SIX
Project Management Performance

Knowing whether a project was managed well or not is, perhaps, of no use to anyone except those who want to move to another project. To them, however, this information will be of immense value. So far, while managing the project we have been asked only to look forward instead of doing a postmortem, but for students of project management a completed project is a case study for real learning. Perhaps, one could learn more from projects which are failures by some standards than the ones which are very successful. Kharbanda and Stallworthy's book on 'Project Disaster' illustrates this point of view.

Let us first establish the criteria for judging the project management performance. When shall we consider a project a total success? Ideally, a project will be considered totally successful if it gets completed on time, within budget and performs exactly to the designer's specifications. But this is a tall order and many projects would not meet these requirements. Besides we have ourselves advocated trade off between the various performance parameters for effective management of a project.

A project, on the other hand, may be considered a total failure in the following cases:

1. If it is abandoned half-way or kept in abeyance or completed with a changed concept.
2. If it does not produce as specified in terms of quality of produce.
3. If it becomes sick soon after going into commercial production.

Very few projects would fall in these categories. Thus, in real life, a project cannot be considered either a total success or a total failure—it would fit somewhere in-between. That being the case, how can one distinguish some projects which have been managed better than others? And for that matter, should one wait till the end to know whether a project has been managed well or not? The investor, project manager and also the public who are watching the project are all keen to know how the project is being managed, and they must be given some indication about it while the project is still in progress.

PERFORMANCE INDICATORS

At present time and cost overruns are the most commonly used indicators of project performance. It is almost taken for granted that a project completed with minimum of time and cost overruns are well-managed projects. But while this may be partly true, it does not enable any comparison with another project. It also does not tell us whether time and cost targets were unrealistic. It is quite possible for a well-managed project to have time and cost over-

runs. It is unfortunate that those who were not closely associated with such a project may not accept this.

In Chapter 2 we have studied the process by which time and cost targets are set. We have noted that there are various difficulties in setting targets realistically, and it would not be in the interest of a project to assume them as being sacrosanct. The targets, as we had advised, are to be used for direction, coordination and control. Overrun, if any, could be as much due to bad estimation as it could be due to bad management.

Time Overrun

200 TPD mini cement projects are quoted to have taken 12 to 24 months for completion. How could the completion period vary so much? Obviously, the zero dates are not the same and the meaning of completion may also differ from project to project. But many people would not be interested in the technicalities of a schedule. In order to get a project cleared through the approving authorities a schedule may be fixed up which can be far from realistic. The vendors and contractors would only add to the confusion by promising deliveries which can make anything possible on paper. Besides, a defective design and subsequent modification/change to suit the project's requirements also increases time and cost. How much time a project eventually takes and who contributed to overruns—these are questions that no one can answer without doing some research. In such circumstances, and this may hold true for most projects, time overruns can not be used as true indicators for project management performance.

Cost Overrun

The situation, however, is not so nebulous regarding cost. While time can be misquoted, cost cannot. Anything done to a project, including time overrun, would be reflected in the cost. If a project is not managed well, its cost will go up; conversely, if a project is managed well, its cost should come down. Therefore, cost can be used as an indicator for project management performance. But cost estimates in a project, as we have discussed before, are to be revised at various stages to improve their accuracy, and they invariably increase after every revision. *Cost overrun*, the expression which is used to represent the variance between the original sanctioned cost and the final cost incurred, would then provide no indication of managerial performance.

Project Sickness

An efficient project manager is one who makes the best possible use of the resources given to him for achieving the project objectives. Whatever a project manager does with respect to the resources will be reflected in the cost and what the project manager provides in return to justify this cost is a plant which, to be called successful, must produce a saleable output. The ratio of this output to the cost incurred for putting up the plant could be an indicator of project management performance and, as we will see later, this also indicates the state of health of the plant.

Referring to our cement plant example, a project will be considered to be healthy when the plant produces cement conforming to ISI specifications at a saleable cost. The performance of a particular cement project will be considered better than another only if the cost per tonne of cement produced by it is lower than the other. Thus, a better cement plant, or one

with better technology, must produce cement at a lesser cost per tonne. This has been confirmed in Table 6.1 which gives the comparative performance figures for a 200 TPD plant and a 1500 TPD cement plant with the latter having a better technology.

The performance of the plant is also dependent on the quality of project management. Firstly, the quality of plant and equipment selected will decide the cost of utilities, repairs and maintenance. Secondly, depreciation which makes a contribution of almost 33% to the production cost is due to installed cost for which project management alone is responsible. If a project is implemented at a lower installed cost, the plant performance will be so much better; if not, the plant faces the risk of falling sick.

It is, of course, another matter that the plant performance can not be measured till the project goes into commercial production, but the project manager is fully responsible for both installed cost per tonne and production cost per tonne. If both production cost and installed cost are not managed well a project may fall sick. The project may also fall sick later due to mismanagement of its operations, but the project manager cannot be held responsible if the installed cost per tonne was at par with the industry average and performance parameters were achieved exactly as per specification.

So the *installed cost per tonne* is a performance indicator which the project manager must watch. To prevent sickness, a project manager must control the installed cost and also the performance parameters of the plant and machinery. How he does this has been discussed in Chapter 5.

