

CHAPTER 4

CASE STUDY 1 - THE AIRPORT PROJECT

4.0 INTRODUCTION TO THE CASE STUDY

A study on a large project management company in Malaysia was undertaken to fulfill the requirements of this research paper. In order to maintain confidentiality, the anonymity of the company and its projects is maintained. The company shall be referred to as XYZ and the projects shall be referred to by the type of project, i.e., airport project and bank project.

XYZ is the largest project management company in Malaysia with foreign multinational equity of 70% and 30% local equity. It has a staff strength of about 200 people. This company operates as an external project management consultant to manage construction projects whose stakeholders do not have in-house project managers. The company currently has eight projects in hand which are at various stages of the project life-cycle.

The following two projects, one of which is a large and complex project while the other is a small project will be discussed in detail as part of this case study in this Chapter and in Chapter 5;

- an airport project which is at the end of the implementation phase of the project,
- a hospital project which has been completed.

Examples from the other project will be cited where necessary.

4.1 SITUATION ANALYSIS OF THE AIRPORT PROJECT

The Airport Project involves the construction and fitting out of the airport support facilities for an airport in Malaysia. The support facilities included a new catering complex, a hangar, and a cargo complex. XYZ Company was appointed as the project management consultant to manage the project from inception through to successful commissioning and hand over.

4.1.1 Project Visualisation Phase

The appointment of the project manager on this project was done early in the project visualisation stage. The project manager was responsible in ensuring that the client's requirements were met and that the new facilities would be the most up to date in technology and in airport support facilities when it was completed. However more importantly the project manager was responsible in making sure that the project was completed and be handed over to the client for operation within forty two (42) months.

When XYZ Company was given the contract for managing this project, the company appointed Mr. Kane as the project manager. Mr. Kane, who was a new employee of XYZ Company, was employed specifically for this project. He was an American architect with vast experience in airport design and at least twenty years of involvement in various airport projects in the United States of America.

As it was a requirement that this project be constructed on a fast track basis, the conceptual design was required to be carried out concurrently with the project visualisation phase. Therefore an airport design consultancy firm, McJays Ltd. was also appointed by XYZ Company to carry out the conceptual design.

Apart from the appointment of the project manager, the main activity in project visualisation was planning. The project manager, Mr. Kane planned the management of the project by breaking down the activity into various tasks.

Firstly, Mr. Kane assisted the stakeholder or client to focus on a mission for the project. Since it is quite normal for clients to focus their minds on various ideas and being unable to set missions, Mr. Kane took a conscientious effort to guide the client in determining the project mission. For example, the Client could not decide on the size and number of hangars that should be built to meet its requirement. The client was also unsure as to whether the dish washing for the catering should be outsourced, and if so how it should be done.

Mr. Kane helped the Client to achieve a focus on the project mission by presenting various options for the hangar complex. The advantages and disadvantages for each option were evaluated. A recommendation to build one hangar to accommodate three aircrafts at any one time was recommended to the client. The recommendation was justified by the savings in the cost of aircraft servicing equipment that could be realised from a single hangar, and the savings in land area for the hangar and taxi lanes.

As for the catering complex, Mr. Kane convinced the client on the disadvantages of outsourcing the dish washing based on distance, control, image and cost. Then he solved the problem of space shortage with the help of the conceptual design consultant. Mr. Kane recommended a four-storey, fully automated catering complex that incorporates dish washing, drying, sorting storage, retrieval etc..

The recommendations by Mr. Kane were deliberated at the client's board of directors' meeting and finally approved. Hence Mr. Kane succeeded in guiding the client to establish the project mission which was, to build the airport support facilities consisting of a three-bay hangar, a four-storey fully automated catering complex incorporating dish washing facilities, a fully automated two-level cargo complex, a four-storey administrative building, taxi lanes, car parking facilities, infrastructure etc., within the original planned duration of forty two (42) months, at an estimated project budget of RM 800 million.

Once the project mission was established and approved, Mr. Kane listed out the objectives that lead to achieving the mission, and planned an implementation strategy. This was documented as a project brief.

The project brief for the Airport Project was developed by Mr. Kane with design input from McJays Ltd. and some technical support from XYZ Company's technical support department. The project brief was required to formalise all the requirements and the strategies in order to achieve the project's mission. It was also required to be submitted to the client for approval. The project brief that Mr. Kane developed contained the following;

- more detailed description of the project requirements in terms of the size, equipment, automation etc..

- conceptual designs prepared by the conceptual design consultant.
- schedules of accommodation.
- a list of consultants required to carry out the detailed design, obtain approvals, procure contract packages, manage the cost, etc.. This included; architects, civil and structural engineers, mechanical and electrical engineers, quantity surveyors, landscape architects, interior designers, acoustic consultants, food and beverage consultants, and automation consultants.
- the implementation strategy for this project which was to divide the project into three divisions; catering, cargo and hangar. Each of these divisions was to be headed by a project manager who would have a team consisting of project management staff, consultants and site supervision staff.
- a bar chart of an initial project implementation programme, which was divided into; schematic design, detailed design, procurement, construction, testing and commissioning, and hand over / familiarisation phases.
- an initial estimated budget of RM 800 million consisting of RM 280 million for the catering complex and its infrastructure, RM 300 million for the cargo complex and infrastructure and RM 220 million for the hangar and infrastructure.

