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Project Planning and Control

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Abstract

Operations management is important because it relates to the creation of products and services on which we are all dependent. Operations management is also quite motivating; operations are the center of many changes that affect business - changes in customer preferences, changes in the supply chain caused by technologies based on the businesses where we work, where we want to work and so on.

Operations Management includes the role of operations management, the various characteristics of processes, management activities, the responsibilities of managers, and the timely evolution of Operations Management.

Operations Management is a constant change, fostering creativity which allows organizations to respond to many changes, is becoming the main task of operations management. They are the ones who have to find solutions for technological and environmental changes as well as for the growing globalization of markets. The project usually arises as soon as the client's need is identified, and goes through all the extensive phases and sub-phases to take its true form and put into operation.

The project is divided into two main parts that include Planning and Implementation that are separate in these stages: definition, planning, organization, control, completion.

Planning involves a detailed calculation of the project. This includes known facts, admissible facts and risk calculation. Planning as a process involves the cost that accompanies it. The manager must strike the balance between cost and benefit. Project control uses data provided by monitoring to bring performance.

Keywords: Project Planning, Control.

1.   Introduction

Before starting the planning process it is necessary to consider the way in which the objectives should be presented to the project, and according to which the plans should be distributed. The usual way for this process is for the client to give a summary of terms. of reference, and the project manager responds with a proposal. This process is carried out before moving on to a more detailed consideration of the nature and purpose of the planning process.

There is no single way to formulate the project summary and the proposal that follows. Formalized processes are usually most required when the client and supplier are in the proposal document enterprise. The size of the project does not affect the degree of formality that should occur, but it generally happens that the larger the project, the larger the be the degree of formalization.

The abbreviated summary must be very accurate so that the supplier can identify and clarify each aspect before beginning to prepare the proposal. However, the most common for the summary is to write down the exact output requirements, and to

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leave the means of achieving these requirements to the supplier's experience. There are situations when it is necessary for the summary to be as broad as possible. The short summary is just the starting point. It is the responsibility of the project enterprise to make the best interpretation of it.

The transition from the main points of the project to the proposal can be the main part of the planning process.

Careful consideration is essential, as it will set the criteria by which the result will to be tried. The proposal should be considered in relation to:

• Who is the proposer-decision maker for the investment, or a third party?

• Why is this proposal required?

The first part of the analysis in formulating the proposal should consider the potential clients of the project - are they internal to the enterprise or are they external? Also, are the clients the end users, the investment decision makers or a third party acting? on behalf of one of them. The proposal itself must contain:

• A project administration summary that provides key information in a nutshell. Ideally it should be read in a minute.

• The main part of the report-diagrams and figures give much more information than the text. To ensure that the presentation is harmonious, some standard forms are used, which make it more difficult to leave out a section. A list of verification questions is quite valuable in drafting documents.

• Appendices - any information summarized in the main report can be included in a longer form here, along with the data supporting it.

The plan is the first step in providing the funds to satisfy the requirements of the project owner or sponsor. It is the beginning for the project manager's input to ensure that whenever possible, problems are identified and resolved in advance. The plan is a document that clearly states the intended time for project activities, and is the basis for evaluating requirements. for the source.

Problem prevention and non-regulation is one of the main objectives of the planning process. The designation of project planning as a process implies that there is a well-defined path that the planner should take. This is not always clear and an overall planning model is difficult to build. Planning as a process involves the consumption of resources, the cost that accompanies them.

The project manager must strike the balance between the cost incurred during the process and the benefits to be undertaken. The Project Planning process is performed at two levels:

At the first level he must decide "what happens". Then this plan at the tactical level must become a definition of how it will be implemented at the operational level.
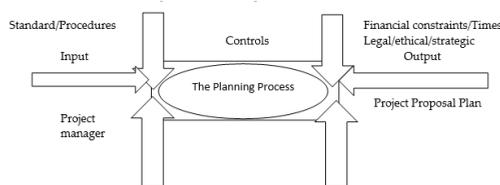

Fig.1. Activity model used by IKOMs

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Figure 1. Shows an activity model to be used in activity analysis systems considering inputs, controls, outputs and mechanisms (IKOMs) for the activity. Inputs form the basis of what will be converted by the activity, in this case the project summary. Benefits of using systematic planning methodology include:
• Breakdown of complex activities into manageable parts
• Determining the logical order of activities
• Provide the following input to the project management
• Providing a logical basis for decision making
• Indicating effects on other systems
• Allows lessons to be learned from practice
• Facilitates the communication of ideas with others in a logical form, etc.

