



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

Student Name	عبدالرحمن محمد حسن علي الحبر	اسم الطالب
Students I.D	2021202282	الرقم الجامعي

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Advanced project Management

Instructions:

- اخر موعد للتسليم هو يوم الخميس ١٧-05-2021 في تمام الساعة ٩ 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).

عنوان البحث

إعطاء الفريق مخططاً تفصيلياً للمشروع Give the team an the project planner

التخطيط للمشروع Project planning:

تخطيط المشروع تعتبر الخطوة الأولى في عملية إدارة المشروع وتسبق العمليات الأخرى للمشروع، فتخطيط المشروع هو أداة لبناء تصور مسبق عن مراحل تنفيذ المشروع، وتصور المخاطر المتوقعة التي ستواجه المشروع عند تنفيذه، وما هي الآليات اللازمة لمعالجة هذه المشاكل المتوقعة لذلك نجاح تخطيط المشروع يرتبط بقدرة القائمين على التخطيط وخبراتهم في التنبؤ بالمشاكل والمصاعب التي ستواجه المشروع في مرحلة تنفيذه.

ويشمل تخطيط المشروع ما يلي: It includes project planning

الأهداف : Project goals وتحتوي على صياغة أكثر تفصيلاً للأهداف العامة. وتشمل الأهداف التقنية والتنافسية، وتحقيق الأرباح، وتسليم النتائج النهائية للعميل بما يحقق رغباته، وكذلك تحقيق الأهداف الشاملة للمنظمة.

نطاق المشروع: Scope of the project تحديد الأطراف المؤثرة والمتأثرة بالمشروع مع تحديد الأقسام الوظيفية في المنظمة التي ستساعد على إنجاز المشروع وما هو المطلوب من كل قسم في كل مرحلة من مراحل المشروع.

القيود والميزانيات التقديرية. Project constraints and budgets

- القيود هي المحددات المفروضة على المشروع ومن أمثلتها قيود (الوقت، والكلفة، والجودة).
- أما الموازنات التقديرية فتشمل تقديرات تقريبية لتكاليف المشروع موزعة حسب مراحل دورة حياة المشروع.
أصحاب المصلحة: stakeholders وهي الأطراف المهتمة بالمشروع وهم (المالكون للمشروع والممولون له) والمنظمة الأم، والمنفذ للمشروع، والمستفيد من المشروع وهي الجهة التي ينفذ المشروع لصالحها، وتشمل كذلك الموردون.. (الخ). وكل طرف من هذه الأطراف لها الأهداف الخاصة بها وعلى مدير المشروع تحقيق الموازنة بين تحقيق هذه الأهداف.

التصميم The structure : ويصف التصميم الهيكل الإداري المستخدم في المشروع وعلاقته بالمنظمة وأهدافها.

الاستراتيجيات: Strategies وتبين التوجهات الاستراتيجية والقواعد التي ستحكم عمل المشروع ويجب أن تستمد استراتيجية المشروع من الاستراتيجية العامة للمنظمة، وتعمل على تحقيق أهداف المشروع وكذلك أهداف المنظمة بشكل عام.

المخاطر Risks : أي العمل على تحليل المخاطر وأنواعها ومصادرها، والصعوبات التي ستواجه المشروع عند تنفيذه، مع إعداد الخطط والآليات اللازمة لمواجهة هذه المخاطر وتقليل أثارها عند تنفيذ المشروع.

المراحل الأساسية للمشروع : Phases ويعني ذلك تحديد المراحل الرئيسية للمشروع مع تقدير الوقت اللازم لكل مرحلة والموارد اللازمة لتنفيذها.

الأدوار والمسؤوليات: tasks and responsibilities أي تحديد مسؤوليات مدير المشروع وفريق العمل، ومكتب عمل الفريق، والمساعدين لمدير المشروع والمنسقين له. وذلك لأغراض المحاسبة وتحديد المسؤولية لكل طرف من القائمين على إدارة المشروع.

