Process Of System Planning

Unit 5

Fact Finding Techniques

- Fact finding techniques are techniques used by the system analyst to collect data related to the existing system.

- This may include data about the organization, staff, documents used, formats used in the input and output processes.

- The different fact finding techniques are : interviews, group discussions, site visits, presentations, and questionnaires. System Analysts uses the techniques to know the requirements of the system.

1. Interview : Personal interview is a recognized and most important fact finding technique. In this method, the system analyst gathers information from individual through face to face interaction. Interviews are used to find the facts, verify the facts, clarify facts, get the customer involved, identify the system requirements and know all options. The interview is conducted by system analyst. The interviewer must have personality which helps him/her to be social with strangers or different types of people. Interviews are not appropriate for all situations.

Types of interviews :

There are two types of interviews:

• Structured; and

• Unstructured.

Structured : In structured interviews, there is a specific set of questions to be asked to an interviewee.

Unstructured : In unstructured interviews, there are few specific questions pertaining to an interviewees. But we can have questions that are common to all interviewees. These are conducted with only a general goal or subject in mind.

Conducting interview is an art. The success in interview depends on selecting the individual, preparing for the interview, creating situation in which the answers offered are reliable and creating a situation in which opinion can be given without any fear of being criticized by others.

Arranging Interview :

The system analyst should prepare properly for the interview. S/he should select place of interview, time of interview in such a way hat there will be minimal interruption. It is important to take appointment with the interviewee. Time to be spent during interview varies from project to project.

Guidelines for conducting interview :

Steps to be followed for a successful interview :

1. Introduction : At the time of introduction, the analyst should introduce himself by focusing on purpose of the interview and the confidential nature of interview. This is the phase wherein first impressions are formed and pave way for the success of the remaining part of the interview.

2. Asking questions : Questions should be asked exactly as these are worded in case of structured interview. Rewording may modify or bias the response. Always, questions have to asked in the same sequence as prepared.

3. Recording the interview : Record of the interview must be kept mentioning the source of the data and its time of collection. Sometimes, the analyst cannot remember the source of the data which may attribute to the invalid sources.

4. Doing a final check :After the interview has been completed, the deliberations made during the interview should be put in the form of a report. The report of the interview has to be sent to the interviewee for his/her signature. If any discrepancies are found or any modifications are to be done, these can be done at this point of time.

Advantages:

- Interviews permit the systems analyst to get individual's views and get the specific problem work wise and operation wise.

- Interviews allow the systems analyst to obtain a better clarity of the problem due to feedback from the interviewees.

- In the process of interviews, the interviewer has time and scope to motivate the interviewee to respond freely and openly.

- Interviews allow the systems analyst to understand the user requirements and to know the problems faced by the user with the current system.

- It is an effective technique to gather information about complex existing systems.

Disadvantages :

- Interviews are very time consuming.

- Success of interviews, in most of the cases, depends on the systems analyst's interpersonal relationship skills.

- Some times, interviews may be impractical due to the location of interviewees.

2. Group Discussions: In this method, a group of staff members who are expected to be well versed in their own wings of the organisation are invited. The analysts will have a discussion with the members for their views and responses to various queries posed by them. Individuals from different sections gather together and will discuss the problem at hand.

At the end, they come to an optimum solution. In this process, the problems of all sections are taken care of most of the cases, solutions are found which are acceptable to everyone.

Disadvantage :

- It is very difficult to get al the concerned people together at a time.

Advantage :

- A mutually acceptable solution can be found.

3. <u>Site Visits :</u> The engineers of the development organisation visit the sites. The systems analysts visit sites to get first hand information of the working of the system. System analyst watches the activities of different staff members to learn about the system. This method is used when there is confusion about the validity of data collected from other sources. The main objective of site visit is to examine the existing system closely and record the activities of the system.

<u>Advantages :</u>

- The process of recording facts site visits is highly reliable.

- Site visits take place to clear doubts and check the validity of the data.

- Site visit is inexpensive when compared to other fact finding techniques.

- In this technique, systems analyst will be able to see the processes in the organization at first hand.

- The systems analyst can easily understand the complex processes in the organization.