Productivity as Performance Indicator

Installed cost per tonne also reflects the productivity of project execution just as operating cost per tonne reflects the productivity of an operating plant. A productivity indicator reflects how resources have been utilised either for production of goods and services or for creation of facilities for the same. Since a manager is responsible for utilisation of the resources put under his disposal, this indicator can reflect his performance.

As has been pointed out, productivity at the project implementation stage will affect the productivity of an operating plant. Therefore, productivity must be measured not merely for evaluating the performance of project management but mainly to ensure profitability of the plant and to ward off sickness. When one talks of time overrun or cost overrun, the effect of these overruns on the viability of the project does not become immediately apparent; one also starts immediately questioning the validity of the original schedule or the original budget. As has been universally accepted in the case of financial management, a ratio of budgeted and actual expenditure is always a better indicator of performance than the deviation figures between budget and actual cost.

Thus, even with respect to completion time, a ratio of installed cost to completion time can be a better index which can be used to reflect project managements performance with respect to schedule management. So if one works out the cost index and schedule index of a completed project and compare it with the industry average in the same technological area, one should get a true indication of the project management performance.

Value as Performance Indicator

While we discussed time and cost indices, it was assumed that the quality of the hardware was maintained at a level which is essential to meet the desired performance, i.e. quality

remained constant. Performance of project management was, therefore, evaluated not in terms of quality but in terms of time and cost. However, in reality project management almost universally gets too occupied with the building up of quality hardware with no consideration for cost and time. Even today projects reminiscent of the Taj Mahal are being built. All this is, perhaps, done under the misconceived notion that sturdier a plant is, healthier will it be.

But as we have discussed before, a sturdier plant may not always be a healthier plant. If the installed cost per tonne of capacity is higher than normal, which it is likely to be if the project management is occupied only with building of sturdy hardware, then the plant will invariably fall sick. Fortunately, projects like the Taj Mahal were not commercial projects or else they would have, perhaps been disbanded when they were half-way through. Limitless excellence, without any consideration of time and cost, can only lead to project disasters.

The task for project management is to build a plant that works; the hardware, therefore, has always to be the crux of project management. But the hardware must be completed within time and cost estimates. And when one has limited time and budget, one has, necessarily, to be content with a limited size of hardware and limited performance. This is the other reality which is portrayed in Fig. 6.1.

Figure 6.1 shows that corresponding to a hardware configuration, also referred to as scope, there is an appropriate time-cost-performance framework. The task of project management is to first define this time-cost-performance framework and then to ensure, through design of the hardware and management of its implementation process, that this framework is not distorted. The scope-time-cost-quality diagram is thus, a symbolic representation of scientific project management and can make a good design for a project management logo.

The diagram depicts the relatedness of scope, time, cost and quality. But an analysis of the diagram will reveal that it is consideration of cost again which can lead to improvement in total project management. For example, time overrun in a project, as we have discussed earlier, will result in increased cost of financing and cost escalation; and consequently cost control will require time control. Again, since the scope for cost control is maximum during the design and engineering phases of a project, cost control will require control of scope and specifications of the project. This we have earlier referred to as the *value engineering effort*. Thus, when the cost of a project is controlled, scope, time performance are also controlled. In short, the total project management framework is controlled.

Consideration of cost does not imply any compromise on quality. In fact, as we have seen, value engineering encourages increase in quality if it can be attained at no extra cost. Value, which can be expressed as *performance*, improves only when performance is achieved as at no extra cost or when cost can be reduced for the desired level of performance. But *gold plating* or *robust design*, as it is often called, does not improve performance; it merely adds to cost and hence reduces value. This is what may happen if people are concerned only with the production of so-called quality hardware without any concern for cost. But if the project is designed and managed using the value engineering approach then productivity of project execution or installed cost per tonne of capacity installed will reduce, thus, reflecting excellence in project management. Consideration of value is, therefore, the same as consideration of cost or productivity and it is essential for improving project management performance.