The client entrusted Mr. Kane to draw up the project brief without any interference. However, when the project brief was submitted to the client for approval, Mr. Kane was requested to provide further clarifications and justifications. The project brief was submitted to the client for approval only after a feasibility study of the brief was completed.

4.1.2 Project Design Phase

The design phase involved four main tasks for Mr. Kane; namely,

- a) feasibility study of the project brief,
- b) organising the project,
- c) planning the project implementation programme, and
- d) managing the design process.

a) Feasibility Study Of The Project Brief

The feasibility study of the project brief involved reviewing the practicality of the brief, including buildability, possibility of obtaining authority approvals, land encumbrances, duration, resources etc.. In order to do so, Mr. Kane carried out an environmental and resource analysis with the assistance of the conceptual design consultant, and XYZ Company's technical support and human resource departments. The environmental and resource analysis was carried out to identify the strengths, weaknesses, opportunities and threats of the airport project.

Subsequently, Mr. Kane used the results of the SWOT analysis to determine if any adjustments or revisions were required to be made to the project brief. This comparison is known as a gap analysis in management terminology.

It was found that in terms of buildability the conceptual design worked very well for most of this project. However, the proposed hangar roof structural system was a problem because it involved clear exceptionally long span beams that were only supported at both ends. This form of structure was required to allow free movement of aircrafts in and out of the hangar. Since a hangar design is such that it is walled only on three sides, wind loads need to be considered carefully because strong winds could lift the roof. From the environmental study it was found that the strong wind loads was a threat on site.

The gap analysis, revealed that the hangar roof structure was a major problem because an exceptionally long span roof structure could be susceptible to lifting by strong wind loads. As such the conceptual designers proposed a double layered roof truss system which would be able to counteract the lifting forces. However this alternative structural system was estimated to cost an additional RM 50 million. The client's approval for this additional budget was sought by Mr. Kane. The client did not have any alternative but to approve the budget because it was essential that the long span roof structure be maintained in order for the hangar to function efficiently.

The predetermined duration of the project was a weakness, as the duration to complete the project was found to be too short. This was concluded by XYZ Company's senior programmer, based on time estimates made for the amount of work involved. The duration was agreed upon to accommodate the requirements of a prominent politician whom the client did not wish to challenge. As a result, XYZ Company's senior programmer estimated that the project would require three times the resources that would have been normally required for a similar project with a reasonable project duration.

However, sourcing human resources was made easier when the government relaxed the regulations on the intake of foreign workers for this project. Therefore, Mr. Kane planned to capitalise on this opportunity and did not foresee a major problem in sourcing human resources for the project.

Another known weakness was that in order to obtain approvals from the authorities, all submissions to local authorities must be made by locally registered design consultants. The gap analysis revealed that this was going to be a potential problem because there were no experienced airport designers available locally. Therefore, the design works were divided into two phases so that the schematic design was undertaken by experienced foreign airport designers. Detailed design was then based on the completed schematic design and carried out by locally registered consultants who were required to carry out submissions to local authorities.

The necessary amendments to the project brief were made by Mr. Kane before it was submitted to the client for approval. Based on the recommendations and justifications given by Mr. Kane the client approved the project brief and made strategic decisions for implementation. There were no objections or conditions from the client when approving the project brief and approval was obtained within reasonable time.

b) Organising The Project

Once the project brief was approved by the client, the project manager, Mr. Kane proceeded to plan, organise and appoint the project team members using the results of the environmental and resource analysis.

Mr. Kane organised the project team by listing all the tasks that need to be carried out to achieve the requirements of the project brief, as follows;

- project management
- design management
- cost management
- procurement
- scheduling
- construction & quality management

He then divided the tasks into logical and related positions, and defined the relationships of the positions. In the process, the tasks of cost management and procurement were merged because of their relatedness. Mr. Kane then organised the positions into a functional project organisation structure. The criteria he used to organise the positions were authority, accountability and area of discipline. For example the design manager, construction manager and design consultants were accountable to the catering project manager, and the catering project manager had the overall authority on that particular project division. The design manager had the authority over design issues and similarly the construction manager had authority over construction matters.

A typical organisation chart for the project which has been simplified for the sake of presentation is shown in Figure 4.1. Mr. Kane adopted a functional organisation structure for the project although it did not promote formal interaction between the various functions. Mr. Kane was probably unaware that the current trend in project organisation is to create group or team settings with open communication rather than hierarchical, non-communicative work design of a functional organisation. This was because Mr. Kane does not possess sufficient management training.

As a result of Mr. Kane's decision to adopt a functional organisation structure, some of the project team members were not motivated to communicate, interact or cooperate with the members of other functions, although their functions were dependent on or determined by the functions of other members.

For example there Mr. Trevans (the programme manager) and Mr. McDonald (the construction manager for the catering complex) never communicated with each other about the delay encountered on the catering complex. This delay resulted from Tenaga Nasional Berhad's delay in laying the incoming power cables to the site. As a result the delay was never reported until there was no power available for the testing and commissioning of equipment. A recovery plan to provide standby generators for the testing and commissioning was not put in place by Mr. Trevans because Mr. McDonald did not communicate the delay.