1.1.   Elements for project planning

The process of developing a project plan varies from one enterprise to another, but each project plan must contain the following elements:

A general presentation. It is a brief summary of the objectives and purpose of the project and a list of the most important moments in the project schedule.

Objectives. The general goals of the first part are given in more detail. This may include profit as well as competitive and technical goals. .

General method. This section describes the managerial and technical methods. The technical discussion contains the connection of the project with the existing technology. It can be noticed that this project is an extension of the work done by the company for a previous project. The managerial method points out any deviations from routine procedures eg: use of subcontractors for some parts of the work.

Rakt Contractual aspects. This critical part of the plan includes the complete list and description of all claims reported, sources provided by the client, liaison arrangements, advisory committee, project review and cancellation procedures, any specific management arrangements as well as schedule distribution and the specific change procedure of each one mentioned above.

Schedule. In this section different schedules are given and all critical events are listed. The time estimate for each job should be taken from those who do the job. The project schedule will be built from these inputs.

Resources. Two main aspects are covered in this section. The first is the budget. Capital requirements as well as expenditures are detailed in assignments, thus giving us the project budget. Second, cost monitoring and control procedures should be described. In addition to the usual routine elements, monitoring procedures should be set to include requirements for specific project resources, such as special machinery, testing equipment, special materials, etc.

Staff. Listed here are the staffing requirements for the project. Special qualifications, types of training needed, problems with potential recruitment, legal or policy requirements for workforce composition and any other specific requirements should be given here. Designs are an element important of the budget, so that parts for staff, schedule and resources can control each other to ensure compliance.

Evaluation method. Each project should be evaluated against the standards and with

the methods defined from the very beginning of the project. This section contains a brief description of the procedure to be followed for monitoring, collecting, storing and evaluating the progress of the project.

Possible problems. It is often difficult to persuade planners to make a serious effort to anticipate potential difficulties. One or more of the potential difficulties such as subcontractor withdrawal, technical failure, strikes, bad weather, etc., are certain to occur.

1.2.   **Job breakdown structure**

Breaking down large activities into manageable units is a key part of project management. This breakdown gives people responsibility for manageable parts of the project as well as facilitates financial control activities.

In general the structure of work breakdown is an important document that can be used in different ways. It can illustrate how each part of the project contributes to the whole project in terms of performance, responsibility, budget and schedule. It can serve as a basis for estimating costs or estimates of work duration.

Its uses are limited to the needs of the project and the imagination of the project manager. No version of the SZP will fit all needs, so the job breakdown structure is not a document, but any job breakdown structure is simply one of many possible documents.
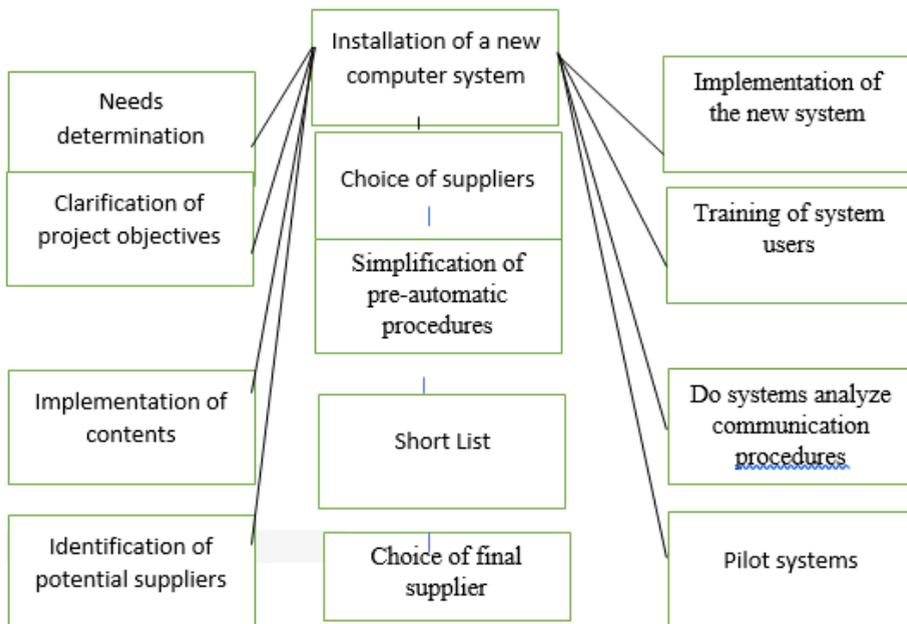