الجدول: Schedul: يخطط هذا القسم الجداول الزمنية لتنفيذ كل مهمة في المشروع ومن المسؤول عن أداء المهمات وتوقيعه على الجدولة النهائية المتفق عليها.

Literature Review and Conceptual framework

الدراسات العلمية السابقة:

The SNC Group⁽¹⁾

Introduction

The title, "The Challenge of Project Management;" was purposely not, "The Problems of Project Management!" Too often in the execution of projects we project managers have excuses for failure, blaming such and such a problem. Or, it would have been successful if we had not encountered this, or experienced a shortage of that. Project management must include planning for the known events. The point that I would like to make is that it is just as important to plan for unknown possibilities, recognize obstacles and plan how to go around them or overcome them. Whether one is carrying out a project in an industrial region full of infrastructure and human resources, or in remote areas, or in foreign countries with different practices, one must ask: What are the particular challenges we are likely to meet? What type of strategies should we develop to ensure success?

Presented here are some project management challenges which SNC has encountered and how these challenges were met.

Start-Up Planning and Labor

A recent petroleum refinery project for Suncor in Sarnia, Ontario, with a capital cost of several hundred million dollars², involved designing and constructing some new units for the refinery. It was particularly important for Suncor that the project be started up by a certain date due to contractual commitments they had to meet on product markets. However, in the Sarnia region there was a high level of unemployment in the construction

industry and very few reasons why the labor force should be motivated to go all out for a fasttrack project. We (SNC) decided to initiate two particular programs to help the construction; one concerning the start-up of the units and the other involving labor productivity.

Normally, start-up activities on a project are only studied seriously when construction is well underway. In this project, SNC carried out detailed planning of the start-up at an early stage of home office design. We broke down the facilities into nearly 200 logical systems. Each system was separately documented with detail on all of the requirements for the turnover of the system to operations personnel. This documentation, for example, included all line lists, instrument lists, equipment lists, check lists for field tests and a list of all applicable drawings. Each system was prioritized to achieve full compatability with the required startup sequence for the plant units. Then, using computerized scheduling, analyses were carried out to ensure that the required completion date for each system would be consistent with the computerized analysis of planned construction progress. Later, at the construction site, with the aid of a special systems completion center, when construction was approximately 80% complete, we converted from our construction scheduling program to our system completion schedules.

This early planning for start-up, using a systems approach, enabled field construction supervision to concentrate on the direct supervision of construction activities, and for plant operations to receive the plant in a carefully planned way with which they could easily cope. The end result was that all facilities were operating successfully very shortly after total construction completion.

SNC tackled labor productivity by introducing a program called MAPLE, which stands for Maximum Achievement in Productivity with Labour Expertise. Based on the theory of participative management, the program stresses closer relationships between construction, labor and management, and two-way communications. MAPLE encourages tradesmen to play an active role in improving productivity by suggesting more efficient work methods.

Among the MAPLE activities that were scheduled throughout the project were regular foremen's feedback sessions, foremen's training sessions, quality circles, site tours, suggestion forms, performance recognition and a monthly newsletter known as "Maple Bark!" Thanks to an excellent understanding established with the unions at the start and maintained throughout the project, the MAPLE program helped create a work environment where quality and performance significantly exceeded the norm, despite as noted earlier, a scarcity of other work opportunities in the region.

Participation in Planning Key

While on the subject of labor, another challenge occurred during the construction of a recent pipeline project in Quebec for Gaz Inter-Cite Quebec Inc. (G.I.C.Q.). The project was a provincial distribution system of gas which was available in the province from the T.Q.M. gas trunk line. During the construction of the T.Q.M. line, line welders would only work on the job if they were paid according to the national pipeline agreement (which meant about \$3500 per week). The rate according to the Quebec Decree would have given them about \$2000 per week. On the T.Q.M. project both the owner and contractors in effect broke Quebec law by allowing the national pipeline agreement to apply. On the G.I.C.Q. project both the owner and SNC were determined that the Quebec Decree rates should apply and SNC set up a strategy to make it happen, even though a very strong welding local from Montreal was determined to break the Quebec Decree. The strategy worked out is stated below.