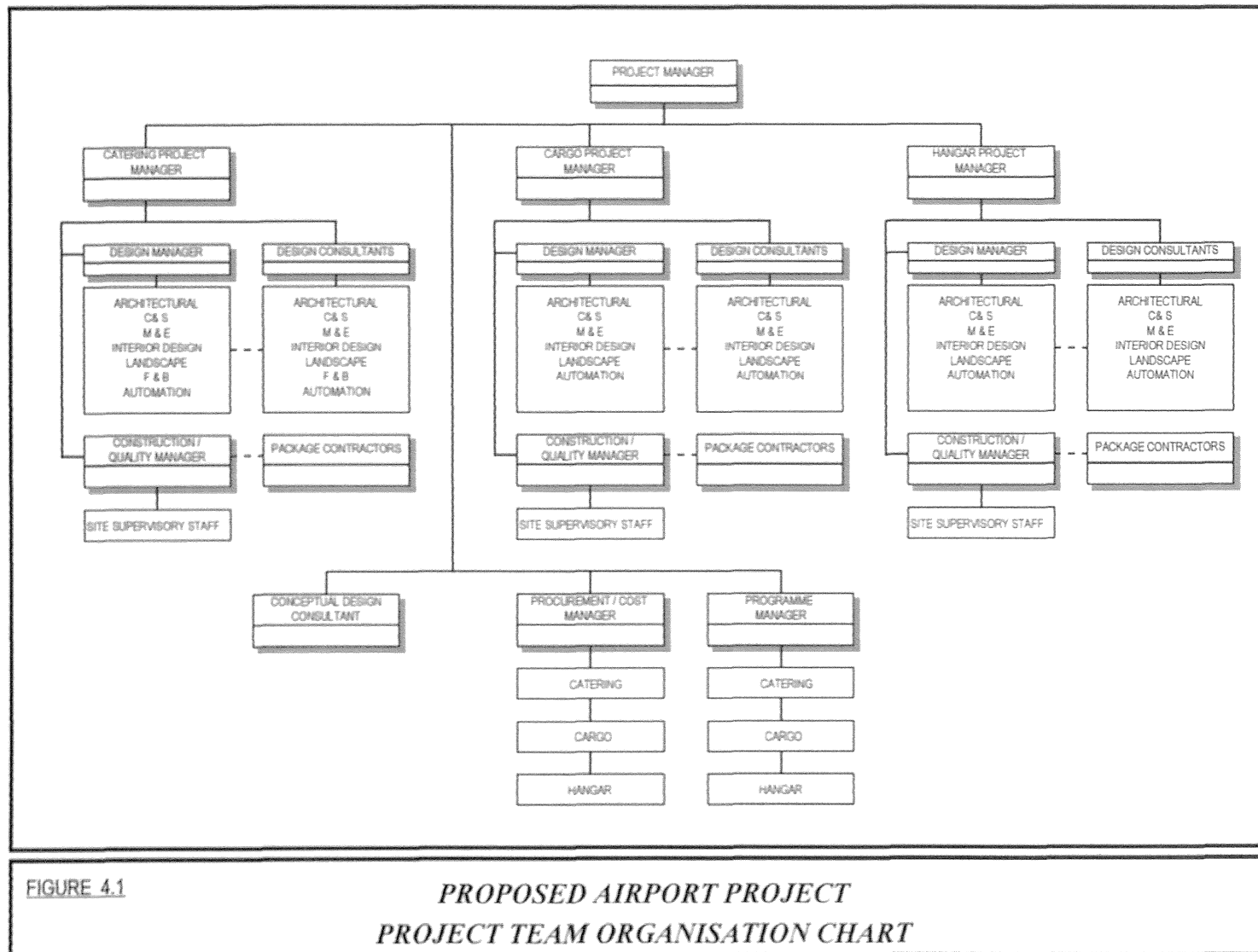


FIGURE 4.1

**PROPOSED AIRPORT PROJECT
PROJECT TEAM ORGANISATION CHART**

With the assistance of XYZ Company's technical department and human resource department, Mr. Kane carried out a resource analysis to fill the positions identified. Qualifications, experience and availability were the criteria of selection to fill these positions. Some of the positions like the construction / quality management positions were not filled immediately but people were identified to fill those positions when they were required at such time when construction commenced.

One of the main problems faced by Mr. Kane in filling the positions identified was mobilising the resources. The mobilisation period was very short or compressed because Mr. Kane wanted to commence work as soon as possible in order to achieve the predetermined target completion date. The other problem was that the time of mobilisation was during the period of a construction boom in Malaysia. This resulted in a shortage of construction staff, which made it more difficult to source new employees.

XYZ Company was only able to fill about 15% of the staff requirements of the Airport Project. The rest had to be filled by new employment. Therefore Mr. Kane and XYZ Company's human resource manager Mr. Jawcrest took the following measures to mobilise the required resources within a short time.

1. They offered attractive remuneration packages that exceeded the market rates, in order to attract well qualified people. Unfortunately other employers were also doing the same thing. As a result the staff cost escalated, but the more serious problem faced by the Airport Project and XYZ Company was high turnover of staff and demotivation among older staff.

One example of this problem was the resignation of Mr. Indran a senior project manager who was seconded as the hangar project manager in the Airport Project. Mr. Indran gave two reasons for leaving. First, he felt demotivated when Mr. Soon who reports to him was employed at a higher salary than him although Mr. Soon was very much junior and inexperienced compared him, and secondly XYZ Company could not match the salary offered by another company to Mr. Indran.