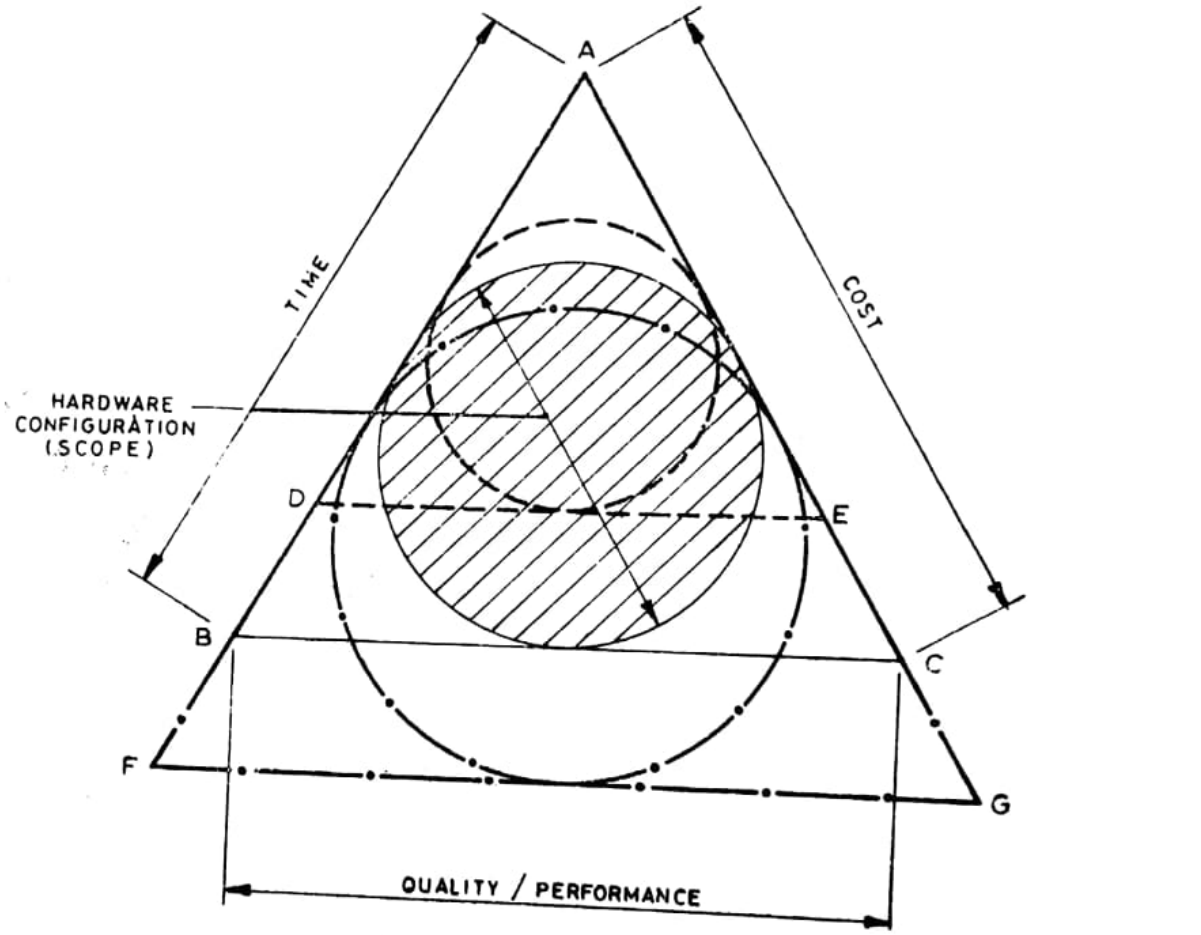

FIG. 6.1 Project management logo

PERFORMANCE IMPROVEMENT—DO-IT-YOURSELF TRAP

Since cost ultimately reflects project management performance, many people would feel tempted to do everything themselves to bring down cost. After all home-made food is both cheaper and better in quality than the food that is available outside. This sort of thinking often results in the owner trying to do a project all on his own. The owner, in such cases, engages a team which will be ultimately required for production to manage his project. He may try to get all the design work done in-house, fabricate as much as possible at his shop, order only those items which are mostly proprietary in nature, engage labour contractors for construction and supervise the design, procurement and construction work all by himself. The project team, on completion of the project, takes over the operation of the plant.

Unfortunately, these are the projects which have maximum time and cost overrun. They are also the ones where quality is ignored. Yet there are a number of operating companies

who are involved in such projects, believing that doing everything by themselves is the cheapest way of putting up a plant. Figure 6.2 describes a typical organisational set-up used by such companies for project execution.