Fig.2. Example of job breakdown structure

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1.3 **Project planning techniques**

1.3.1 Time planning-tools and techniques

The project planning process as described earlier consists of four stages: Identifying the component activities, determining their logical sequence, preparing time and resource estimates, and presenting the plan in an understandable way. This last step allows the plan is communicated to all parties involved in a project as well as the analysis is done. The general planning method involves starting through the review process shown below. This is known as a recurring iterative method that involves going through several times the planning cycle to test the effects of change through the process that is consistently shown to be done on the results. The objective is to make major changes at the beginning of the planning cycle and then make small adjustments to the planning. Despite the different projects that considered, common among project managers is the use of different techniques graphic to allow the construction of a clear and understandable overview of project activities and to communicate with others.

The purpose of graphic techniques is to provide connections between activities and time. The simplest form is a graph with horizontal lines where the duration of the latter indicates the beginning and end of an activity.
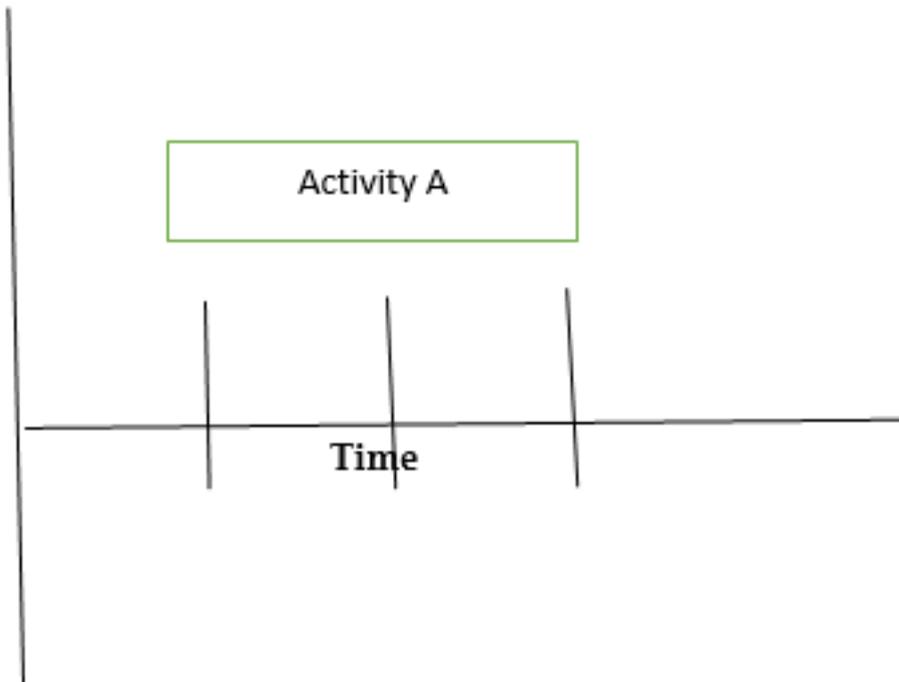

Fig3. Horizontal line graph: Activity 1 starts at time 1 and ends at time 3.