2. They also pinched staff from other companies by offering better salaries and paying off the salaries in lieu of notice that these people had to give to their previous employers.
3. They took advantage of the opportunity to employ foreigners, following the government's relaxation on the employment of foreign workers for this project.
4. They relocated resources from other projects on a part time basis. For example, Mr. Teck, a procurement manager was relocated on a part time basis, from another project until a suitable procurement manager was sourced. Although a suitable procurement manager was mobilised three months later, the procurement of packages on both projects were delayed because Mr. Teck could not cope with both jobs at the same time.

Mr. Kane identified the design consultants required to carry out the design based on the strategy approved in the design brief. He divided the design process into two phases. The first was a schematic design for which Mr. Kane recommended to the client that the conceptual design consultant be retained to carry out the design. This is because an experienced airport designer who was able to bring the experiences and expertise of major design disciplines such as architectural, building services, equipment and automation design was required to produce an effective and efficient schematic design for this project. The conceptual design consultant McJays Ltd., possessed this experience.

The second phase involved the development of the detailed design based on the completed schematic design. As planned, with the help of XYZ Company's data base of consultants, Mr. Kane identified a list of suitable local architects, civil and structural engineers, mechanical and electrical engineers, landscape architects, interior designers, automation consultants, food and beverage consultants, and quantity surveyors who had sufficient expertise and experience to produce the detailed design and manage the cost.

Mr. Kane, together with the respective division project managers, design managers and the client, interviewed at least three (3) consultants for each discipline. These consultants were judged on criteria such as professional staff, experience, track record of past projects, financial capabilities, design facilities, and capabilities to meet targets.

In order to meet the tight schedule Mr. Kane proposed to the client that separate consultants were appointed for each of the divisions of work, i.e., catering, cargo and hangar. Therefore for some of the disciplines such as automation, and quantity surveying, all the consultants interviewed were appointed because of the limited number of suitable consultants available in the market.

As part of project organisation, Mr. Kane drew up a project procedures manual for the project team. He also set up coordination and monitoring mechanisms in the project procedures manual to control and monitor the progress of the project. This consisted of reporting structures including frequency of reports, contents etc., and weekly meetings such as design coordination meetings, project coordination meetings etc..

c) Planning The Project Implementation Programme

Another important task in project management which was carried out during the project design phase was planning for the future or drawing a project implementation programme. For each of the divisions in the Airport Project, Mr. Kane instructed his programme manager, Mr. Trevans, to prepare a detailed implementation programme. This was carried out by listing all the activities in the project, allocating the realistic time frame for each activity, relating the activities and determining preceding, ensuing, concurrent and independent activities in a logical manner. The critical path dictates the overall duration of the project. An example of the implementation programme for the Airport Project is not included in this research report because it is too voluminous and difficult to be disguised. However an example of a typical critical path method programme is shown in Appendix 1.

This method of project planning is called a Critical Path Method (CPM) network or a Programme Evaluation Review Technique (PERT) network. It is evident that planning tools are necessary in planning for the future and scheduling project activities, and there are various tools available such as CPM Network, PERT Network, PRIMEVERA, etc.

d) Managing The Design Process

After completing the project brief, organising the project team, and planning the project programme, the design of the project was developed by the design consultants. The respective design managers controlled the design process by monitoring and coordinating the work.

The results of the SWOT analysis were also used by the design consultants as guide in the design process. The strengths, weaknesses, opportunities and threats of the project were taken into consideration when designing a particular component. For example, the wind conditions of the site was one of the factors that determined the type of structure for the hangar. Although the conceptual design consultant proposed a double layered roof truss system, during the design process the structural engineer found this to be an expensive solution. Therefore various other alternatives including roof installation methods were evaluated by the structural engineer. The architect's input on aesthetics was also taken into consideration. Finally, the consultants and the design manager, Mr. Soon, came to an agreement that a double bolted roof installation system would be the best solution to the problem. The agreement was reached based on the fact that it was cheaper and aesthetically more acceptable than the earlier recommendation, and it met the requirements to counteract the strong wind loads on the site.

To determine the extent of change that was required to the project brief, gap analysis was carried out continuously throughout the design phase by the respective design managers. When there was a need to change, for example the hangar roof system, alternatives were developed by the design team, evaluated with Mr. Soon, and finally recommended to the client for approval as part of strategic decision making. The recommendations to the client were attached with relevant justifications and when requested Mr. Kane provided further clarifications by obtaining it from Mr. Soon or the hangar project manager, Mr. Wheels.

The design managers managed the design process by having regular meetings with the design consultants. The coordination of the design was carried out by the design managers at design coordination meetings with all the consultants.

The design managers also monitored progress on a weekly basis against a design programme which is a sub-programme of the project implementation programme. Delays were reported to the programme manager who managed the delays by rescheduling activities. For example, there was a delay in structural design of the hangar because of the need to evaluate alternative options for the roof design. Therefore, the programme manager supporting the hangar division, En. Kandar, rescheduled the duration for production of drawings by adding additional draughtsmen to produce the drawings. This eliminated the delay in the completion of the hangar structural design.

When a delay could not be managed by rescheduling activities, an application for extension of time was submitted to the client for approval. For example, when the client requested for additional air-conditioned cargo storage facilities, the programme manager supporting the cargo division, Mr. Ong, found that the delay in completing the mechanical and electrical design for the cargo complex could not be managed. Therefore, an application for two weeks extension of time was made to the client by Mr. Kane based on the cargo project manager, Mr. Dogman's justifications and implications on the overall completion of the project. The Client deliberated on the delay for several weeks before granting the approval.