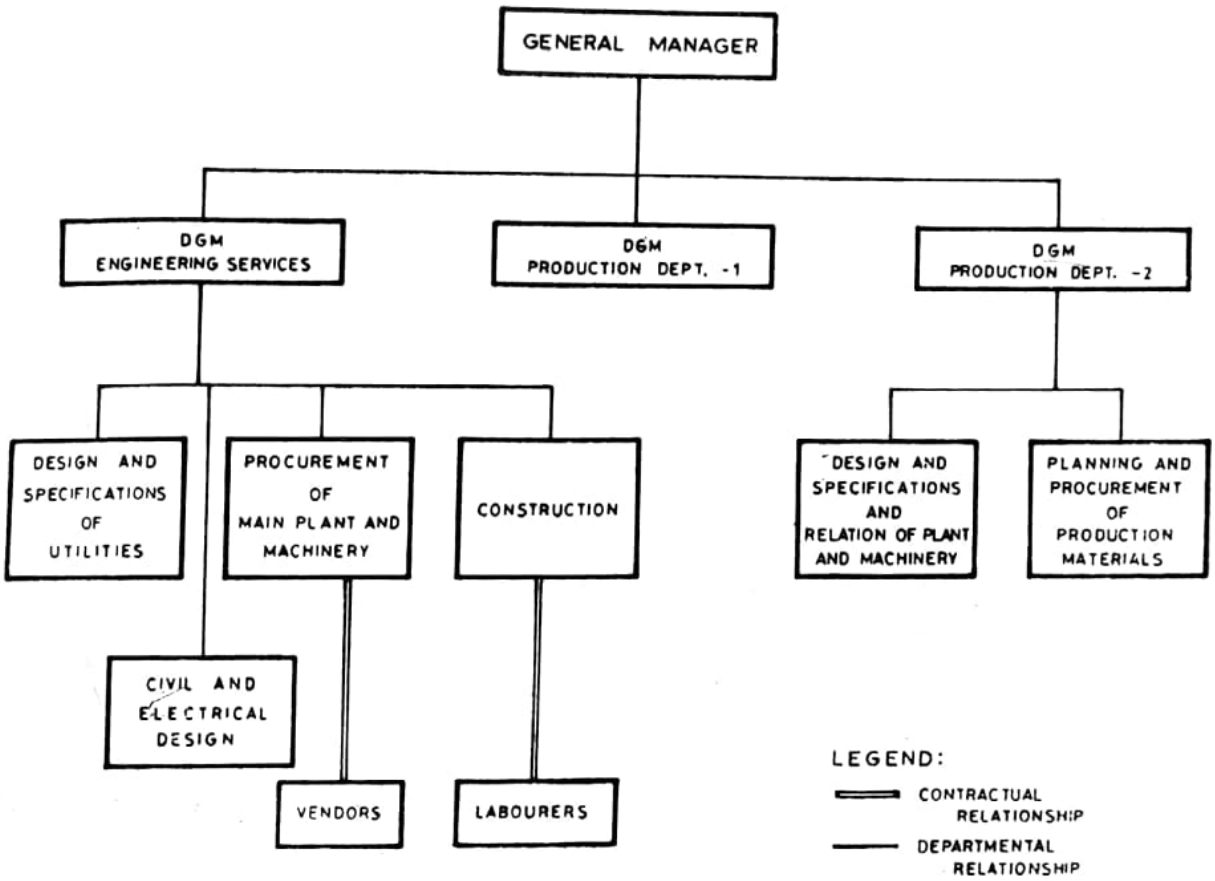

FIG. 6.2 Owner executing a project with his production staff

The main drawback with this arrangement is that it imposes a tremendous load of coordination on a working group which has no experience nor is equipped with the tools and techniques of project coordination. Further, it is almost simultaneously required to work for both the project and the production department. Since the people have a production background, they do not have the experience of working in an uncertain and dynamic work environment which is characteristic of a project. Therefore, they are, in most cases, not able to project or foresee what may happen and take necessary actions. All this results in tremendous time and cost overrun for a project.

There are many other reasons why the cost of a project goes up when an owner decides to go in for a 'do-it-yourself' plan. The operating people will invariably expand the scope of the project for the sake of unlimited flexibilities to avoid any possible difficulty during operation. This increases the cost of the project. Further, the scope never gets frozen fast as there is no hurry to package it out to any one at minimum cost. Added to this, there are endless changes even after the basic package is finalised. The operating personnel seem to have higher priorities for modifications which would ensure better operation of the plant rather than completing the project on a time-bound schedule.

A production-oriented project team invariably turns out incomplete purchase specifications and commercial conditions which are sometimes exploited by vendors and contractors;

sometimes the 'extras' tend to surpass the original price. Also, since the owner may not have much idea about the trustworthiness of the vendor or contractor, he may end up under a contract with someone who does not follow any business ethics. One such contractor is enough to take the fun out of 'do-it-yourself' type of project management and unless someone intervenes, the owner may find himself tied to a contract with many of these unscrupulous types who are only interested in picking up payments. A project, in such a case, does not get completed easily and costs very heavily.

The story almost repeats itself at the construction site with the contractors. Most contractors have cash flow problems, and since competitive bidding does not leave much margin to them, they continuously look for 'extras' to improve their margin. If the owner's supervision is not experienced, the contractor may do certain things which may not be in the interest of the project. Some contractors even engage claim consultants from the beginning to make cases for extra claims. The defensive records that a contractor may build, and the legal overtones that usually highlight these contractual relationships, are not matters over which a production manager has any proficiency. So the production manager may not only increase the cost burden for the owner but also land himself in the court.

Thus, the 'do-it-yourself' proposition does not promise performance improvement in any front, not even in quality which one could have normally expected because of the various reasons stated above. The cost of not having enough experience outweighs any apparent advantage in one's handling the project all on one's own.

Do-it-yourself—A Case

When the A-B-C chemicals company which was marketing some chemicals decided to put up a plant for the manufacture of these chemicals, they thought it would be better and cheaper for them if they follow the 'do-it-yourself' strategy. Since they have to recruit a team, in any case, for managing the operations of the plant they thought they could use the team for project execution as well. They felt it would increase the efficiency of plant operations if the same team who would operate the plant is allowed to design, specify, select and build the plant they are to operate. Also, the operating people, they argued, will have to live with the plant and as they understand their requirement for good living much better than others, they are the people who are most qualified for designing and building the plant.

A-B-C chemicals, following the above line of thinking, recruited an experienced production manager from one of their erstwhile suppliers as their General Manager—Project. The General Manager, in turn, using his contacts in the industry, brought in other from operating factories to work for his project. He, thus, built up a team which would eventually be required for managing the operations efficiently.

The enthusiastic project team wanted to have a modern plant in the shortest possible time. Accordingly, they entered into a technical collaboration with a foreign company for supply of know-how, main plant and machinery, and erection and commissioning of the plant and machinery. In their anxiety to get the plant started at the earliest they arranged with the collaborator to supply some equipment which was available within the country but had a long delivery time. The owner's project team undertook the responsibility for civil work, supply of utilities to the plant, and building the off-site facilities.