The owner, G.I.C.Q., agreed with us that they would have no contracts at all with the unions. We asked the government to give to the Office de la Construction du Quebec all the necessary funds to allow them to carry out the key issue of labor hiring. Then the owner held a press conference, making a firm statement that the project would be constructed strictly according to the laws and regulations of the province. At the same time SNC met a few key business managers from the unions to make it clear that this project would not be carried out with the same violations that were allowed on the T.Q.M. project. The contracts that would eventually be signed by pipeline construction

contractors contained a special section pertaining to labor agreements and prospective contractors had to sign these conditions before being invited to bid.

SNC started construction of the Montreal-Sherbrooke line at the Sherbrooke end of the line where we knew high unemployment would make it easier to obtain welders, and where the local workers did not like being dictated to by locals from Montreal. We set up training programs, but still could not obtain enough welding progress without the participation of the highly skilled welders from Montreal who were still refusing to work unless the national pipeline agreement was applied. So, according to Quebec law, since there were no more welders available in Quebec, we followed our planned strategy and brought in both welding machines and welders from Western Canada.

After a few weeks, realizing that the job would go ahead without them, the welders from Montreal indicated that they wished to negotiate. Again, it was made clear to them that the laws of the province were not going to be broken. Eventually, after a few days of discussions, they agreed to come to work, after obtaining an agreement that the Government, the Contractors Association and the owners would take into account the special case of welders at the next year's negotiation of the Quebec Labour Decree.

The project was eventually completed on schedule and with no unusual labor problems and no labor violence. It was the first time in over 30 years that a pipeline project had been completed in Quebec without having to apply the national pipeline agreement. The strategic planning that was carried out with a positive approach from the outset enabled all parties to the project to maintain their self respect, and avoided any under the table agreements that had occurred on previous work.

Staying Close to the Owner

The execution of the \$500 million aluminum smelter project for Reynolds in Baie Comeau, Quebec, had presented a real challenge in decision making in order to achieve a fast-track schedule. The project which is now almost complete necessitated commitments averaging \$20 million a month over a sustained period. In effect, this amounts to reaching decisions on procurement and construction contracts at about one million dollars per

working day. Considering the complex chain of activities required to arrive at such decisions in a well managed manner, the challenge is a great one, both for the company managing the project and for the owner.

It is essential to have good planning and good budgeting, which in turn lead to credibility and a high confidence level by the owner if events take place as planned and budgeted. The owner's representatives also develop high credibility within their own organization if approvals required follow the expected course rather than the unexpected. Another key factor leading to fast decision making is well organized communications and meetings with all participants involved in the decision making process.

On the Reynolds project SNC purchased approximately 15,000 pieces of equipment in 370 separate packages, averaging \$350,000 per equipment purchase package. The construction work on-site, following a policy of maximizing local input, involved 150 separate contracts at an average of \$1.8 million each. Before any package or contract can be committed, a whole sequence of events must take place, including technology conformity, engineering specification and design, request for bids, and technical and commercial analysis of bids. It is necessary to establish dates for each part of the sequence and to give proper coding to all the key elements in a part. With the aid of a computerized critical path method schedule, SNC can then control, at any one time, several thousand activities. By the use of computerized procurement and contracting systems, we can also monitor and control the thousands of activities that occur after award of any package or contract, right up to delivery and installation at the construction site.

During the Reynolds project there were many types of scheduled meetings, a key one being the coordination meeting held every two weeks to review progress in procurement packages and construction contracts. The evolution of each package or contract was reviewed as well as the progress after award. Each part of the sequence (e.g., engineering, tendering and award, fabrication) was reviewed three months before it was expected to occur, and each part of the sequence was dropped from the review as it was completed. Thus, a package or contract could be on our list for review from 6 to 18 months. These comprehensive review meetings, with all key participants present, meant

that corrective actions could be recommended and agreed upon effectively. With the owner's representative present as well, we had all the tools in place to arrive at the fast and continuous decision making required on a daily basis.