4.1.3 Project Implementation Phase

In the project implementation phase, the output from the project design phase was implemented. Construction of the project was carried out based on the design completed by the consultants. During this phase the construction manager managed the construction process with his team of site supervisory staff.

When the design was nearing completion the construction manager divided the construction work into various packages. Related construction work were packaged into one package. For example, in the cargo complex, the construction manager, Mr. Denon packaged all the infrastructure work such as roads, drains, pavements etc., into the infrastructure package, similarly all structural and architectural work were packaged into the main builder's work package.

Once the package strategy was established the cargo project manager, Mr. Dogman, coordinated the procurement of the contract package with the design manager, Mr. Nair, construction manager, Mr. Denon, and the procurement manager, Mr. Teck. Mr. Nair released the design information according to the scope of work within each package. Mr. Denon checked the adequacy of the design information for the scope of work involved in the package. When it was found there was inadequate information Mr. Denon liaised with Mr. Nair to obtain the information. Mr. Teck prepared the tender documentation using the design information that was signed off by the Mr. Denon and called the tenders. Mr. Dogman held regular procurement meetings to coordinate and monitor the progress of the above process.

The evaluation of tenders was carried out jointly by Mr. Dogman, Mr. Nair, Mr. Denon and Mr. Teck. Recommendation for award was made to the client through Mr. Kane who provided the clarifications to the client based on justifications prepared by the evaluators.

Once the tender was awarded Mr. Denon became responsible for the execution of the work by the contractor, in accordance to the specified quality and time. Mr. Denon was supported by a team of site supervisory staff while programme and cost management support were provided by Mr. Ong and Mr. Teck respectively. Mr. Dogman was responsible for overall coordination, monitoring and reporting.

The key management task is the project implementation phase was measurement and control of progress. Control was the process of ensuring that actual activities conform to planned activities. Mr. Denon measured the quality of work against the drawings and specifications, the duration against the construction programme, and the cost against bills of quantities and contract sums.

Mr. Denon addressed deviations in quality such as honey combs on concrete directly with the contractor by issuing a corrective action request and ensuring that the deviation was rectified. There were no design changes, delays or cost overruns encountered during the construction of the cargo complex.

However, cultural differences had created other problems in the cargo division. Mr. Dogman, an American with very assertive personality became a very unpopular manager with his team. He frequently harassed Mr. Denon with various issues such as slow authority approvals and so on which were beyond Mr. Denon's control.

Mr. Denon being a more introvert personality was afraid to express his views and ideas. This made Mr. Dogman to believe that Mr. Denon was stupid and lazy whereas it was the contrary. As a result, Mr. Denon began to hate Mr. Dogman and looked for ways to avoid taking instructions from Mr. Dogman. There have been instances when Mr. Denon ignored Mr. Dogman's memos and influenced others in the team to do the same.

Mr. Dogman also could not understand why his Malaysian employees refused to work during cultural and religious festivals. He issued a memo instructing all his team members to work during the Chinese New Year holidays, and this led to a strike by the team members. Eventually, XYZ company had to replace Mr. Dogman as the cargo complex project manager.

During the project implementation phase, it was discovered by the hangar construction manager, Mr. Lam, that work on the taxi lanes adjacent to the cargo complex had not commenced. This was a problem because the hangar taxi lanes were nearing completion and it did not connect to the main taxi lanes because the lanes adjacent to the cargo complex was not completed. The hangar was due for completion earlier than the cargo complex so that when the airport passenger terminal was open, the maintenance facilities were also ready. However upon probing further with Mr. Denon, the cargo construction manager discovered that the portion adjacent to the cargo complex was only programmed to be completed when the cargo complex is completed. It was a serious problem that was subsequently addressed by omitting the work from the cargo complex contractor and awarding it as a variation to the hangar contractor. XYZ Company was fortunate that this did not result in cost or time implications, and the client was satisfied. Otherwise it would have resulted in huge back charges to XYZ Company.

A problem was also sighted in the catering complex when there was a need to change the design during construction. There was a need to revise the room layout of the dish washing area when it was discovered that the conveyor system could not be routed smoothly through this room.

Mr. Tanaka, who was the architectural design manager for the catering complex refused to cooperate with Mr. McDonald, the construction manager. He insisted that there should be a better way of routing the conveyor and blamed Mr. McDonald for taking the easy way out although it involved abortive construction cost.

The issue was deliberated for a long time and even when it was brought to Mr. Kane's attention it was not resolved. This was because Mr. Kane failed to direct Mr. Tanaka to focus on addressing the problem rather than pursue a personal goal.

Finally, the opinion of the schematic designer was sought before it was agreed that the room layout had to be changed. This resulted in delays and increased costs, which could have been avoided if Mr. Tanaka had cooperated in the first place. Mr. Tanaka seemed to refuse the change more to protect his credibility in approving the original layout rather than addressing the problem.

Towards the end of the project implementation phase, the Airport project also experienced a high turnover of staff. Thirty members of the project resigned within three (3) months. This is approximately 30% of the total members in the team. XYZ Company was forced to temporarily reassign people from other projects and offer two months incentive bonus for those who stayed until the end of the project. Mr. Kane perceived the high turnover to be caused by the fact that the project was drawing to an end and XYZ could not assure continuous employment after that.