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Vol. 8 No. 1
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1.4 **Project networking techniques**

The difficulties of the Gant technique are overcome by developing project network techniques, and their diagrams. These techniques involve presenting the proposed project as a diagram consisting of a set of arrows and nodes. The original structure of the model depends on the proposed project execution method and is drawn in such a way that the logical structure of the plan can be easily viewed and tested. He presents the way of project planning and gives the model to understand and when it is necessary to make the modification of the plan.

There are two models of network techniques: the arrow activity model (AOA) where the activity is represented by an arrow and the node activity model (AON) where the activity is represented by a circle or box. Both of these methods have their advantages and supporters. necessary for some companies to know both of these methods to meet the needs of customers. These techniques can be used in situations where the start and end of work can be determined.

a) Construction of diagrams with arrow activity (A-O-A)

In the arrow activity system more commonly known as critical path analysis (CPA) or evaluation program and review technique (PERT), the project is represented by the arrow diagram. This diagram is composed of key elements:

The activity is an element of the work listed in the project. In many cases the work is not real in the sense that no energy or money is wasted, and in some cases no time is used. However, ignoring the latter cases the activity is a task that must be performed. The event which is the beginning or the end of an activity or group of activities. The main criterion is that a definite and clear time moment can be distinguished.
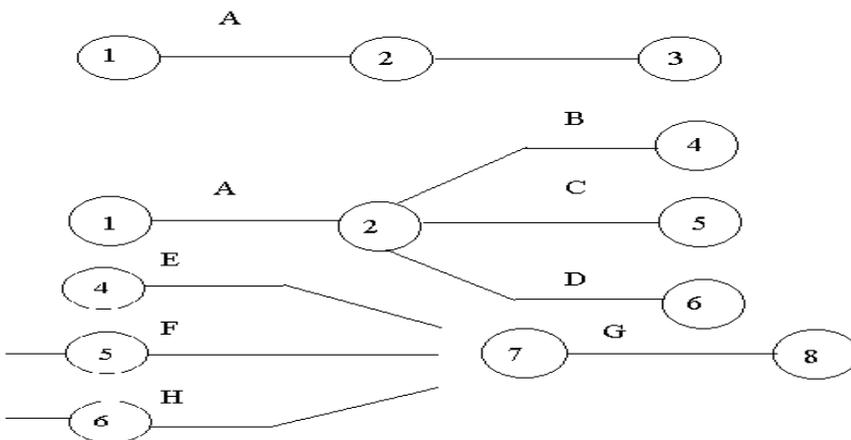

Fig.4. Construction of diagrams with arrow activity

Figure 4. The first example shows two activities A and B; activity B can not start until A is over and the times for A and B are 5 and 7 days respectively. This logic is known as dependence and can be represented as in other examples. Here more than one activity depends on another, in in this case B, C and D can not start until A is over.

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Likewise H can not start until E, F and G are over.
b) Construction of diagrams with activity in nodes (AON) This network diagram also consists of two main elements: 1. Activity element of the work listed to be performed in the project. It has the same characteristics as the AOA activity. While resources may not be used, this is an activity that is necessary for the project. The presentation is done in a node that is usually drawn as a rectangle.2.The dependency that shows the interrelationship between the different activities. So if activity B depends on activity A will be given as in figure 5.
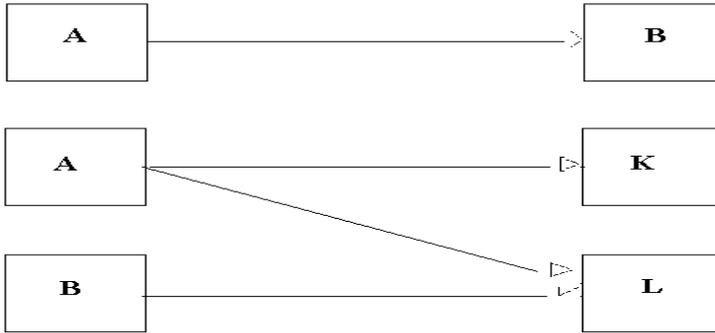

Fig.5. Construction of diagrams with activity in nodes

Similarly:
Activity K depends on activity A
Activity L depends on A and B
Activity M depends on B