The foreign collaborator supplied the basic package on time but it was not detailed enough for carrying out detailed engineering. It took a long time to finalise the quantity and [illegible]

teristics of the utilities and their conditions at the battery limit of the main plant. It was suddenly discovered that some of the machinery supplied by the collaborator would not work under the Indian operating conditions, particularly with respect to power supply, environmental conditions and work environment. Indian engineering standards had not been taken into consideration in the specification of the machines due to which the utilities cannot be terminated at the various machines as desired.

The basic package had, therefore, to be revised. But the comments from the owner's side reached late and, therefore, some of the machinery already under manufacture had to be scrapped. The collaborator agreed to revise the basic package at no additional cost but the owner had to agree to pay charges for modification and rework on plant and machinery. Everybody, however, felt that the review was useful as it helped to remove the communication gap between the collaborator and the owner. But considerable time was lost and the owner's side could not make much progress with detailed engineering and procurement of plant and machinery under their scope.

The owner's team took considerable time in floating enquiries to suitable vendors for the supply of various utility systems. The deliveries quoted by vendors did not match the requirements of the project. Further, the owner's team was not in a position to cut short procedural delay in the placement of orders and ordering cycle time was, in most cases, more than the delivery period quoted by the vendors. The owner's team negotiated hard and, in most cases, agreed to pay more for getting faster delivery.

Due to delay in placement of orders a corresponding delay in receipt of vendor data from the local vendors was foreseen. Civil and structural contract was, therefore, awarded on item rate basis on guestimated quantities. The civil contractor was, however, tied up to a tight time schedule in order to get the plant building ready for receiving the imported plant and machinery. The contract also had provisions for penalty for delay and compensation for idle charges.

The imported plant and machinery arrived on time but the building was not ready. Due to the delay in receipt of vendor data and delay in in-house design, the structural drawings could not be issued to the contractor on time and so the building was not ready. A covered warehouse had to be hired to store the imported plant and machinery. The transporting agency had also to make two shipments instead of one. All these were additional costs not included in the budget. The civil contractor had also to be paid additional amount for extra items which was not envisaged earlier and also for idle labour.

The plant layout provided for all possible facilities and future expansions. Likewise for administrative building and plant offices, the designs were made keeping all possible future requirements in mind. It was argued that if these were not built at that stage, they may not be taken up later due to shortage of funds.

Since construction drawings for the main plant building could not be issued on time, the civil contractor was kept busy with administrative building and miscellaneous non-priority work. As was feared, the funds got exhausted much sooner and additional sanction had to be taken. That took considerable time and during this period the vendors and contractor's bills could not be paid timely. The contractor at the site could not, therefore, be pressurised to speed up the work as their payments were held up.

The owner's team believed that the indigenous items would also be delivered on time like the imported ones. And since they were already unable to erect the imported plant and machinery, they did not consider it necessary to expedite the local vendors. Therefore, only

at a later date when the civil work was ready, they started checking up with the vendors and found to their surprise that some had not even started work on their orders. The vendors had many excuses ready such as delayed approval of vendor drawings, delayed decision from the owner, late changes in scope of supply and lastly delay in release of part payment. The owner's team then started sending their team members to various vendor's shops for expediting their orders. In some cases, they stayed back to follow-up work at the vendor's shop till the items were loaded on the truck.

The project was, thus, running very late and the owner's team was not able to give any firm date to the foreign collaborator to come over for erection and commissioning. By that time pressure was building up all around for commissioning the plant without further delay. So the owner's team estimated a date when the utilities would be ready and gave a call to the collaborators. The collaborator came as requested only to find that the utilities were not ready as promised. They left in a huff and agreed to come over later again only on the assurance of additional payment and certificate of readiness from the owner's highest authority.

A few months again passed before the utilities could be made completely ready. The collaborator this time did not turn up immediately on receipt of call. They came after several follow-ups and finally the plant was commissioned a year behind schedule at almost one-and-a-half times the original estimated cost. The plant was running but not very efficiently. The utility systems seemed to be over-sized and were operated at a much lower level than their guaranteed capacity.

The Turn-key Trap

Those who realise that they do not have the expertise to manage a project themselves often decide to use the turn-key approach for efficient execution of a project. The owner in this arrangement expects the turn-key contractor to take care of all the troubles of project execution and hand over the key to the owner when the plant is ready for operation. Some believe this to be the surest way to complete the project not only in the shortest possible time but also at least cost.

XYZ Company Ltd wanted to diversify into a new product line. Since they did not have the necessary know-how, and also wanted to put the product in the market at the earliest, they decided to go for a turn-key contract. They were aware that going turn-key may cost them more but they were hopeful that the revenue from early production would outweigh the additional cost.

Since the XYZ company did not have the know-how, they appointed a technical consultant to prepare the bid package, evaluate the bids and make recommendation. Though the company was keen to float the enquiry immediately, it could not be done as the consultant took several months to prepare the bid package. The company was not prepared for this and wanted to make up the delay by setting a still tighter completion target for the turn-key contractors.

The bidders did not agree to submit their bids by the due date and the date had to be extended. When the bids were finally received the owner was disappointed to find that no one had agreed to deliver the plant by the target set by him. Also, the prices quoted by the bidders were much higher than his estimate. The owner had to engage himself in prolonged discussions for reduction of price and improvement in schedule.