Disadvantages :

- People may feel uncomfortable when being watched; they may unwillingly perform their work differently when being observed.

- Due to interruptions in the task being observed, the information that is collected may be inaccurate.

- Site visits are done during a specific period and during that period, complexities existing in the system may not be experienced.

- There may be scheduling problems for the systems analysts when the activities take place during odd hours.

- Sometimes, people may be more careful to adopt the exact procedure which they do not typically follow.

Guidelines for site visit :

Site visits are to be conducted where the work load is normal. The systems analyst should collect the input/output form, documents at the time of his/her visit.

The following guidelines need to be followed at the time of observation and site visit:

- Keep a low profile at the time of site visit.

- Take necessary permissions from appropriate officials to conduct site visit.

- Inform the individuals who will be observed at the time of site visit.

- Take notes of the study of site visit immediately.

- Do not make any assumptions.

4. <u>Presentations</u> : It is another way of finding the facts and collecting data. It is the way by which the system analyst gathers first hand knowledge of the project. Customer makes a presentation of the existing system or about the organization. Participants in the meeting are representatives from the IT company and key personnel of the client organization. Presentation is made by the concerned department in consultation from other departments and senior officials.

Disadvantage :

- It is very difficult to obtain information in detail from a presentation. Information through presentation is sufficient to develop a prototype.

5. <u>Questionnaires :</u> These are special purpose documents that allow the analyst to collect information and opinion from respondents. With this technique, it is possible to collect responses or opinion from a large number of people. This is the only way to get response from a large audience.

Types of questionnaires :

1. Free formed questionnaires : are questionnaires where questions are mentioned along with blank spaces for responses.

2. Fixed formed questionnaires : are questionnaires which consist of multiple choices and the respondent can select only from the choices provided.

    Various types of fixed formed questionnaires :

1. True/false or yes/no type questions.

2. Questions whose response will be one of the choices : strongly agree, agree, disagree.

3. Ranking type questions (ranking items in order of importance)

4. Multiple choice questions (select one response or all the relevant responses).

Advantages:

- It is an expensive means of collecting the data from a large group of individuals.

- It requires less skill and experience to administer questionnaires.

- Customers can complete it at their convenience.

- Responses can be tabulated and analyzed quickly.

- Proper formulation and interaction with respondents leads to unbiased response from the customers.

Disadvantages:

- Number of respondents may be low.

- There is no guarantee that the respondents will answer all questions.

- Sometimes, individual may misunderstand the question. In such a situation, the analyst may not get right answer.

Issues Involved In Feasibility Study

- Feasibility consists of activities which determines the existence of scope of developing an information system to the organization. This study should be done throughout the life cycle.

- Feasibility study starts from the preliminary investigation phase. At this stage, the analyst estimates the urgency of the project and estimates the development cost.

- The next checkpoint is problem analysis. At this stage, the analyst studies current system. S/he does it to understand the problem in a better way. It helps him/her to make better estimates of development cost, and also to find out the benefits needed from the new system.

- In feasibility study, we need to study the following :

- Technical feasibility

- Operational feasibility

- Economic feasibility

- Legal feasibility

1. Technical Feasibility :

Technical feasibility is concerned with the availability of hardware and software required for the development of the system, to see the compatibility and maturity of the technology proposed to be used and to see the availability of the required technical manpower to develop the system.

The below three issues are addressed in this study.

1. Is the proposed technology proven and practical? : In this stage, the analyst has to see or identify the proposed technology, its maturity, its ability or scope of solving the problem.

2. Does the firm possess the necessary technology it needs. : In this, we have to ensure that the required technology is practical and available. Does it have the required hardware and software.

3. Availability of technical expertise. : Software and hardware are available. It may be difficult to find skilled manpower. The company might be equipped with ERP software, but the existing manpower might not have expertise in it. So, the manpower should be trained in the ERP software. This may lead to slippage in the delivery schedules.

2.   Operational Feasibility :

Its all about the problems that may arise during operations. Two aspects related with this issue are :

- What is the probability that the solution developed may not e put to use or may not work?

