3.0 Research Methodology

3.1 Selection of Companies

The study will be conducted on companies involved in the Process Control Automation industries. In order to be focused the study will be conducted on companies involved in a typical supply chain of the Process Control Automation industry.

The Industry

Process Control Automation is an important part of the Oil and Gas Industry, food processing, pulp and paper, cement, oleo-chemicals, petrochemicals, water and wastewater management, district cooling, power generation and co-generation among the more prominent. Here the Down-stream as well as the Up-stream activities is being performed using leading edge technology with high adherence to quality standards set up by bodies regulating this industry. In a typical oil and gas industry the client/end-user would usually be the big oil companies like Petnonas, Shell, Esso-Mobil , Carigali and others. Drilling platforms, production platform, refinery and synthesizing are done with utmost control and quality. The volume of production entails that the plants be run 24 hours a day whole year round. Automation is the key to ensure these high demand and quality requirements are met consistently. Thus when companies build plants they often select control system thru competitive bidding and this makes the supplier to this industry very competitive.
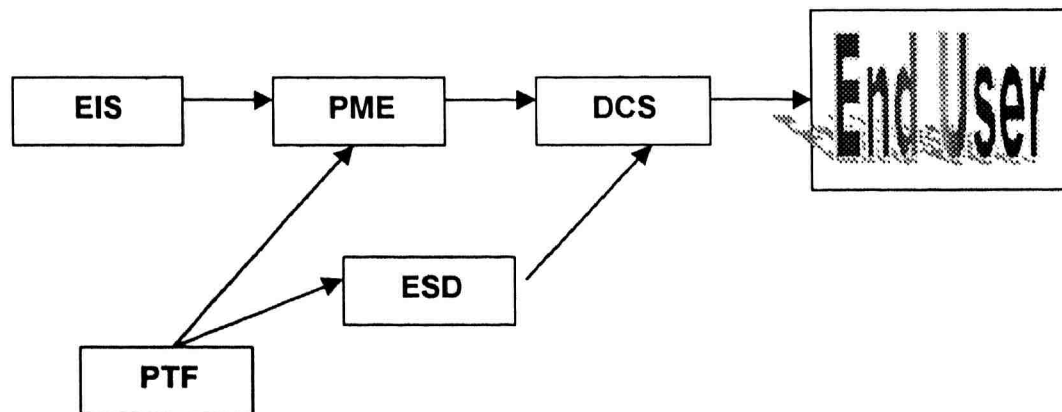
3.2 Data Collection Procedure

An exploratory interview was conducted with the Business Development Manager of the DCS Company. Here the main aim was to obtain the companies actively involved in a typical supply chain of the company. Next a set of questions was carefully prepared keeping in mind the research propositions to obtain the needed data. The Questions used during the interviews are attached in Appendix.

The research objectives and background and the purpose of the data collection were conveyed to the key person of these companies. Upon securing a date for an interview was conducted by having a one to one interview assisted by the questionnaire. In all cases the questions were given to the respondents before the scheduled interview. This is to enable them to prepare and be comfortable for the interview. The interviews were conducted at the offices of these companies by the author.

Interviews were conducted with
- The Managing Director (Japanese) of DCS
- The Regional Sales Manager (Malaysian) of ESD. The Managing Director could not attend the interview as he was away on business.
- The Managing Director (Malaysian) of PME
- The Managing Director (Malaysian) of EIS
- The Sales Manager (Malaysian) of PNF.

In researching the objectives of this study, companies involved in a typical supply chain of process control automation were done. The diagram below shows the typical supply chain for the selected PCA industry.

Legend:
DCS = Distributed Control System   (Main Instrument Vendor)
ESD = Emergency Shutdown System   (Supplier)
PME = Panel, Mechanical and Electrical   (Vendor)
EIS   = Engineering Intelligent Solutions   (Solution Provider)
PTF = Peripheral and Field Device   (Local Agent)

In the above diagram the DCS Company is the Main Instrument vendor in the supply chain. This company participates in the bidding process to obtain projects from the end-users. The main vendors directly involved with DCS, are PME who does the contracting work for DCS and ESD who supplies a programmable logic controllers used in ESD system. ESD specializes in providing plant emergency shutdown system. EIS is a solution provider company that provides engineering and manpower services to PME whereas PNF is one of the local agent who supplies peripherals and field devices for both ESD and PME.

By selecting the companies involved in this particular supply chain it is seen that the interrelation between these companies will further provide results that are more meaningful and consistent.

14

3.3   Data Analysis Techniques

The interviews were open ended in nature and more of a discussion where the interviewee's response was recorded down. The questionnaire was useful in keeping the conversation focused to the topic and not swaying to include unrelated areas. The responses are written in a case format for the reader to have a feel of what were expressed by the interviewees. Using these cases the author used the pattern matching techniques to obtain salient points to support the objectives and conclusions of this study