4.1.4 Project Commissioning And Hand Over Phase

This phase involves commissioning the completed project and handing it over to the client. The Airport Project has not reached this stage as yet.

4.2 MANAGERIAL PROBLEMS

Several technical and managerial problems were encountered in this project. However for the purpose of this study the discussions are limited to managerial problems.

Project management involves management of resources, and the most important resources are people. Therefore it is not surprising that most of the problems with project management that surfaced from the case study of the Airport Project were associated with people. Generally the problems involved mobilising, demobilising and organising of resources including managing relationships, maintaining and motivating resources to achieve goals, leadership, and building people skills. The other areas with problems are with goal formation and managing change.

4.2.1 Mobilising and Organising of Resources

Mobilising resources for this project was a complex task mainly because the Malaysian construction industry was experiencing a construction boom during the period of mobilisation.

The mobilisation period on the airport was compressed because the overall project duration was not determined in a logical manner but established to meet the requirements of a prominent politician. As a consequence of this the staff requirements for the project also increased. In such a situation, the project manager had the task of mobilising the project team quickly in order to commence the work as soon as possible.

The case study revealed four measures taken by XYZ Company to mobilise the resources for the Airport Project team. First, the company offered attractive remuneration packages that exceeded the market rates, in order to attract well qualified people. However other employers were also doing the same. As a consequence, the staff cost increased and turnover of staff also increased. There were several reasons for the high turnover of staff but it was evident from the example of Mr. Indran's resignation in the Airport Project, that one of the major reasons was the competition among employers in the industry to attract qualified construction personnel, by offering higher salaries.

Secondly, the company pinched staff from other companies by offering better salaries and paying off the salaries in lieu of notice that these people had to give to their previous employers. Similar to the first measure this measure also resulted in high turnover of staff and high cost.

Thirdly the company took advantage of the opportunity to employ foreigners, following the government's relaxation on the employment of foreign workers for this project. This measure resulted in high costs and in some cases people problems that were associated with cultural differences. The evidence of this is Mr. Dogman, an American who did not understand local work culture and sensitivities. He harassed his subordinate, Mr. Denon for not getting the authority approvals quickly without realising the slow action work culture with Malaysian authorities. He also failed to understand the cultural sensitivities of Malaysian workers when he instructed his staff to work during the Chinese New Year period, when in it was a normal practice for the whole construction industry in Malaysia to come to a halt during this period.

Finally the company relocated resources from other projects on a temporary and part time basis. The example of Mr. Teck the procurement manager who was relocated on a part time basis, from another project is evidence that both projects were eventually affected in a negative way.

Related to the mobilisation of resources is the organising of resources. In management terminology this is called organisational design (Stoner & Freeman, 1992). XYZ Company generally adopts either a functional organisation structure (Figure 4.2) or a matrix organisation structure (Figure 4.3), for its project teams. However the company has no rigid guideline or procedure for organising project teams and it is left to the project managers to structure the team.

Both the functional and matrix organisation structures have their own problems. The functional structures are very departmental and rigid, thus there is a tendency to delay decisions and actions. The matrix organisations present multiple lines of accountability which could result in conflicts of interests.

Functional organisation structures worked very well on some projects for XYZ Company but failed in others. In the Airport project the functional organisation structure was considered a failure because it hindered formal communication and interaction among some team members although their functions were related to the functions of other members. The evidence is the example of Mr. McDonald (catering construction manager) and Mr. Trevans (programme manager) who never communicated on the delay encountered on the catering complex, and this resulted in the failure to have a recovery plan for the testing of equipment.