- What is the inclination of the management and end users towards the solution? Though, there is very least possibility of management being averse to the solution, there is a significant probability that the end users may not be interested in using the solution due to lack of training, insight etc.

Other issues related with operational feasibility are :

Information : The system needs to provide adequately, timely, accurate and useful information. It should be able to supply all the useful and required information to all levels and categories of users.

Response time : It needs to study the response time of the system in terms of throughput. It should be fast enough to give the required output to the users.

Accuracy : A software must operate accurately. It means that it should provide value to its users. Accuracy is the degree to which the software performs its required functions and gives desired output correctly.

Security : There should be adequate security to information and data. It should be able to protect itself from fraud.

Services : The system needs to be able to provide desirable and reliable services to its users.

Efficiency : The system needs to be able to use maximum of the available resources in an efficient manner so that there are no delays in execution of jobs.

3. Economic feasibility : It is the measure of cost effectiveness of the project. The economic feasibility is nothing but judging whether the possible benefit of solving the problem is worthwhile or not. At the feasibility study level, it is impossible to estimate the cost because the customer's requirements and alternative solutions have not been identified at this stage. When the specific requirements and solutions have been identified, the analyst measures the cost and benefits of all solutions, this is known as "cost benefit analysis". A project which is expensive when compared to the savings that can be made from its usage, then this project is considered "economically infeasible".

4. Legal feasibility : This type of feasibility studies issues arising out of the need to the development of the system. This might include copyright law, labour law, foreign trade, regulation etc. Legal feasibility plays an important role in formulating contracts between vendors and users. If the ownership of the code is not given to the user, it will be difficult to install it without proper permission to other systems. Whenever an IT company and the user company do not belong to the same country then the tax laws, foreign currency transfer regulations, etc. have to be taken care of.

Cost Benefit Analysis

Cost benefit analysis is done in economic feasibility. There are two types of costs associated with a project : the costs involved with development of the system and costs associated with operation and maintenance of the system.

System development cost can be estimated at the time of planning of the system and it should be refined in different phases of the project. Maintenance and operation costs are to be estimated before hand. These estimations are bound to changes as the requirements change during the development process. After the implementation, these costs may increase or decrease depending on the nature of the updates done to the system. System development cost is one time cost, but maintenance and operating costs are recurring costs. Different costs involve the following :

Cost of human resource : It includes the salaries of system analyst, software engineers, programmers, data entry operators, operational, and clerical staff. In short, it involves the amount going to be spent on the people involved.

Cost of infrastructure : This includes the cost of computers, cables, software etc.

Cost of training : Training on new technologies must be given to both the developing staff and operating staff. This must also be considered for calculating the cost of the system.

There are two components in economic feasibility : costs and benefits.

The cost includes tangible hardware, software costs, cost of human resources and some intangible costs. Tangible costs are saved by the system. Intangible costs are saved by the quality of the system. Application of the system should lead to efficiency. When the quality of system is high, then the effectiveness of the services provided by the organisations increase. Tangible benefits are those which can be quantified easily. They can be measured in terms of savings or profits. Intangible benefits are difficult to quantify. Intangible benefits include improving company goodwill, improving employee moral, better decision making etc.

Preparing Schedule

- Process scheduling is an activity that distributes estimated effort according to the planned project duration by allocating the effort to specific software engineering tasks. At the early stage, macroscopic schedule is developed. This schedule identifies all major activities of the project. As the project progresses, each entity of macroscopic schedule is refined into a detailed schedule. For systems development, scheduling is meant for setting an end date to the projects.

- System analyst must take care of schedule feasibility of the system. The purpose of schedule feasibility is to understand the time frames and dates of completion of different phases of the project. At the project planning phase, the decision of conforming to the schedule must be taken by considering the size of expected team size, availability of resources, sub-contracting or outsourcing of activities have to be considered. Scheduling feasibility will be reassessed during the commencement of each phase.

Gathering Requirements Of System

- Finalizing the requirements of the system to be built is the backbone for the ultimate success of the project. It involves confirming the functions and constraints of the system. When the requirements of the system are inaccurate, it may lead to the following problems :

- Delivery schedules may be slipped.

