



Institute Technology Management and Entrepreneurship

**INNOVATIVE TECHNOLOGY IN CONSTRUCTION MANAGEMENT: A
CASE STUDY ON ALMATAB SDN. BHD**

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**INNOVATIVE TECHNOLOGY IN CONSTRUCTION MANAGEMENT: A CASE
STUDY ON ALMATAB SDN. BHD**

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DECLARATION

I declare that this project paper entitles Innovative Technology in Construction Management: A Case Study on ALMATAB SDN. BHD is the result of my own research except as cited in the references. The case study has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Date: 29 February 2008

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EXECUTIVE SUMMARY

Almatab Sdn. Bhd is one of the construction companies available in Malaysia. Located in SS15 Subang Jaya, Selangor, Almatab is a Class A (Bumiputra) company that has 31 years of experience in building construction and an ISO certified company. This is important for a company like Almatab to stay competitive and maintaining their good track in this industry since the competition in getting jobs in this area are stiff.

Almatab is also a registered member of the body of authority such as CIDB, Pusat Khidmat Kontraktor(PKK), Pertubuhan Arkitek Malaysia (PAM), SIRIM and Construction Labour Exchange Centre Berhad (CLAB). Registration with some of the authorize body like CIDB is part of the requirement needed for a Class A contractor like Almatab to abide when operating in this industry and in gaining customers trust on their credibility in safety matters especially at the construction site.

However with the changing trend in technology and demand is the evident that's happening in both the private and government sectors right now. In the past, the latter has been criticized for their lack of initiative in testing new products but has taken the lead role to be pro-active. This is manifested in some of the government projects seen around Malaysia, where we see state-of-the-art designs epitomizing the hi-tech look of the millennium. Therefore in this paper will discuss all the possible actions might be taken to improve the construction industry in Malaysia to a new higher level along with the possible innovative technology in the construction management.

RINGKASAN EKSEKUTIF

Almatab Sdn. Bhd adalah merupakan salah sebuah syarikat pembinaan yang terdapat di Malaysia. Beribu pejabat di SS15 Subang Jaya, Selangor, Almatab ialah sebuah syarikat Kelas A (Bumiputra) dan mempunyai 31 tahun pengalaman dalam pembinaan bangunan dan juga sebuah syarikat yang mempunyai sijil layak ISO. Adalah penting bagi syarikat pembinaan seperti Almatab untuk sentiasa berdaya saing dan mengekalkan rekod baik mereka dalam industri seperti ini memandangkan persaingan dalam mendapatkan kerja adalah sangat tinggi.

Almatab juga merupakan ahli berdaftar di bawah badan – badan seperti CIDB, Pusat Khidmat Kontraktor(PKK), Pertubuhan Arkitek Malaysia (PAM), SIRIM dan Pusat Pertukaran Buruh Binaan Berhad (CLAB). Pendaftaran dengan badan seperti CIDB adalah merupakan salah satu yang wajib untuk kontraktor Kelas A seperti Almatab patuhi apabila beropersi dalam industri ini dan dalam mendapatkan kepercayaan pelanggan terhadap kredibiliti mereka dalam perkara yang berkaitan dengan keselamatan terutamanya di tapak pembinaan.

Walaupun bagaimanapun, dengan perubahan dalam trend teknologi dan permintaan, ia adalah bukti situasi yang melanda terhadap pihak swasta dan juga kerajaan kini. Pada suatu ketika dahulu, mereka yang terlibat ketika itu yang dikritik kerana kurangnya inisiatif dalam mencuba produk dan sesuatu yang baru tetapi mereka telah mengambil peranan utama untuk menjadi pro-aktif. Ini telah ditunjukkan dalam beberapa projek kerajaan yang dapat dilihat di sekitar Malaysia, dimana kita dapat lihat rekabentuk terkini yang menunjukkan rupabentuk yang berteknologi tinggi pada abad ini. Oleh itu, kertas ini akan membincangkan tentang semua tindakan yang mustahil untuk diambil untuk meningkatkan industri pembinaan di Malaysia ke satu tahap yang lebih tinggi bersama dengan teknologi inovatif yang mungkin bagi pengurusan pembinaan.

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CHAPTER 1

INTRODUCTION

1.0 Background of Study

In today's fast rate and ever changing technology, the demand in Malaysian building and construction industry has motivated architects, designers and developers to be ever more creative and innovative, pushing ideas to new limits and making challenging demands on building products and design.