Since all the bidders were manufacturers of the main plant equipment, they were not keen to take up civil and electrical work. The owner agreed to take out this part of the work from the bidders scope as it was explained to him that this would bring down the cost of the project. The bidders also suggested that the owner should procure the proprietary items on which they are adding their 'mark ups'. But the owner did not agree as it would dilute the turn-key responsibility and also increase coordination and hence disturb the project schedule. As there was recession in the industry, the bidders were keen to win this contract and, therefore, accepted the owner's stipulation that for the items not manufactured by them they should work as the owner's agents and receive a fee for their services. The owner would reimburse the successful bidder for the cost of these items.

The owner did not stop at this stage. He started negotiations simultaneously with all the bidders in order get a heavy discount on the price of the main plant and machinery and also a crash schedule. Finally, he could make one bidder agree to his crash schedule but on condition that there would be no delay in the release of payments. The bidder also insisted on a 25% advance along with the letter of intent (LOI) and an unconditional letter of credit (L/C) for the entire contract amount after six months of issue of the LOI.

The owner agreed to pay the advance in a phased manner. It was agreed that release of advances will be linked to a programme of supply of load data and general arrangement drawings by the vendor. This, the owner thought, would ensure him to make the civil work ready in time for erection of the plant and machinery. The owner also made the contractor agree to a penalty/bonus clause in order to ensure that the contractor makes all out efforts to complete the project on a crash schedule and meets guaranteed performance.

The project started slipping almost from the first day. Except for the first lot of load data and drawings, the contractor could not stick to his drawing release schedule as he was not able to place orders for bought outs as per plan. He could not even start manufacture of main plant and machinery in his shop immediately due to delay in supply of manufacturing drawings, non-availability of materials and existing shop-load.

It soon became clear that the rate of progress demanded by the contract was not achievable. The contractor, however, attributed the delay to uncertainty perceived at his end about the project due to the owner's not finalising the agreement. The signing of the agreement was delayed from the owner's end by almost three months but the contractor assured the owner that he would make up the delay in the subsequent months.

The following months brought tremendous pressure on the contractor for the supply of load data and general arrangement (GA) drawings. The owner had already lined up a civil contractor and was unable to feed the civil contractor the structural drawings according to the agreed time schedule. However, submission of load data and GA drawings to the owner were getting more and more delayed. It was observed that the contractor did not pass on any advance to his sub-vendors in a like manner as was done by the owner. Accordingly, sub-vendor data were getting delayed. However, at the owner's insistence, a team was sent to the various sub-vendors' offices and the team collected considerable amount of data across the table.

It soon became clear that the first shipment of equipment from the contractor's own shop is not likely to take place as scheduled unless vigorously expedited by the owner. Regular review meetings were held with the contractor's shop personnel and while manufacturing progress improved, it became clear that the slippage which had already occurred could not be recovered. After several months had passed, the owner decided to take up the matter with the contractor's top management so that the contract received out-of-order priority.

Interestingly, the contractor's top management started defending the slippage on the grounds of delayed signing of contract and non-opening of letter of credit. The owner explained that the financial institutions would not permit him to lock-up his money by opening a letter of credit since no material was ready for despatch. The contractor, however, was insistent that the letter of credit must be opened immediately as per the contract to enable him to step up progress. He also made a claim that substantial plant and machinery was ready but could not be despatched due to lack of a letter of credit.

The turn-key contractor meanwhile lined up a new group of professionals as their erection sub-contractor with the idea that a new group would be cooperative and put in their best effort. This was, however, not acceptable to the owner. Since considerable slippage had already taken place, it was considered essential to have a contractor with an excellent track record so that a part of the slippage could be recovered during erection. The erection contract was, therefore, terminated and a new contractor approved by the owner was engaged.

The owner opened a letter of credit for the despatch of items declared ready by the turn-key contractor. Considerable time was spent in settling the terms. Soon the owner discovered that what the contractor claimed as ready and despatched were not erectable. The contractor despatched whatever was ready, whereas the owner insisted that the turn-key contractor must send items in erectable sequence. The contractor, however, maintained that this was not possible but promised to ensure erectable deliveries as far as practicable.

Since materials were not arriving at site as planned, the erection contractor did not mobilise as promised. Materials which had reached the site lay idle either because they were not erectable or erection labour was not available. The situation was intolerable as far as the owner was concerned but he was not in a position either to rectify the situation or cancel the contract.

The turn-key contractor, on the other hand, suggested that the owner should directly take charge of erection as the situation at the site was a creation of the erection contractor who had been appointed on the owner's recommendation. The turn-key contractor also expressed his inability to despatch equipment in an erectable sequence as he was unable to pick-up all the ready materials from the various sub-vendors with the limited funds that the owner had allowed him. He threatened that unless a letter of credit for the entire balance amount was opened immediately he would stop all despatches.

But the owner was not convinced that he should open the balance letter of credit when all the items were not ready for despatch. He felt that if the letter of credit was opened for the entire balance amount, the contractor would take it easy and his project would get further delayed. He was convinced that he had not so far received a fair deal from the contractor and, therefore, there was no reason for him to oblige the contractor. The contractor, on the other hand, concluded that the owner was short of fund and, therefore, there was no point in expediting the project.

Lessons from Turn-key Contract As we have seen from the above case, the turn-key contract does not lead to the shortest possible time-period. What is worse is that it may lead the owner to a state of helplessness. Having put all the eggs in one basket, the owner is left with no opportunity to remedy things at a later date. If he does not select the right contractor, there will be no end of trouble for him.

