CASE 5

MARKET ASSESSMENT FOR A PROJECT PLANNING SYSTEM

You are a member of the Management Science Department of the University of Capitalville and have been approached by a visiting consultant, Mr. Smooth, from Materialist Management Systems Ltd (MMS). MMS have pioneered the development of a project planning system based on a mini-computer with appropriate input and output facilities and graphics display. This total system is not prohibitively expensive, and includes good software for setting up networks, identifying critical activities, scheduling resources and writing reports. The system has sold well in Europe and the USA and MMS are considering marketing it in Third World countries.

Mr. Smooth's proposal is for you to survey the market for potential sales of their system in your country. MMS have identified the construction industry as one suitable target but they would be happy to explore the market in other sectors if you advise that this would be more appropriate. MMS would wish to comment on your proposal and then get you to conduct the survey and to write a report on the results. You will, of course, receive a suitable fee for your services and thus are keen to help Mr. Smooth as he suggests. You accept the project after a relatively short discussion on terms and conditions.

You describe your consultancy project to a colleague in the tea-room that day. He expresses interest and says that he has some material which may be of relevance. In due course, he comes up with two documents. The first document contains an extract from a report on attitudes towards formal project planning methods in the construction industry in Kenya. The report was written by an MBA student at the University of Nairobi. The second document consists of a transcript of a conversation which your colleague had concerning the use of network analysis to help plan an extension to the Kali Water Supply. The two documents are reproduced here as Appendices 1 and 2.

Instruction to student:

1. Design a survey.
2. Conduct the survey.
3. Write a report.

APPENDIX 1 Extract from MBA Student Paper on Network Analysis in the Construction Industry in Kenya

One of the characteristics of any developing country is a high rate of growth in the construction industry. In Kenya output from the construction industry is growing at the rate of approximately 20-25%. The gross product of the construction industry amounts to over 8 million Kenya Pounds. This figure is expected to double over the next five years.

The construction industry happens to be one sector where the operational research tools of network analysis and CPM can play a vital and very advantageous role. To try and evaluate the planning techniques currently in use and the future prospect of the employment of network analysis in the industry I conducted a small sample study of the planning activity.

The sample used for the study included oral interviews with four leading contractors and four groups of architects currently in operation within the Kenyan economy.

The questionnaire presented below was used to study the planning pattern currently being employed in the construction industry in Kenya. Attached also in a summary of the results of the interviews conducted.

The planning tools currently in employment in the construction industry are the traditional tool of bar-charts and Gantt charts. In the construction of the charts no effort is directed towards evaluating for the critical path that could affect the project completion. The reason given for the use of the bar-chart is that it enabled the site manager to keep the other participants in the project informed about the job progress.

Those who knew of the existence of CPM as a planning tool and who readily accepted the fact that CPM was a better tool still rejected the idea that it would serve just as well in the Kenyan case. Though a number of reasons were put forward as to why it had not been employed the basic reason that was stressed throughout the interviews was the lack of know-how factor. For to use CPM analysis to its fullest, all the participants must be aware of the method and must understand the logic of the method. This is what is lacking. One respondent reckoned that less than 10% of the people involved in the construction industry knew of its existence, let alone used it at any time.

QUESTIONNAIRE

Q.1 What method do you use in the planning for jobs or projects under your control?

ANS (i) Traditional Gantt-chart or bar-chart.
(ii) Critical path analysis using bar-charts.
(iii) Critical path analysis using network analysis on arrow diagrams.
(iv) Computer used in evaluation.
(v) Other.

Q.2 How useful is the tool currently being employed in your project planning?

Q.3 Is the plan thus drawn up used, reviewed and employed through the life-span of the project under-hand?

Q.4 Do you tender for and accept government building or construction contracts?

ANS (i) Yes (ii) No (If yes to Q.4 ask Q.5)

Q.5 Has the Government stipulated any particular planning format to be used on their projects?

ANS (i) Yes (ii) No (If answer to Q.1 is (i) ask Q.6)

Q.6 Have you ever heard of CPM?

ANS (i) Yes (ii) No

Q.7 Have you in your career ever used CPM for project planning?

ANS (i) Yes (ii) No (If yes to Q.7 ask Q.8)

Q.8 Where have you employed or come across the employment of CPM in project planning?

Q.9 How useful do you consider CPM is as compared to traditional bar-chart?

Q.10 If you consider CPM as the better tool, why then is it not in employment in the construction industry in Kenya?

Q.11 Do you foresee the use of CPM in the construction industry in Kenya in the future?