Logistics Challenges for International Project Management

SNC has met some interesting challenges in overseas projects. A communications project known as PANAFTTEL, completed at the end of 1982, involved designing and building 62 towers and associated equipment for a microwave system linking five African countries (Sénégal, Mali, Upper Volta (now called Burkina Faso), Niger and Bénin). The biggest challenge we had to meet was one of logistics. We had to procure (mainly from Canada, but also from the U.S., France and Israel) all of the project materials, radios, power systems, prefabricated buildings, steel, construction equipment, trucks, tools, spare parts, support equipment and supplies for field crews, including fully equipped living trailers and the bulk of food requirements. All of this had to be shipped to 62 sites in 5 countries. All of these countries had relatively poor material handling, customs and communications services.

The key to logistics success was a thoroughly detailed logistics plan identifying lots of materials, types of coating, marking codes, precise transportation routings, shipment schedules, and material control procedures at each point of shipment and at each transit and final delivery point. We also hired a freight forwarding company that had direct affiliates in all of the five African countries involved. SNC's own personnel were constantly inspecting and monitoring all activities in Canada and Africa to ensure that mistakes were identified and corrective actions taken. They also had to ensure that each of our construction crews was supplied with materials and equipment in the proper sequence and according to schedule. Despite all our precautions some materials were mis-shipped, causing great customs confusions. A steel base is presently stranded in the bonded area of a certain harbor. It was cheaper to replace than to retrieve it from a country where officially it had never entered. However, never during the construction phase were the

field crews stalled by a lack of material or equipment, and partial delays were limited to a few days.

Technical Challenges and International Project Management

Another major challenge on the PANAFTTEL project was the technical one of providing 41 sites with dual Rankine cycle turbogenerators manufactured in Israel by Ormat. These machines, to be used at unmanned sites, have low fuel consumption, require little maintenance, and were the particular choice of our client. The machines that we received were really prototypes, had never been used in a similar systems configuration and initially had problems contending with the high temperature-no wind weather, and the low quality fuel available in the African countries. We agreed with the manufacturer to conduct a new series of tests in Israel, simulating as precisely as possible operating conditions in Africa, and together designed “modification kits” that could be added to the machines in situ.

After testing the “modification kits” at an experimental site in Africa we then made plans for delivery and installation of the kits at 41 sites. We mobilized the skilled personnel needed from the manufacturer to install the kits and made our detailed plan for the retrofits. However, by the time the retrofits were due, relations between Israel and three of the African countries had deteriorated to the point where visas for Israeli citizens were not allowed. SNC had to meet the challenge by sending its own technicians for a three week crash course at the manufacturer’s plant and then bring them to Africa to complete the job. Today, all the machines are effectively supplying energy to the microwave links, and many Canadians have technical experience ready to be applied on future projects.

Financial Challenges and International Project Management

The last set of challenges concerns those met during SNC's recent copper mine and concentrator project in Peru. This project, for a new state enterprise known as Tintaya, had a capital cost of several hundred million dollars and was located 13,500 feet up in the Andes. A substantial portion of the project was financed by the Canadian Export Development Corporation (E.D.C) and Canadian banks.

Although our client looked to have a stable future, there is considerable financial instability throughout Peru. Based on a default clause with E.D.C., if any one Peruvian client is in default of payment to E.D.C., then all E.D.C. financed projects in Peru are automatically affected. Twice during the first half of the project financing came to a stop, until our client came to the rescue of the Peruvian government and arranged to help the defaulting party. This in turn caused a certain amount of rescheduling of loans to our own client. It became a continuous challenge throughout the project life to stay very close to E.D.C., so as to be aware of the state of all Canadian loans to Peru and keep our client advised of all potential Peruvian financial problems. The effect of any financing stoppages obviously has a serious adverse effect on the project schedule.