While:
Activity K depends on A
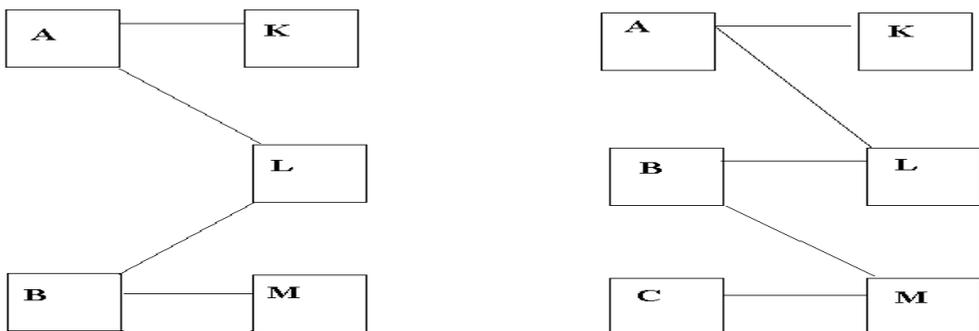Activity L depends on A and B
Activity M depends on B and C

Fig.6. Dependence that shows the interconnectedness between different activities

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1.5 Analysis of network diagrams

Network with arrow activity

a) Times of activity and event to calculate the total project time (KTP) is performed forward through which the earliest start times (FH) are calculated. For its calculation it is often necessary to refer to the earliest end time (MH) of an activity given as:

Earliest end time = earliest start time + duration

The critical path is then determined by going back through which the latest start time is given as:

Late start time = latest end time - duration.

It is important to understand that activity times are derived indirectly from the forward and backward transitions, which directly give us event times for nodes. A node has two times associated with it: one from forward, the earliest event time (KHN) which is the earliest time that the event can be realized, the other from going backwards, the latest time of the event (KVN) which is the latest time in which the event must be realized if the total time is to be reached of the project.
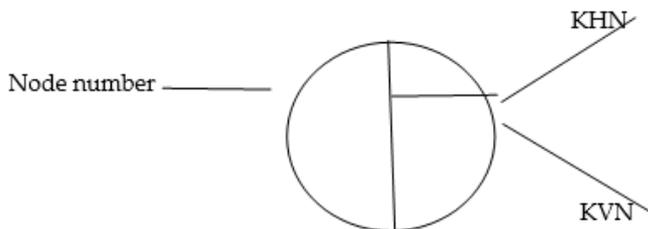
The recommended form to use is:

Fig.7.

1.6 Cost planning-tools and techniques

In addition to the main methods used for time planning, the role and nature of estimates should be considered in order to provide a realistic cost-benefit analysis.

The reason for carrying out an activity is that there will be some benefit: thus in the case of a construction project a building will be obtained or in a manufacturing industry time will be saved and the quality will be improved. For activities of medium and high complexity, the planning process will continue throughout the life of the project providing the basis for control action.

Changes are made in the circumstances of the project and thus the plan will need to increase the flexibility to change the schedules accordingly. The nature of the changes is as follows:

• Inputs - The project summary can be changed by the client, the longer the project duration, the more likely it is that significant changes will take place.

• Limitations-each of the listed constraints gives a degree of uncertainty;

• Mechanisms - the readiness of people and the state of technology are difficult to predict.

The role of the project manager in the evaluation process will range from collecting evaluations from other people to prepare the proposal, to conducting a detailed cost-

benefit financial analysis. Evaluation is an activity that continues throughout the life cycle of the project. As the project nears completion, the manager will have more confidence in the final times, resources and cost. So, the accuracy of the estimates gets better and better.

Name	Nature	Role	The accuracy **(%)**
Non-detailed estimate Rough	Lots of uncertainty about what is involved	To check the project summary from the beginning	+/- 25
With some objections	As it was done before but followed by some adjustments - a lot of quantitative data exist	An appropriate contingency fund can be used for proposals	+/- 15
Detailed estimates	An initial work has been done to determine what the potential problems might be	Proposals	+/- 10

Tab.1 Cost proposals

There are two main methods of preparing cost information:
• Bottom-up estimates for each level of the job breakdown structure are aggregated together for each level of supervision in the project hierarchy.
• Top-down-allocation of a certain amount of money for the completion of project activities to be allocated between sub-projects. This allocation is based on either senior management estimates or the use of marginal cost.