SUMMARY OF THE RESULTS OF THE QUESTIONNAIRES

1. All the project planning done in the construction industry in Kenya uses the Gantt or bar-chart.

2. The reasons quoted for the use of the above tool was that it was the only tool currently in employment within the construction industry in Kenya.

3. The bar or Gantt chart, though used throughout the life of the project, was employed as a communication tool, so that the site manager could keep the other participants informed as to the progress of the project.

4. The government of Kenya contracts architects and contractors on a rate basis, for the construction of public utilities.

5. The government does not stipulate any particular format to be used for their projects.

6. Of the sample interviewed less than half (3) knew of or had heard about the CPM for planning as a tool whose application in the construction industry can achieve high returns.

7. Only one architect of the sample used had ever been involved in a project that used CPM and this was when he was working in the UK.

8. All the three who had heard of the CPM were quick to agree that it was a better tool for project planning. But they reckoned that its usefulness in Kenya would be limited. The reason cited was lack of know-how amongst the participants in the project.

9. A variety of reasons were given as to Q.10. These were:
   (i) Lack of know-how.
   (ii) Because many of the raw materials used in the construction industry were imported. Their arrival and delay made any time estimate very vague and generally either very optimistic or pessimistic.
   (iii) Competition in the construction industry in Kenya is not as high as that in the developed countries. Thus planning and project delays do not appear as critical constraints.

(iv) Delays in project completion on average do not cost the constructor as highly as they would in other countries where he operates i.e. other developed areas where labour costs are higher. Thus the saving (i.e. costs due to bad planning) are not high enough to provide for stronger reasons to use better planning tools.

(v) Most of the projects undertaken are not large enough to make the use of bar-charts a cumbersome exercise and most of the supposed large projects are usually undertaken for the government and these are usually broken-down to phases.

10. All those interviewed who know of CPM said that it would take a very long time, without committing themselves to any particular period, before CPM as a planning tool enters the construction industry in Kenya. The chief reason given here is that it will occur only when most of the participants become aware of the tool.

APPENDIX 2 Edited Transcript of Conversation on Network Analysis for Project Planning

The following conversation took place between Dr. V. Portant of the University of Capitalville (VP) and Mr. G. Lots (GL) of Amundsen, Heath and Partners.

VP Good morning ... What can I do for you?

GL I understand that you teach Network Analysis here at the University and I wanted some advice.

VP Yes. Fire away.

GL We are using network analysis to plan an extension to the water supply for the town of Kali. At the moment the network is drawn out by hand and we've done the planning that way. I wondered if it might be a good idea to put the network on a computer.

VP What stage is the project at? Have you actually started or are you still at the planning stage?

GL Well that's the point. We've been doing the planning so far but we're starting the project soon and think that it may be easier to put in the actual times which jobs have taken and re-evaluate the network if we had it on a computer.

VP What made you use a network analysis? Is it standard procedure for Amundsen, Heath?

GL No it isn't and actually half the money for the project is coming from a World Bank loan and the Bank stipulated that it must be used by the consulting engineers.

VP Why were you allocated to it - did you have any special knowledge?

GL No. I was put in charge of the project and, after we'd been told to use network analysis, I read it up for myself ... I think it fair to say that we only used network analysis because we had to, but we now realise that it's a much more realistic method than bar-charts and it has greatly improved our project planning.

VP That's interesting. Well, in terms of computers, you could ask yourself a number of questions. Like, how frequently are you likely to update the network and how often are you likely to re-run it. Or, put it another way, do you see it as being an occasional aid or something for close control?

GL Well, I think we'll want to update it fairly frequently and run it perhaps once a month.

VP So it's not for close control.

GL No. I don't think we see it used in that way.

VP How big is the network anyway? I should have asked you that earlier.

GL It's about 250 activities, give or take a few.

VP That's not very big as networks go. My feeling, off the top of my head, is to stick to your manual system. What access to computers have you got?

GL Well, none at the moment. Could we try it on your University machine?

VP I'd be happy to put it on for you myself but it's a cumbersome monster. I don't think you'd want to use it on a regular basis.

GL Well, thanks for the offer. I may take you up on it. But your feeling is to go ahead by hand?

VP Yes, I think so. But I'd be quite keen to try to put it on the University machine as a trial. Let me know about that.

GL OK after I've had a chat back at base. Well, thanks for your help ...

Sequel: GL rang VP a week or so later to say that they'd decided not to put it on a computer and thanks again for his advice. His boss wasn't very keen on the trial idea but perhaps another time.