم مناسب. إذا لم يكن لديك مشروع فعلي لتكتب عنه ، فيمكنك إكمال المشروع افتراضياً. ستكون هذا التقرير من ثلاث إلى ست صفحات.

يجب أن يعالج تقريرك ~~كل~~ **احد** القضايا التالية:

1. تحديد ووصف الغرض والنطاق والأهداف من المشروع. اعرض هذه المعلومات باستخدام أداة مناسبة.
2. صف كيف يتم إعطاء الفريق مخططاً تفصيلياً للمشروع.
3. وصف الاستراتيجيات التي سيتم وضعها للحفاظ على التواصل مع أعضاء الفريق.
4. صف الأدوات التي سيتم استخدامها لرصد الأهداف أو الأطر الزمنية أو المعالم.
5. تحديد معالم المشروع والأنشطة. اعرض هذه المعلومات باستخدام أداة مناسبة.
6. إنشاء موازنة وربط التكاليف بالمعالم الرئيسية للمشروع.
7. صف كيف ستقوم بتقسيم المهام والموارد بين فريق المشروع. اعرض هذه المعلومات باستخدام أداة مناسبة.
8. صف بإيجاز كيف سيتم رصد التقدم.
9. كيف يتم الاحتفاظ بسجلات المشروع الحالية؟ من المسؤول عن هذا؟ تقديم بعض التوصيات حول كيفية تحسين هذه العملية.
10. وصف الإجراء الحالي لإنهاء المشاريع. قم بإنشاء الإجراء الخاص بك وحدد كيفية تقييم نجاح المشروع.
11. التشريعات التي قد تؤثر على المشروع بما في ذلك الصحة والسلامة ، وتشريعات مكافحة التمييز.

مع تمنياتي بالتوفيق..

Monitoring the Testing and commissioning project's goals and progress of King Abdullah Financial District (KAFD)

1. Introduction

A project is defined as a collection of milestones or phases, activities, or assignments that support an endeavor to achieve a goal. Project Management includes launching a new project, planning, placing the project management plan into action, and measuring progress and completion. Also, the process of scoping, planning, staffing, organizing, directing, and controlling the development of an agreeable system at a tiniest cost inside a defined time frame.

The King Abdullah Financial District (KAFD) is a master-planned development in Riyadh to become the city's new central business district. Including approximately 850,000 sqm NLA of office space, 115,000 sqm GLA of retail, 1,200 residential units, and 2000 hospitality keys in real estate growth, KAFD is a vital enabler of the KSA 2030 vision. This vast property is divided into 129 separate plots, each with varying degrees of completion. The development will be linked to the city's rapid bus, metro, and major highway networks. Once completed, KAFD will be one of the most popular destinations in Riyadh, Saudi Arabia, and will set a new standard for urban living. The project is government-sponsored and ongoing. The megaproject will cover 1.6 million square meters of land and is expected to cost \$12 billion when completed.

The company scope in this project is to provide the management of testing and commissioning of Mechanical, electrical, and plumbing (MEP) systems. As a project engineer, Due to a large amount of equipment, tracking the progress of work completed without appropriate tools is challenging. It may delay delivering the project on time and thus extra costs. According to the Waterfall life cycle, the project life cycle currently at the production and turnover stages.

This research paper aims to study the monitoring of goals, milestones, and progress of the project.

2. Literature Review

Monitoring the project is a necessary process to track the completion progress and is defined by "Monitoring is the collection and analysis of information about a project or program, undertaken while the project/program is ongoing" (University of Oxford, 2014). There are several tools to monitor the project; a famous one is the Key Performance Indicator (KPI), a tool that measures the performance against key business objectives. The three primary criteria of the project success are time, cost, and quality. However, there are more different criteria based on companies' needs such as health and safety, environmental performance, client satisfaction, percentage net, and accident rate (Chan, A.P.C. and Chan, A.P.L. 2004). To implement this KPI data, there many software such as Microsoft Power BI, Microsoft Excel, KPIfolio, Tableau, Google Data Studio, and Qlik View (S. M. Ali, N. Gupta, G. K. Nayak, and R. K. Lenka, 2016), and to visualize the data, there are several tools and charts such as line charts, pie charts, bar charts, Gantt Chart, tables, Scatter Plot and Parallel Coordinates (Aashlesha Bhingarde and Deepali Vora, 2018).

