CHAPTER II

CONCEPTUAL BACKGROUND

This chapter highlights some key concepts that are relevant to the study. It is necessary to review these concepts as they will provide the foundation for analysis.

2.1 Role of Power Plant Control and Instrumentation

Control and Instrumentation (C&I) system are provided to enable the power plant to be operated in a safe and efficient manner while responding to the demands of the national grid system. These demands have to be met without violating the safety or operational constraint of the plant. For example, metallurgical limitations are important as they set limits on maximum permissible boiler metal temperature and the chemical constituents of feedwater. In addition, the plant has to meet safety requirements and to be operated to limits of chimney stack emissions set by by enviromental considerations (British Electricity International, 1990).

The control and instrumentation system provides the means of manual and automatic control of plant operating condition to:

- Maintain an adequate margin from the safety and operational constraints
- Monitor these margins and the plant conditions, and provide immediate indications and permanent records
- Draw the attention of the operator by an alarm system to any unacceptable reduction in the margins
- Shutdown the plant, if the operating constraint is violated.

With the liberation of the electricity supply industry (Goverment of Malaysia, 1996) , TNB no longer has a monopoly on the generation of electricity. Because of competition from Independent Power Producers (IPP) , and the need to meet new and ever tighter emission standards, TNB are trying to improve the reliability and availability of the existing power plants.

As a power plant ages maintenance tends to increase while breakdowns become more frequent. This is also true for instrument and controls systems. However, one of the most cost effective solutions for improving the reliability, availability, and operation of older electric power generation plants is to upgrade and modernize a plant's instruments and controls (Smith, 1995).

Upgrading of field-sensing and measuring instruments must be done periodically to ensure optimum performance of controlled processes. Such upgrades improve the accuracy and reliability of the measurement and instrumentation systems. To make the right decisions, those responsible for upgrading the instrumentation must understand what is available now and what is going to be available in the not-too-distant future. They also should look at instrument upgrades from perspective of long term investment. Reliability and accuracy are still significant, but they do not constitute the only requirement, because today's instrumentations offer advanced capabilities that can be enhanced further as technology evolves. For example, control system instruments today can generate new kinds of information, enable management to meet competitive challenges by operating the business more efficiently and to comply with emerging regulatory and product quality requirements.

Plant data must also be available to the sales and marketing departments. Thus, upgraded field instruments must be capable of digital communication, not because more accurate information is required, but to serve the multi-faceted needs of the business at large (Boland, 1995).

To carry out the upgrading of the control and instrumentation, a specification could be written to include several vendors. The process of procurement includes developing the specification, obtaining and evaluating bids. It was noted that the procurement includes a strategic alliance agreement with the successful vendor. This is due to the fact that the strategic alliance has the following benefits: 1) Favorable pricing, as the agreement with the supplier, guarantees the lowest price offered to any other preferred customer with auditing provisions, 2) eliminates the cost of lengthy and detailed specifications, 3) eliminates the cost of justification for sole sourcing, 4) eliminates the cost of multiple bid evaluations, 5) allows for sharing of strategic goals and the free interchange of information with vendors and reduces cost of spare parts and tra (Power Engineering, 1995).

2.2 Competitive Analysis: Porter's Five Forces Model

To enable one to analyse an organisation competitiveness, Porter's Five Forces Model could be used. According to Michael E. Porter (David, 1995) the nature of competitiveness in a given industry can be viewed as a composite of five forces namely 1) Rivalry among competitive firms, 2) Potential entry of new competitors, 3) Potential development of substitute products, 4) bargaining power of suppliers, 5) Bargaining power of consumers.

Rivalry Among Competitive Firms

Rivalry among competing firms are usually the most powerful of the five competitive forces. The strategies pursued by one of the firm can be successful only to the extent that they provide competitive advantage over the strategies being pursued by the rival firms. The intensity of rivalry among competing firms tends to increase as the number of competitors increases, as competition become more equal in size and capability, as demand for the industry's products declines and as price cutting become common. Rivalry also increases when consumers can switch product easily, when barrier to leaving the market are high, when fixed cost are high, when the product is perishable, when rival firm are diverse in strategies, origin, and culture, and when mergers and acquisitions are common in the industry.

Potential Entry of New Competitors

Whenever new firms can easily enter a particular industry, the intensity of competitiveness among firms increases. Barrier to entry can include the need to gain economies of scale quickly, the need to gain technology, the lack of experience, strong customer loyalty, large capital requirement, government regulatory policies, tariffs, and saturation of the market.

Potential Development of Substitute Products

In many industries, firms are in close competition with producers of substitute products in other industries. The presence of substitute products puts a ceiling on the price that can be charged before the consumers will switch to the substitute product.

Bargaining Power of Suppliers

The bargaining power of the suppliers affects the intensity of competition in the industry, especially when there is a large number of suppliers, when there are only a few good substitute materials, and when switching materials is especially costly. It is often in the best interest of both suppliers and producers to assist each other with reasonable prices, improve quality developments of new services, just-in-time deliveries, and reduced inventories costs, thus enhancing long-term profitability for all concerned. Firms may pursue a backward integration strategy to gain control or ownership of suppliers. This strategy is especially effective when supplier is unreliable, too costly, or not meeting the firm's needs on a consistent basis.

Bargaining Power of Consumers

When the customers are concentrated, large, or buy in volume, their bargaining power represents a major forces affecting the intensity of competition in an industry. Rival firms may offer extended warranties or special services to gain customer loyalty whenever the bargaining power of consumers is substantial. Bargaining power of the consumer is also higher when the products being purchased are standard or undifferentiated. When this is the case, consumers can often negotiate selling price, warranty coverage, and accessory packages to greater extent.

2.3 Bumiputera Participation

TNB, being the government owned company and privatised under the government privatisation programme, is expected to help Bumiputera in the business. Therefore, PPC&I segment could be considered for their participation.

Privatisation

Privatisation was used as one of the major vehicles to enhance Bumiputera participation in the economy. In order to ensure active Bumiputera participation, the privatisation policy stipulated that Bumiputera should hold a minimum of 30 per cent equity in all privatised entities. During the Seventh Malaysia Plan, Bumiputera contractors were given contract works in privatised projects involving the construction, sewerage, telecommunications and utilities sectors. Although privatisation was used as a vehicle to enhance Bumiputera participation, it also benefited other Malaysians through joint-venture

projects between Bumiputera and non-Bumiputera as well as contracting and sub-contracting of privatised projects to non-Bumiputera.

Vendor Development Programme

In line with the objective to enhance the development of small and medium-scale (SMIs), the government placed greater emphasis on the vendor development programme and the creation of Bumiputera entrepreneurs through agencies such as Perbadanan Usahawan Nasional Berhad. This will provide greater opportunities for Bumiputera entrepreneurs to participate in major privatisation projects. Efforts are made to promote collaboration between large privatised companies and individual entrepreneurs as well as small companies.