

Study Project Ngõ sang - Micro Research

Introduction

In November 2009 a group of Electrical Engineering students goes on Study Tour to Malaysia, Singapore, Vietnam and South Korea. To be prepared for the tour research is being carried out by the participants into various aspects of the countries and a number of companies. The research is divided in three parts namely the Macro, Meso and Micro research. The Macro research covers aspects such as culture, history, politics and economics. During the Meso research several economical sectors relevant to Electrical Engineering are studied. The results of both the Macro and Meso research form the content of the preliminary report.

The third and final part of the research is the Micro research. It covers the companies/universities which will be visited. This document describes how the Micro research of Study Project Ohariha will be carried out. In the end this Micro research combined with day reports will form the content of the final report.

Goals

The contents of the research can all be traced back to the goals for this project:

- Get to know Asian countries from 2 different points of view: study of culture, climate, politics, geography, language, economy, social aspects, etcetera But also:
 - Study of activities in Electrical Engineering – the level of education, research and the ways they are implemented
 - Learn some of the aspects of the work of an electrical engineer within a company in an Asian country
- Get to know people in companies, research institutes and universities, both in the Netherlands and abroad
- Gain some knowledge in the working area of Electrical Engineering

Evolution of Technology

The theme of the study project is Evolution of Technology. The meaning of the theme is twofold. On the one hand it is about how a specific technology evolves. On the other hand it is about how a country evolves technologically. This will be studied by first hand encounters during the study tour during which Malaysia, Singapore, Vietnam and South-Korea will be visited. So is for instance Vietnam still in the early stages of technological adoption and evolution, whereas South-Korea is a fully developed technological society.

Examples of technologies that are still evolving and being developed further are among others foldable and touch sensitive displays, lab-on-a-chip systems, smart dust and demotic's.

Micro Assignment

The Micro research is final part of the Study Tour. Its goal is to gain more and specific knowledge about the evolution of certain technologies. The results will be compared to

the Macro and Meso research. Most of the Micro research is carried out during and after the Study Tour. In order to be prepared for the tour and to be able to ask relevant questions a small part is carried out before the tour. This preparation work will also help the companies to fine-tune their presentation to our needs.

Micro goals

- Formulate a description of the organization / company, what it is doing and in what sector(s) it is active.
- Identify the drives and barriers these organizations / companies encounter in their technological development and how this supports or inhibits the evolution of technology.
- Compare the results with the Macro / Meso research and visits to other organizations.
- Give an answer to the research question.

Research question

The overall research question of the study project is:

How did and could technology evolve in Malaysia, Singapore, Vietnam and South Korea?

For the micro analysis this results in the following micro-research question:

What are the drivers and barriers for technological development this company (department) or research institute encounters and how does this company (department) or research institute deal/responds to these drivers and barriers?

These two questions need to be answered by the editor of the micro research.

The micro research question is divided into three sub questions:

What are the core technologies of the company (department) or research institute?

How can these technologies further develop itself in this company (department) or research institute?

What are drivers and this company (department) or research institute encounters and how does this company (department) or research institute deal with/respond to these drivers and barriers?

These three questions need to be answered for each company that is the subject of each micro research topic.

Setup

You will write an individual report (or in some cases this report is written by two participants) about a certain company. The end result will be a report about all the individual companies visited during the study tour. You need to write a few chapters (1-4) about each company like what it is doing, how many employees and so on. Besides, there is an overall introduction, a discussion and a conclusion for the micro research. Everyone will also perform a peer-review of two other micro research topics and checks if it's properly formatted in Latex.

Context

The Micro assignment is part of the course 'International Study Tour Preparation' (188085) and the workload equals 4 ECTS for each student. If you like more ECTS, there is an option to get 5 ECTS if you perform an additional assignment to fit this course in the minor 'International Exploration'.

Travel guide

The travel guide is the book which each of the participants will receive before the tour. It contains the travel schedule, information about cultural excursions and the company visits. Each participant needs to provide a texts about a company that is visited , so that every participant gets an impression of the company. The table below contains a list of chapters and the length of each chapter of your text for the travel guide.

Chapter	words / pages
1. Introduction (for each organization and an overall introduction)	250 / ~0.5
2. Organization description (for each organization)	500 / 1
3. Relevant Technologies / developments (for each organization)	500 / 1

Note: if you perform the micro research in a group of two, the number of words / pages also need to be doubled.

Final report

The final report is published after the tour and contains reports of each company visit. The structure of this report is the same as for the text of the travel guide but with some additional chapters. Also note that the length of some chapters is different.

Chapter	words / pages
1. Introduction (for each organization and an overall introduction)	250 / ~0.5
2. Organization description (for each organization)	500 / 1
3. Relevant ETs / developments (for each organization)	1000 / 2

4. Macro and Meso aspects (for each organization)	750 / ~1.5
5. Discussion	(overall) 500 / 1
6. Conclusion	(overall) 500 / 1

Note: if you perform the micro research in a group of two, the number of words / pages also need to be doubled.