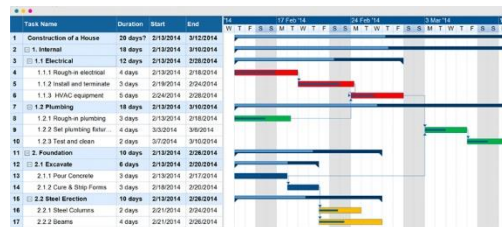


Figure 1: Gantt Chart

There is much software for project management to track and monitor the project goal, timeframe, and milestones; the two most used software are Microsoft Project and Primavera. The construction professionals are heavy users of PM software as (Matthew J. Liberatore; Bruce Pollack-Johnson; and Colleen A. Smith, 2001) found that Primavera is more used among the professionals. The selection of project management software depends on the work environment, firm size, percent work in PM, number of projects worked on. A typical number of activities in each project, and history of PM software usage, choices for all of these decisions should probably be quite different (M. J. Liberatore and B. Pollack-Johnson, 2003).

3. Methodology

The used software for project tracking and monitoring of progress, milestones, timeframe, and targets are Microsoft excel to implement KPI and Microsoft Project for monitoring project schedules and plans.

The reason to choose both Microsoft software is to integrate these two software to import and export data. Also, Microsoft Project is cheaper than Primavera, and it fit the project needs.

The first step was to reflect the equipment list sheet to the KPI sheet to visualize the data using Microsoft Excel and make the plan according to the readiness of installation provided by the construction team. Then preparing the goals within the timeframe and implemented them in Microsoft Project using Gantt Chart. The next step is to identify the milestones of the project to be tracked and monitored, and achieved on time.

4. Results and Discussion

The data visualization using KPI was successfully implemented using Microsoft Excel. The progress is tracked on a weekly basis to compare the planned activity with actual work performed. As a result, the progress is kept in control, and any uncompleted work is detected to avoid unscheduled delays.

	Plan vs Actual	Overall	12-Sep-2020	19-Sep-2020	26-Sep-2020	3-Oct-2020	10-Oct-2020	17-Oct-2020	24-Oct-2020	31-Oct-2020	7-Nov-2020	14-Nov-2020	21-Nov-2020	28-Nov-2020	5-Dec-2020	12-Dec-2020	19-Dec-2020	26-Dec-2020	2-Jan-2021	9-Jan-2021	16-Jan-2021	23-Jan-2021	30-Jan-2021	6-Feb-2021	13-Feb-2021	20-Feb-2021	27-Feb-2021	
			Weekly Plan Target	Cumulative Plan Target	Weekly Actual	Actual Cumulative	Weekly Plan Target	Cumulative Plan Target	Weekly Actual	Actual Cumulative	Weekly Plan Target	Cumulative Plan Target	Weekly Actual	Actual Cumulative	Weekly Plan Target	Cumulative Plan Target	Weekly Actual	Actual Cumulative	Weekly Plan Target	Cumulative Plan Target	Weekly Actual	Actual Cumulative	Weekly Plan Target	Cumulative Plan Target	Weekly Actual	Actual Cumulative	Weekly Plan Target	Cumulative Plan Target
Energization	ATP-1	1788	379	113	89	169	19	75	270	61	16	33	29	27	14	0	28	0	24	0	22	16	14	11	1	0	1	13
	Cumulative Plan Target	1784	857	970	1059	1218	1247	1322	1402	1493	1569	1631	1693	1763	1831	1900	1970	2040	2124	2214	2312	2417	2528	2645	2768	2896	3029	3166
	Weekly Actual	1784	379	113	89	169	19	75	270	61	16	33	29	27	14	0	28	0	24	0	22	16	14	11	1	0	1	13
	Actual Cumulative	1784	834	947	1036	1095	1224	1299	1469	1530	1546	1579	1608	1635	1649	1649	1677	1677	1701	1701	1723	1760	1774	1774	1774	1774	1774	1774
	Weekly Plan Target	1175	0	0	0	109	75	61	97	25	28	0	0	0	0	0	0	0	0	0	25	25	0	0	0	32	2	2
	Cumulative Plan Target	1175	673	673	782	857	918	1015	1048	1068	1068	1068	1068	1068	1068	1068	1068	1068	1068	1068	1068	1099	1118	1118	1118	1150	1150	1150
ATP-2	Weekly Actual	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekly Plan Target	1790	379	113	89	169	19	75	270	61	16	33	29	28	14	0	27	0	24	0	22	21	14	8	1	0	1	0
	Cumulative Plan Target	1790	857	970	1059	1228	1247	1322	1492	1563	1569	1602	1631	1693	1693	1673	1700	1700	1700	1724	1724	1746	1767	1781	1789	1790	1790	1790
	Weekly Actual	1783	378	114	89	169	19	75	270	61	16	33	29	27	14	0	28	0	24	0	22	17	17	14	0	0	0	0
	Actual Cumulative	1783	833	947	1036	1095	1224	1299	1469	1530	1546	1579	1608	1635	1649	1649	1677	1677	1701	1701	1723	1760	1774	1774	1774	1774	1774	1774
ATP-3	Weekly Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cumulative Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekly Actual	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekly Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cumulative Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ATP-4	Weekly Actual	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekly Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cumulative Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekly Actual	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Test Pack	Weekly Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cumulative Plan Target	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekly Actual	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 2: KPI Planned vs Actual tracking for KAFD T&C Project