1.7 Budgets
The budget can be defined as "a written declaration of money: where it will be withdrawn, in what amount and how it will be spent". Budgets for public sector projects can be allocated using the "zero based budget". continue, but they are analyzed for annual periods or similar, this method takes into account previous performance. When progress is thought to be unsatisfactory, the remaining activities may be denied funding or cut. or of the periods we consider are often spent to prevent their loss when you return them to the calculation system. This can lead to unnecessary purchases or to rushing to meet deadlines. This certainly does not encourage the good use of resources. Imposing restrictions on the movement of funds between budget categories causes anomaly that can lead to wasted money.

1.8   **Pricing for the project**
The main links between price, cost and profit can be expressed in a number of ways:
Cost + profit = price
Price - profit = Cost
Price - cost = Profit
Which of these equations will be applied, it depends on who will be fixed first, price,

cost or profit. The differences can be explained as follows:

• In the first case, the price is fixed by legislation or through market analysis in the case of the marginal cost system.

• In the second case the cost is fixed, generally through the purchase contract, which guarantees that the goods will be supplied to you at a special price. This way fixes the cost, while your selling price and profit may vary.

• Some contracts give the profit that a company is allowed to make through the system known as "cost-plus"

1.9 Project control

Control is the last element in the implementation of the planning-control cycle. Information is collected on the performance system and compared to the desired or planned level and action is taken if the actual and desired performance changes significantly, which the controller wants to reduce the change. It should be noted that performance reporting, comparing differences between desired and actual performance levels, and considering why such differences exist and are part of the control process.

Essentially control is the act of reducing the difference between plan and reality.

As noted earlier, control focuses on three elements of the project — Performance, Time, and Cost. The project manager is constantly concerned about these three aspects of the project.

Performances

-Unforeseen technical problems may arise Insufficient resources are available when needed

-Quality or safety problems occur etc.

The cost

-Technical difficulties require more resources

-The purpose of the work increases -Initial offers or evaluations have been very low, etc. time

-The initial estimates of the time have been optimistic

-The order of works has been incorrect

-Changes made by the client have required re-creation of work, etc.

The main goals of control

The two main objectives of control are:

1) Adjusting the results between changing activities

2) Supervision of enterprise assets

Control of physical assets

Asset control requires control of the use of physical assets. It is about the maintenance of assets both regularly and preventively. This should include the time of maintenance.

Human resource control

Human resource oversight requires controlling and sustaining the growth and development of people. Since projects are unique and differ from one another in many ways it is possible for people to work with projects to gain extensive experience within a relatively short period of time. short.

Control of financial resources
It is difficult to separate control mechanisms aimed at conserving human resources from those focused on regulating the use of resources. Most financial controls do both. Capital investment controls aim to safeguard enterprise assets before equity expand and the same conditions govern the use of capital to achieve the enterprise's goal of a high return on investment.

Conclusions

From all this we can say that planning is about a detailed calculation of the project. This includes known facts, acceptable ones and risk calculation. The key to a successful project is in its planning. Creating a project plan is the first thing you need to do when undertaking a project.
A project is successful when the needs of stakeholders are met. As a first step it is important to identify the stakeholders in your project. It is not always easy to identify the actors of a project, especially those who indirectly influence the project. Examples include: project result users, project manager and project teams, etc. Once you have identified the stakeholders, the next step is to identify their needs. The best way is by conducting interviews with stakeholders. Often stakeholders will talk about needs that are not relevant. As such, you can prioritize these needs. Once you have created a list of high priority needs, create a clear summary of the goals and record them in the project plan. Identify the project plan, individuals and organizations with a key role in this project. Describe their roles and responsibilities in the project for each.
Project control is done in order to: track progress-The project manager should have a system of periodic reports that identifies the state of each activity in the project, detects deviations from the plan-when various problems push the project out of the scheme own and take the necessary corrective steps.

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