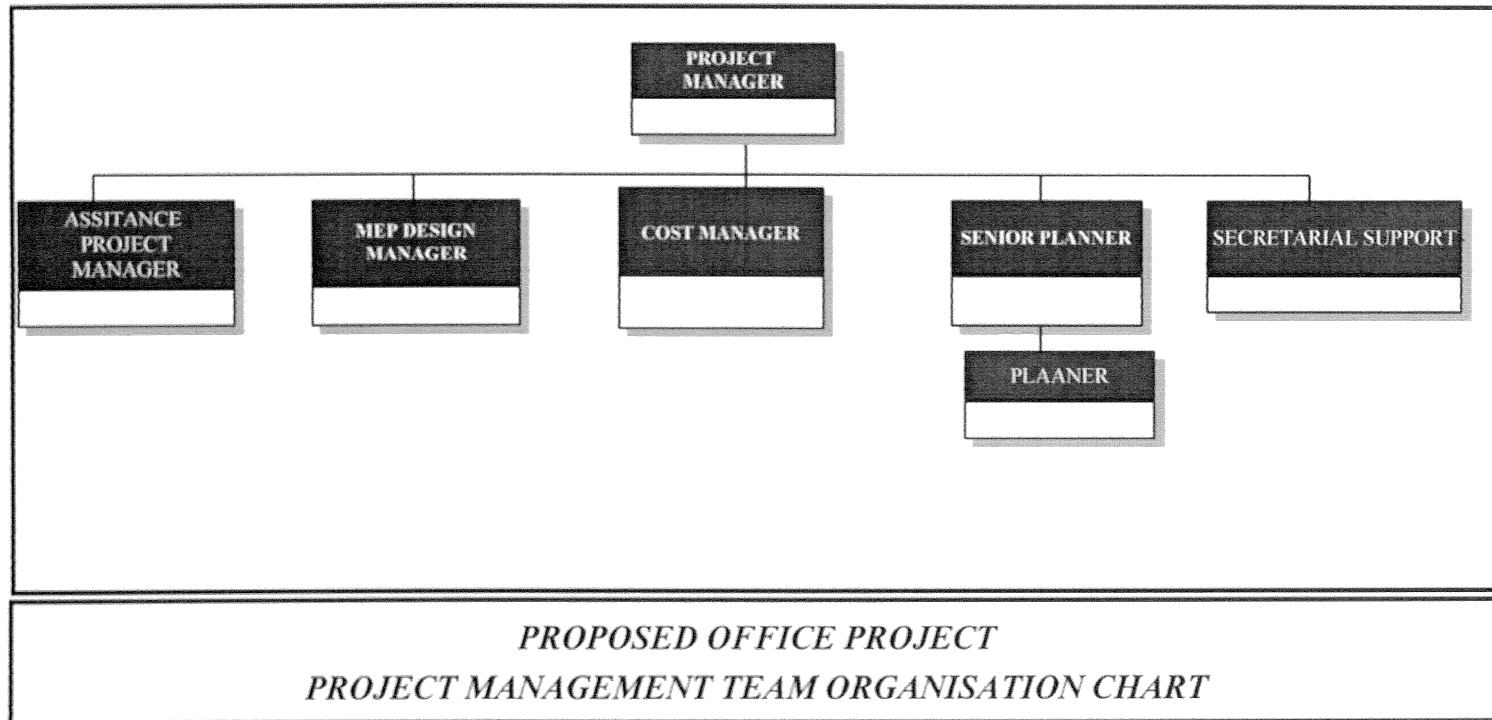


Figure 4.2 - Functional Organisation

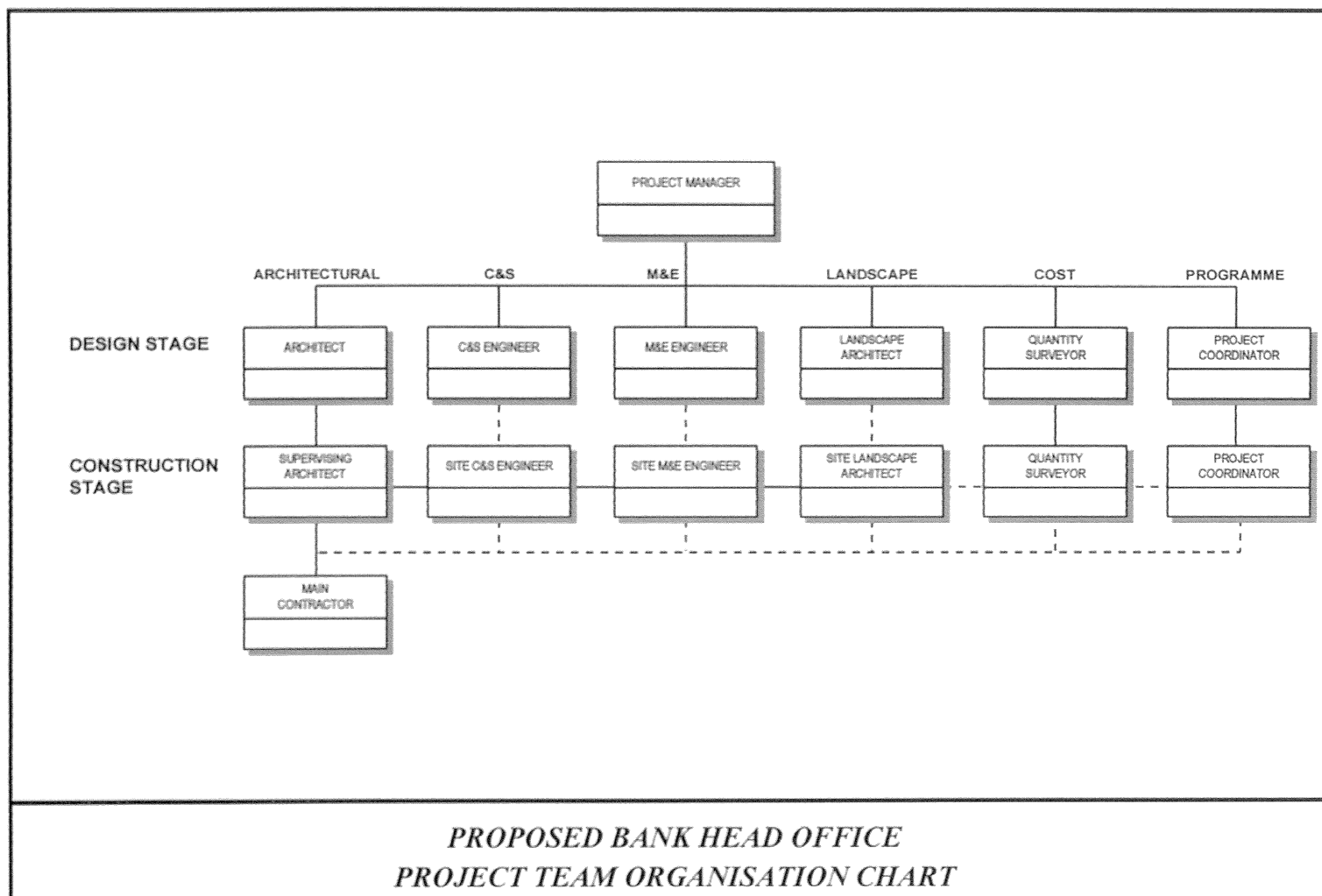


Figure 4.3 - Matrix Organisation

Group action and open communication is important for project management. The relationships among some of the members of the Airport project team were not conducive to achieve the project goals. The evidence is the example of Mr. Tanaka's (design manager) refusal to cooperate with Mr. McDonald (catering construction manager) when a problem with the design was identified during construction. It was perceived that Mr. Tanaka refused to change the design more to protect his credibility in approving the earlier design rather than in the interest of the project, because when the schematic designer accepted responsibility for the earlier oversight, Mr. Tanaka relented.