The milestones are planned to be every three months, and thus critical path of the project was identified. However, this is a general milestone tracker, and there are other more specific project phases such as equipment-wise, level-wise, system-wise, and parcel-wise. There is also the commissioning plan which assigns roles and scope among contractors to coordinate the workflow smoothly. Moreover, there is a significant milestone called Authorization to proceed (ATP) and divided into four stages and granted by the program management.

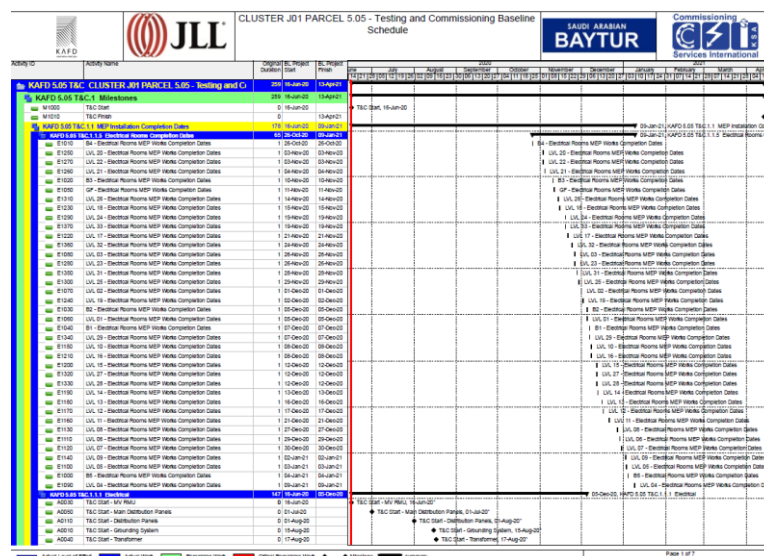


Figure 3: Baseline schedule

As a result, employing these tools has been beneficial that kept the project on track and under control. It helped to identify to monitor the progress and team performance and be flexible for any change request and failed equipment in testing. Furthermore, the client was happy and satisfied with being updated accurately and periodically.

In conclusion, using these software and tools are very helpful and has the following advantages; improved planning and scheduling, better collaboration, effective task delegation, easier file access and sharing, easier integration of new members, effective risk mitigation, budget management, remote working, and enhanced productivity.

5. References

1. University of Oxford. (2014). *A step-by-step guide to Monitoring and Evaluation*.
2. Chan, A.P.C. and Chan, A.P.L. (2004), "Key performance indicators for measuring construction success", *Benchmarking: An International Journal*, Vol. 11 No. 2, pp. 203-221.
3. Aashlesha Bhingarde, Deepali Vora. (2018). "Visualization Tools and Techniques in Big Data", *International Research Journal of Engineering and Technology (IRJET)*, Vol. 5 No. 11, pp. 1659-1664.
4. S. M. Ali, N. Gupta, G. K. Nayak and R. K. Lenka, (2016). "Big data visualization: Tools and challenges," 2016 2nd International Conference on Contemporary Computing and Informatics (IC3I), pp. 656-660.
5. Matthew J. Liberatore; Bruce Pollack-Johnson; and Colleen A. Smith. (2001). *Project Management in Construction: Software Use and Research Directions*.
6. M. J. Liberatore and B. Pollack-Johnson, (2003). "Factors influencing the usage and selection of project management software," in *IEEE Transactions on Engineering Management*, vol. 50, no. 2, pp. 164-174.