The schedule or cost quoted by the turn-key contractor should be of secondary consideration. What should matter most is that the turn-key contractor must have an excellent track

record in management of projects and an integrity which is above reproach. Manufacturing capability should not be the only criteria for selecting a turn-key contractor.

A turn-key contractor has to earn a profit from his supplies. So he will make the tightest possible design and compromise with the quality of work as long as it does not affect his guarantees, and will plan manufacture and despatches to generate maximum fund for himself. Meeting the project schedule cannot be his first priority under such circumstances. If there is a heavy penalty for schedule overrun, he may engage a team of advocates to build up defensive records and bail him out. Instead of paying penalty a turn-key contractor may earn more by delaying a project as the owner will be too willing to accept substandard things and pay additional prices for items for the sake of schedule recovery.

The Problems with DM Company

The real world, unfortunately, is not as beautiful as any presentation would try to make it. The best intentions are often at the mercy of situations. A DM company may not show profit if the cost of the project hardware goes up, but it has to certainly put a lot of man-hours on value engineering to reduce cost of the hardware. The question, therefore, is: will the company put this additional effort for no financial gain? If the DM company is paid a lumpsum fee for design and management, will the company not try to reduce effort in design? Will the company not try to use previous designs and reduce managerial effort either to increase its profit margin or to win a contract through competitive bidding? While the entire company promises to work for the owner, will the company not direct its resources and slacken an on-going job in order to take up another one? Will the company not try to pass on its delays in engineering and procurement to vendors and contractors when it comes to payment of penalties? Thus, what may sound ideal at the hypothetical level, may not necessarily prove so in reality because of many compulsions in the real world.

PROJECT MANAGEMENT ENVIRONMENT

Project management performance will largely depend on the real-world environment. The project management environment in India, as shown in Fig. 6.8, is very different from any other country. There are many problems which are peculiar to our country and these are experienced by all those who are concerned in the execution of both small and big projects. One has to be aware of these problems in order to be able to cope with the same for successful implementation of a project.

The most important problem is lack of mutual trust and respect amongst the participating agencies: owner, financial institutions, consultants, vendors and contractors. The owner believes that the agencies/contractors would take him for a ride and, therefore, he should, as far as possible, do things himself. When consultants are not appointed, projects are likely to have congenital weaknesses such as wrong selection of technology, wrong site, high risk element, etc. Sometimes the owner may appoint a consultant for a nominal fee and ask him to prepare a report which he can sell to the bank. These reports often do not reflect reality as they are made without any in-depth study, and if cleared, would give birth to defective projects. This, no doubt, reflects on a consultant's lack of professional ethics and can be avoided if the financial institutions use a proper accreditation, system for consultants.

However, accreditation of consultants may not set everything right. A site may often be selected purely on personal rather than on techno-economic considerations. The same may happen with the selection of technology or even with the selection of the consultant. Such projects would certainly run into rough weather irrespective of whether a consultant or CM/DM company is engaged or not.

A competent consultant or a CM/DM company can also not help when the promoter wants to have short-term gains at the cost of the project. This may happen with traders-turned entrepreneurs or with those who are basically financiers. The pressures that such an entrepreneur may bring on a consultant, vendor and contractor would invariably make the project environment sick. To avoid this it is often suggested that besides technical and financial appraisal of a project the financial institutions should appraise the entrepreneur himself. It is also suggested that the financial institutions should introduce an on-going audit system to prevent diversion of funds and other forms of financial irregularities. In other words, the