- Developed system may be rejected by the client leading to the loss of reputation and amount spent on the project.

- System developed may be unreliable.

- Overall cost of the project may exceed the estimates.

There are different ways of finding the system requirements. Two of them are joint application development and prototyping.

1.   Joint Application Development

Joint Application development is a process in which group meetings are held to analyse the problem and define the requirements of the desired system. In JAD, each participant is expected to attend and actively participate.

The group includes : sponsor, the facilitator, the user manager and IT staff.

When JAD is used to find requirements, it is known as Joint Requirements Planning.

JAD session spans from 3-7 days but in special cases it may continue to two weeks. Success of JAD depends on proper planning.

Three steps to be followed for a successful JAD session :

1. Selection of a location for JAD session

2. Selection of JAD participants

3. Preparation of agenda items for JAD session.

▪ JAD sessions are usually held in a location different from workplace. The meeting room should be equipped with white board, overhead projector, data projector, laptop, printer, scanner etc.. There should be name tags for each participant.

▪ Preparation of the agenda is the key for the success of JAD session. Agenda must be brief, should mention the objective of the session. It must mention the item to be discussed in each session and the time allotted for each item. Agenda contains three parts namely, the opening, the body and conclusion.

- Guidelines for successful JAD session :

1. Agenda should be followed strictly.

2. Topic should be completed within allotted time.

3. Ensure that the scribe is able to take notes.

4. Avoid the use of technical jargon unless essential.

5. Try to get group consensus.

6. Ensure that the participants follow the rules.

- Disadvantages of Joint Application Development (JAD)

- Since it is a meeting of many people, there may not be sufficient time for everyone to speak.

- Only a few people may dominate the discussion. So, the outcome of the meeting will be the view of those who spoke most during the meeting.

- The problem with such meetings is that some people are afraid to speak out for fear that they may be criticized.

Participants of JAD :

Sponsor : He/she is a person in top management. The sponsor plays an important role in the process of JAD. He/ She works closely with JAD leader to plan the session by identifying individuals from the user community.

Facilitator : Facilitator is a single individual who plays an important role as leader. She/he leads all the session that is held for system development. She/he must have good communication skills, negotiation skills, ability to eliminate group conflicts, possess good knowledge of business, has strong organising power, quick and partial decision making capability. The facilitator plans session for JAD, conducts the session and follows the decision of the session.

Representatives of the Clients : They will also attend the JAD session. They are chosen by the the project sponsor based on their knowledge of the business system. The role of the representatives of the clients is to communicate the business rules and the requirements of the desired system.

Scribe : Scribe records proceedings of the meeting. The proceedings are published and demonstrated to the attendees immediately after the meeting. Scribes need to have a good knowledge of systems analysis. Systems analysts usually play this role.

IT staff : such as programmer also participate in the session. IT staff listen and take notes regarding issues and requirements mentioned by the clients and analysts. They can contribute their technical ideas of the current system.

Managers : The role of managers during JAD is to approve project objectives, establish project priorities, approve schedules and costs and approve identified needs and implementation plans.

2. Prototyping :

▪ Prototype is nothing but a model of the software to be built.

▪ Designing and building a scaled down, but functional version of a desired system is known as prototype.

▪ It is developed using 3GL, 4GL with query, screen, report, form etc.

▪ The analyst builds the prototype as per the basic requirements of the user.

▪ Whenever the prototype is shown to the clients, they give their suggestions regarding improvement of features etc. or they may accept it. There are possibility of rejection also. Based on the user feedback, the analyst improves the prototype and makes a new version of the prototype. This process continues till the client is satisfied and fulfils his/her needs.

▪ Prototyping is used in the following situations :

- Requirements are not clear.

- For any complex systems, prototypes are more useful.

- In the cases where communication problem exist between customer and analysts, this model is useful.

- Tools and data are readily available for building the working system.

- Disadvantages of prototyping model :

- In case of prototyping, formal documentation is avoided.

- Usually, prototypes are stand alone systems. Building prototypes is difficult to cases where data has to be shared.

- Important issues, such as security and validation are not given importance.