In Peru, the laws concerning contracting practices for a state owned company are constantly changing. This necessitates having legal advisers very close to one's project management team at all times. The bidding for any construction contracts must be made public and the award system is very often like a lottery. For example, in the most common type of bid all the bids are analyzed and the contractor who is immediately below and closest to the average is declared the winner. This, of course, could eliminate the preferred contractors. During the actual priced bidding we had to supply the bidders with our own estimate of the contract price. If no bids are received within 10% of our estimate then the whole bidding cycle is repeated. Each member of the client's evaluation board involved in selecting the successful bidder is personally involved with respect to any litigation which may arise from a vendor contesting the tendering procedure or

subsequent award. Because of this personal litigation risk it becomes virtually impossible to cancel a contract, no matter how bad the performance may be.

The Tintaya project had many other project management challenges, including the lack of authority of the client's team, difficult site conditions, lack of telephone or telex contact for nearly two years with our site team, and terrorist attacks. As noted in the introduction, the secret of good management is to anticipate these types of conditions and plan how they would be overcome.

Conclusion

In conclusion, it is always important for project managers to have a positive approach. Project management requires staying close to the client. Project management requires awareness of local desires, laws and practices. Project managers must never stop planning and evaluating the plan.

Dr. Anthony Rustin is Group Vice President, Project Operations, of the SNC Group, Montreal, Quebec, Canada.

Methodology

المنهجية وطريقة البحث

تم العمل على هذا البحث من خلال العالية واقع المشروع وتحليل خطوات العمل الهامة والوصول إلى ضرورة إعطاء الفريق مخططاً تفصيلياً للمشروع وإشراك الجميع في صياغته وتوصيفه من خلال رؤية واحدة لتحقيق كافة الأهداف المبنية بنجاح المشروع والذي هو " تدريب وتطوير مجموعة كبيرة من موظفي جهة أخرى " على كافة المستويات القيادية والإدارية (عليا & وسطى & تنفيذية).

Results and Discussion:

النتائج الرئيسية للبحث

يتضح من خلال ما تم عرضه وما تم نقاشه بأن:

- ١) يوضح التخطيط أهداف المنشأة بوضوح حتى يستطيع كل أفراد الجماعة العمل على تحقيقها.
- ٢) يساعد التخطيط على توجيه كافة الأنشطة الهادفة والمنظمة نحو تحقيق النتائج المرجوة مع تحقيق التابع الفعال للجهود المبذولة.
- ٣) يساعد التخطيط الجيد المشروع على مواجهة المنافسة والبقاء في حلبة السباق مع المشاريع الأخرى.
- ٤) يعمل التخطيط الجيد على زيادة فعالية التنسيق بين كافة الأقسام والإدارات المختلفة.
- ٥) أن التخطيط يتعلق بالمستقبل الذي يتصف بالتغير وعدم التأكد ومن ثم من خلال التخطيط يمكن معرفة المشكلات المتوقعة حدوثها وعمل اللازم لتلاقيها أو الاستعداد لها قبل وقوعها.
- ٦) يعمل التخطيط على الاستغلال الأمثل للإمكانيات المتاحة مما يؤدي الى تخفيض التكاليف الى أدنى حد.
- ٧) يقدم التخطيط الأساس الضروري للرقابة، لأنه هناك علاقة وثيقة بين التخطيط والرقابة وأن وظيفة الرقابة لا يمكن أن تتم دون أن يكون هناك تخطيط مسبق.
- ٨) من خلال المزايا السابقة الذكر يتضح لنا أن التخطيط يعمل على زيادة الكفاءة والفاعلية الإدارية.

References

المراجع:

- ١- <https://www.pmi.org/learning/library/planning-identify-challenge-project-management-5625>
- ٢- Eng. Dr. Akram Mustafa Suliman Ali, Budgeting, Estimating times and costs PMG506 Chapter 9
- ٣- Eng. Dr. Akram Mustafa Suliman Ali, Starting the project plan: The WBS PMG506 Chapter 7