Basically the Malaysian construction industry is separated into two parts. One part is general construction which is more on building constructions such as residential, non- residential and civil engineering works. While the second part is the special trade works in mechanical and electrical such as metal, electrical, plumbing, sewerage and sanitary works, tiling, flooring and etc. In general there are six classes of constructions companies which have been classified such as table below:

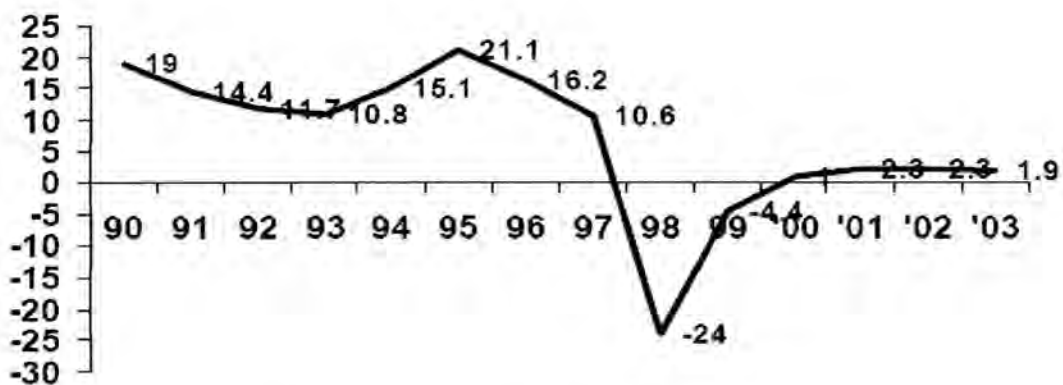
Table 1.1: Classes of construction companies

Class	Financial Limit (RM)
A	Above RM 10,000,000
B	RM 5,000,001 to RM 10,000,000
C	RM 2,000,001 to RM 5,000,000
D	RM 500,001 to RM 2,000,000
E	RM 200,001 to RM 500,000
F	Until RM 200,000

Source: Pusat Khidmat Kontrator (PKK)

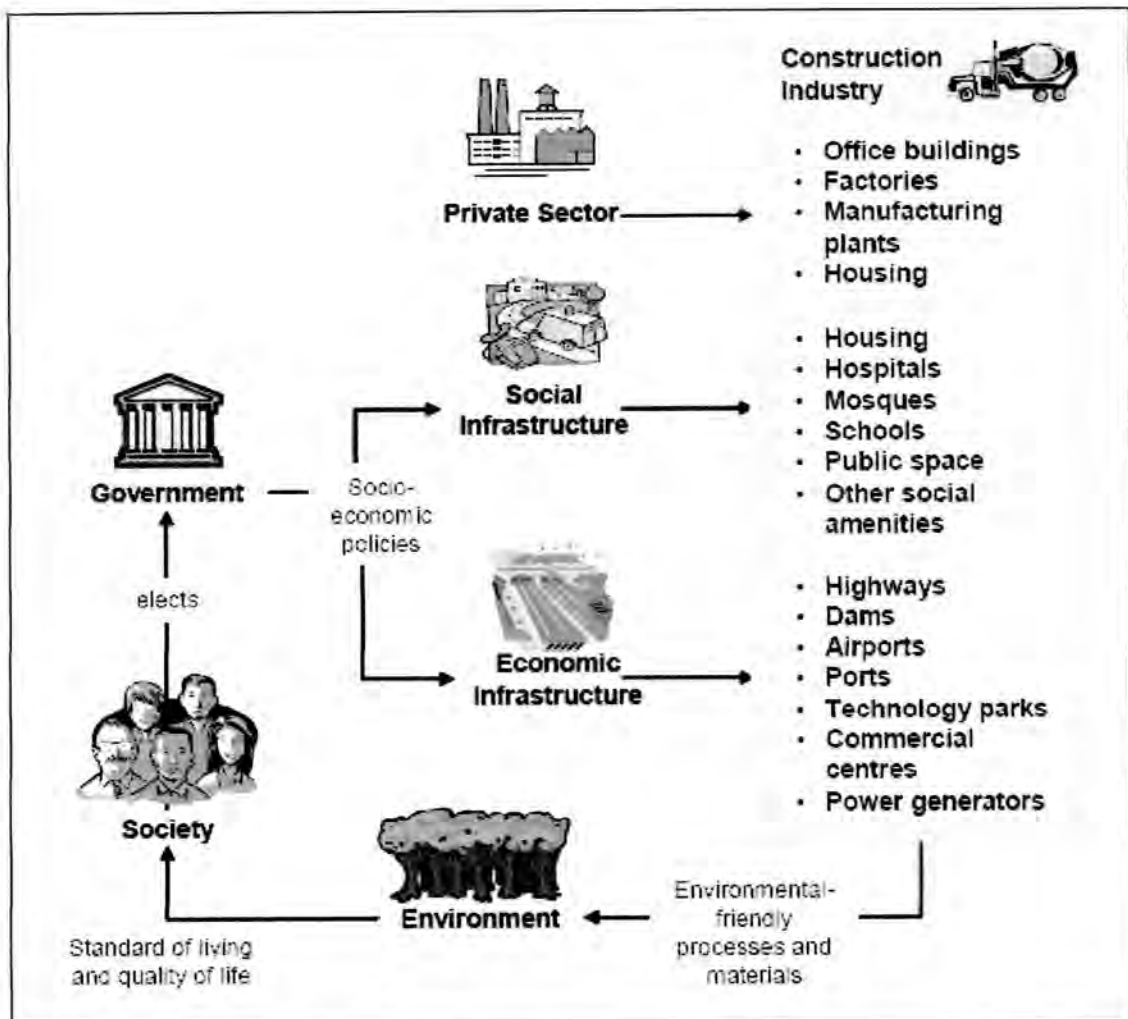
In Malaysia, the construction industry is one of the productive sectors that contribute to the Malaysian economic growth. Despite the fact that the growth rate of this industry has the ups and down since the demand for constructions depends on the economic stability. This is because constructions entail long term investment and risks and it does not create its own demand. When the economic is stable, there will be needs for infrastructure and commercial buildings as the quality of life and buying power is increasing.