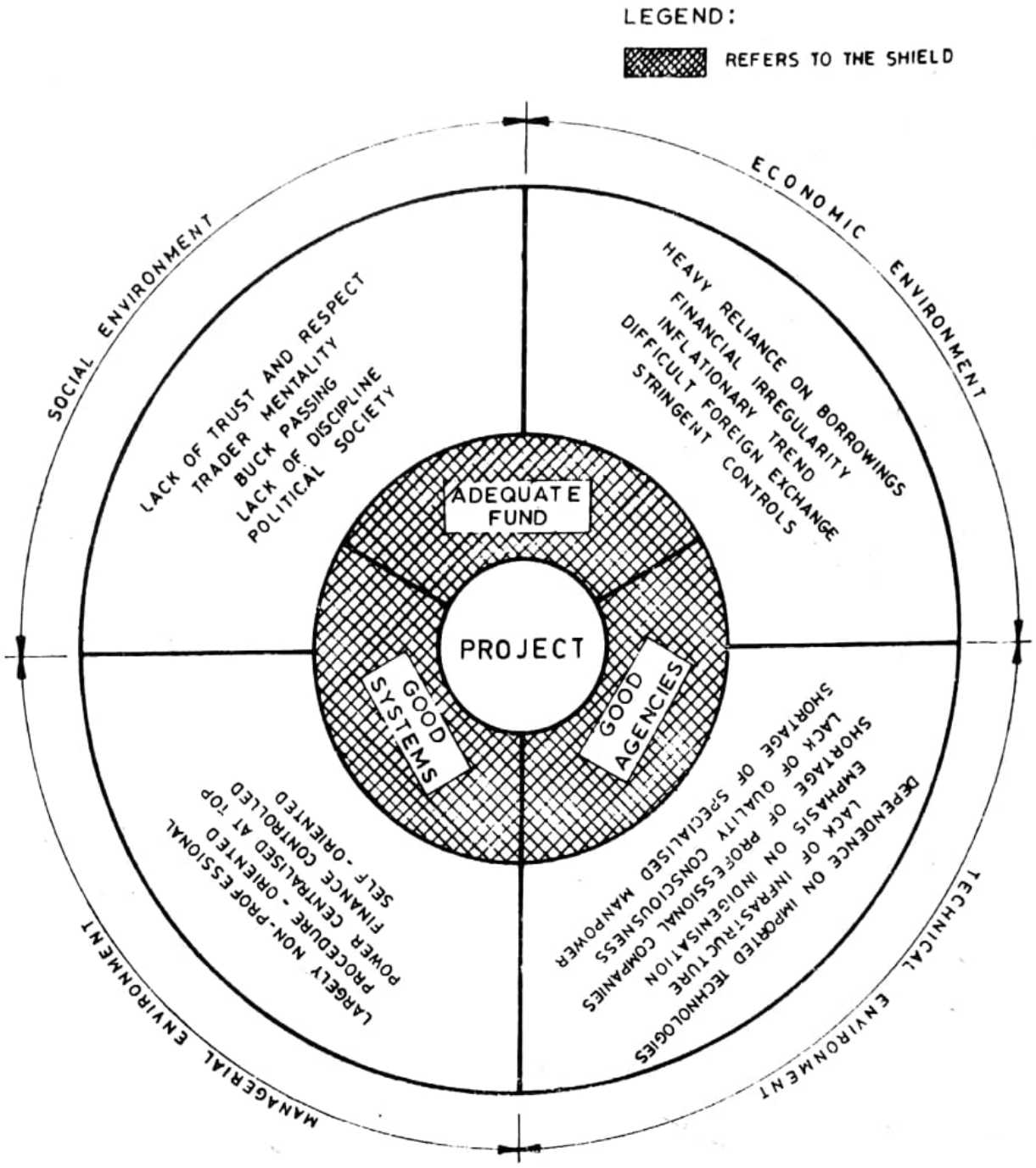

FIG. 6.8 Project management environment and the shield

financial institutions may not trust the owner/promoter since an owner may disown a project and the financial institutions have more stake in the project than the owner himself.

Sometimes a promoter may intentionally underestimate the project cost with the intention of reducing his contribution. This would inevitably lead to cost overrun which normally the financial institutions are expected to finance. Of course, the financial institutions can insist on proportional overrun finance by the owner, but since the promoter's stake is low the institutions are virtually compelled to come forward to save the project. However, the institutions take their own time to decide to finance the overrun, meanwhile the project cost undergoes further overrun. A project, thus, faces a fund crisis leading to extension of project completion time. With the extension of the project schedule further fund problems occur.

Financing cost and inflation overtake the revised cost estimate. Since contingency provisions are too inadequate to meet the inflationary conditions of the economy, institutions have to provide further funds. But this again is not easily sanctioned.

Most vendors and contractors, therefore, do not trust the owner regarding payment. At the very first sign of delay in payment, they start slackening. They cannot also be expected to be too enthusiastic about a project where fund problems are foreseen. A vendor, in such circumstance, may not start the work at all. This not only delays the project but sours the relationship between the owner and the vendor.

Over the years, a number of projects have been affected by enormous increase in prices of cement, steel and transport and energy costs. These are non-controllable costs as far as the owner is concerned and, therefore, the owner looks towards the financial institutions for relief. But the overruns even in such cases do not get automatically sanctioned as the financial institutions do not trust the promoter and would first like to be satisfied about the reasons for overrun.

Financial institutions often hesitate to disburse their term loans unless the promoters bring their entire contribution. Sometimes they withdraw their commitments due to temporary resource constraint, or when they find a project facing serious technical problems. Thus, due to financial insecurity some projects cannot progress as desired and end up with huge time and cost overruns.

Boundary Management

The problems discussed above can broadly be grouped into four classes of environmental problems: social, economic, technical and managerial. Figure 6.8 details those problems which are normally experienced during project execution in India. As discussed before, if these problems are not tackled, time and cost overruns cannot be stopped. Yet management of environment is beyond the scope of project management. There is no point, therefore, in discussing these problems in any further detail as they are beyond the scope of this book.

While one cannot change the environment for the duration of a project, one can definitely protect oneself from its adverse influences. This can be done by creating a strong shield which will not only resist the adverse effects of the environment but also influence the environment marginally, at least, along the boundary. This is referred to as *boundary management*.

A project can shield itself effectively against the environment only if it engages good agencies, uses good systems and has adequate funds to meet the requirements of the project. Good systems and good agencies will require good funds. However, the funds must be used properly otherwise a project cannot be completed at least cost which is the ultimate criteria for measuring the efficiency of project management. Unfortunately, at the moment, we are unable to provide such a shield to all our projects and that must be the only reason for our poor performance in the execution of projects.

A number of seminars and symposia are organised to discuss how to improve project management performance, and invariably all of them come to the conclusion that the environment is to be blamed and must be changed to improve project management performance. But as the environment is not likely to change in the near future, we should talk about developing a shield for improving project management performance for which this book can serve as reference material.