Schedule

The Micro research will start on Oktober 16nd at 13:45 with a lecture from Dr H.J.M. Ruel in HO B1242. Within a week a list will be mailed with the list of companies and which participant will do a research of which company. Before the tour you need to write some details about the company for the travel guide. You have about a week till Oktober 29th to finish this. This is not much time but the report for the travel guide should not be much work.

During and after the tour you need to draft the report with information which you obtained during the visit. There will be time when traveling between cities and in the evening to work on the report. It is a lot easier to write things down when it is fresh in your memory. The final version should be finished at the end of January.

- Oktober 16nd 13:45 - introduction lecture in HogeKamp B1224
- Oktober 29th – DEADLINE Travel Guide text
- January 22th – Hand-in Micro research for peer-review
- January 29th – DEADLINE micro research report

Reporting guidelines

This chapter gives some information about how the reports should be written. As explained there will be two reports: one for the travel guide and one for the final report. There is a considerable overlap between the two as the final report includes the (modified) introduction of the organization concerned. Use the information below as a guideline. Select the relevant aspects but also be creative by adding things which are not mentioned below when it is appropriate. You may also add some pictures, graphs etc. For both texts write them in Latex with proper sections and subsections.

Travel Guide

The travel guide is one of the books which you will receive in advance to the Study Tour. It will contain travel information like our schedule, city information, cultural excursions and so on. Another part of the guide will cover the company visits. That part will contain what the company is doing, how many people are working there and so on. This part about the companies is what you will write first. Below are guidelines on what must be in it. Be creative and add other things when applicable.

Chapter 1: Introduction

Give a description about the organization. Do not repeat the Macro/Meso/Micro assignments but focus on points like:

- History of the company
- Recent developments (in the news due to e.g. takeovers, technological breakthroughs..)

Chapter 2: Organization description

In this chapter you will describe the organization. Take into account aspects which you think are relevant. At least pay attention to the following bullets:

- Company/organization size
- Organization structure
- Number of employees
- Turnover
- Location(s)
- Main operations
- Strategy
- Products
- Business culture
- Process description
- Main relationship with other organizations
- Position in the market
- The sector the company is in

Chapter 3: Relevant Technologies / developments

This chapter describes the relevant Technologies / developments that the visited organization is concerned with. The list below gives some aspects to which you could pay attention. Also make some questions which you can ask during the visit.

- Which Technologies are the main focus of the organization?
- Which next emerging technologies is the organization working on?
- What does the company contribute to the evolution of these technologies?
- Is the company an adapter or a creator of new technologies?
- Is the company doing any fundamental research?
- How do the evolution of their core business technologies influence products and R&D?
- Which major technologies have been developed by the company?
- What fields of Electrical Engineering does the company think will become important in the future?
- ...

Final Report

The report in the travel guide gives you an idea what each organization which you are about to visit is doing. After the visit you have learned a lot more about the company. The

first part of the assignment for the final report is to correct and complete the text in the travel guide. Next, you extend it with additional chapters for which you obtained the information during the visit. Below is a list of suggestions of what should be in your report. It is a guideline, so adapt it to your own needs and add other aspects when relevant.

Chapter 1: Introduction

Give a description about the organization. Do not repeat the Macro/Meso/Micro assignments but focus on points like:

- History of the company
- Recent developments (in the news due to e.g. takeovers, technological breakthroughs, .)

Chapter 2: Organization description

In this chapter you will describe the organization. The same has been done for the travel guide but that version might not have been complete. Try to complete it and take into account aspects which you think are relevant. At least pay attention to the following bullets:

- Company/organization size
- Organization structure
- Number of employees
- Turnover
- Location(s)
- Main operations
- Strategy
- Products
- Business culture
- Process description
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Chapter 4: Macro and Meso aspects

Derive relevant aspects of the Macro/Meso research and investigate how they influence on the organization and how the organization deals with them. Suggestions for relevant Macro/Meso aspects are given below.

Relevant Macro characteristics

- Political/Legal
 - Political system
 - Government stability
 - Present political issues (e.g. war on terror)
 - Legislation
- Economical
 - Trade agreements/barriers
 - Financial indicators (e.g. inflation, exchange rate of CAD,..)
 - Employment
- Socio-cultural
 - Cultural differences
 - Education
 - Emancipation
- Technological
 - Infrastructure (roads, electricity, telecom, ..)
 - Internet
- Historical
- Geographical
 - Climate
 - Demography

Relevant Meso characteristics

- Important Emerging Technologies and developments
- Porter's Diamond conditions
 - Demand
 - Factor conditions
 - Firm strategy, structure and rivalry
 - Relating and supporting industries
 - Government
 - Chance

Chapter 5: Discussion

In this chapter make a comparison with:

- Other visited organizations: what are the differences and similarities between the visited organizations? Pay attention to chapter 4 and 5;
- Results / expectations of the preliminary report (Macro, Meso).

Chapter 6: Conclusion

Give an answer to the research question based on the answers given in chapters 1-5.

References

Provide a list of references which you used for collecting the information.