4.2.2 Maintaining and Motivating Resources

Maintaining resources basically involves keeping the project team members for the duration of the project. In order to maintain the members, project managers have to keep them motivated throughout the duration of the project.

When resources for the project were being mobilised, the turnover of staff was high among the existing employees of XYZ Company who were seconded to the project. The main reason for this was the fact that new people were being employed at higher salaries with better perks than the existing employees. As in Mr. Indran's case his new subordinate was drawing a bigger salary than him. Another reason for high turnover was the fact that the opportunities to seek alternative employment with a better salary was good. Therefore when XYZ did not take the effort to keep existing employees happy, they left for better opportunities.

Another problem that was evident in the early stages of the Airport Project with the older employees of XYZ, was that some of them became less interested in their work and were frequently on medical leave. An example of this was Miss Suma (Mr. Kane's secretary) who used to be very hardworking, took longer time to do her work, and frequently reported sick. It was later discovered that she had seen the employment contracts of other secretaries employed for the project, and discovered that they all earned more than her. Mr. Kane requested Mr. Jawcrest to revise Miss Suma's salary, and there was an immediate improvement in her performance.

Towards the end of the Airport Project's implementation phase, maintaining the resources was a problem because there was a high turnover of team members. In 1997 approximately 30% of the project team members resigned within three months. The main reason for this was the fact that XYZ Company could not assure these people of continued employment when the project is completed. Therefore when there was an opportunity for alternative employment, the members left.

The consequence of this problem had major impact on the project for the following reasons.

- In order to discourage turnover, incentive bonuses were offered to employees who stayed until the end of the project. This resulted in the escalation in staff cost by approximately RM 4.5million.
- The replacement of members resulted in a drop in productivity because the new members required some time to familiarise themselves with the project (learning time).
- The temporary reassignment of people from other projects resulted in the performance of both projects being affected.

4.2.3 Leadership

Leadership plays a central part in group behaviour. Therefore a project manager's role as the leader of the project team is very important.

However, not all leaders are managers and not all managers are leaders. This is where the problems in project management arise. Mr. Kane was not perceived to be a good leader because he did not display the characteristics of a leader. Although he organised the project team in a functional structure, he did not provide any direction to the various functions, nor did he make an effort to promote team effort and group communication in the team. Each individual was allowed to pursue his own path. This divergent work process resulted in individuals having different priorities because they perceived the project goals differently.

Two problems encountered on this project support the statement that Mr. Kane did not display the characteristics of a good leader. Mr. Kane did not foresee the need to coordinate the construction programme of the cargo complex and the hangar. Although the taxi lane adjacent to the cargo complex was required to be completed when the hangar was completed, Mr. Kane did not attempt to coordinate the work within the two packages to be completed together. He did not provide the overview of the whole project to his divisional project managers.

Mr. Kane also did not attempt to resolve the conflict between Mr. Tanaka and Mr. McDonald on the need for a design change in the catering complex. He failed to direct Mr. Tanaka to focus on the problem rather than pursue a personal goal.

Another problem that was encountered on the Airport Project that was attributed to leadership style was Mr. Dogman who was too assertive, and intimidating on Mr. Denon who was by nature an introvert. Mr. Dogman was also presumptuous in thinking Mr. Denon was lazy and stupid just because he did not express his views and ideas.

4.2.4 Managing Change

Change in the construction industry is inevitable and will happen. The success in managing change depends on how it is effected. Effecting change after an event has happened may involve reactive measures that are more costly, more time consuming, and may bring along more problems. On the other hand, change that is recognised and managed in a proactive manner can be more beneficial. Therefore project managers must have the vision to identify the need for change early, in a proactive manner.

A problem was encountered in this project because Mr. Tanaka did not recognise the need to change the layout of the dis washing area early. As a result, additional cost and time were incurred.

Managers in XYZ Company resisted the change to empower project team members on determining their working hours (flexi-time). They feared that the change will result in a loss of control over team members. This was taken to mean a loss of status-quo and power.

4.2.5 Building People Skills

XYZ Company did not give priority to developing the skills of its employees. Several reasons were given by the management of XYZ Company.

- The employees who were employed on projects were not deemed to be permanent. This is because projects are temporary in nature, with a definite beginning and end. Therefore no real benefit was perceived for the project, to concentrating on building people skills.
- Individuals employed to carry out a certain scope of work were deemed to have the necessary qualifications and experience, otherwise they would not have been employed.
- The turnover of staff in the construction industry was high, therefore XYZ Company was reluctant to invest in training and developing its employees' skills, only to lose these employees to its competitors.
- There was no time for training. Every member of the project team was expected to be performing productively throughout the project. Projects were always on a tight schedule with limited time.
- The individuals gained by the experience in the project or organisation and sought other employment when the project was completed.