Malaysian government through the 9th Malaysia Plan (9MP) has allocated between RM150bil to RM200bil to the construction industry (9th Malaysia Plan). This allocation for new development and as well as the continuation of projects initially slated for 8MP. This also has bring hope among the contractors that there will be more jobs for them. However the value of construction works in overall is a bit slow compared to other develop countries when taking considerations that the country's economy is influenced by the global economic development.



Source: Construction Industry Development Board (CIDB)

Figure 1.1: Growth of Construction Sectors, 1990-2003



Source: Construction Industry Development Board (CIDB)

Figure 1.2: Enabler of Government's Socio-Economic Policies

Reviews from the market watch 2005 construction industry in Malaysia mentioned that presently more than 600,000 people are employed in the construction sector including 109,020 legal foreign workers. With the involvement of illegal workers, the construction sector is identified as a labour generating industry and the dependence on foreign labour is very high. However the lacking of high technology working process causes the low productivity level that can lead to other problems such as projects delayed and quality.

Yet it is vital for Malaysia to build a sustainable construction industry that emphasizes professionalism, quality and productivity to become a world class, innovative and knowledgeable global player (Bernama).

Therefore on site management is the crucial part in the construction management where the site personnel's are directly involve with the actual work of the project and to make sure that everything is done according to the plan and specs given. The current trend of increasing efficiency and productivity in the management of construction activities has placed considerable emphasis on the use of new method and high technology that can help in saving the cost and time.

Increased demand for faster design and construction, and increased uncertainties and complexity in design and build also has made projects more difficult to handle, and may generate more errors and changes. Unanticipated errors and changes in construction projects often cause delays in the schedule, cost overruns and affect project performance. A sector in the construction usually related to pollution, non-consistent working conditions, completions of projects are usually behind the schedule that they have to abide and also sometimes abandoned projects.

**Table 1.2: No. of abandoned projects for the period of 1990 until
Disember 2005**

Negeri	Bil. Projek	Peratus (%)	Bil. Rumah	Bil. Pembeli	Hilang Jualan (RM Juta)
1 Perlis	3	2	161	132	5.475
2 Kedah	16	7	2791	1466	265.0
3 Pulau Pinang	26	10	12566	10196	1069.9
4 Perak	20	8	3052	1611	151.57
5 Selangor	63	24	32967	22460	2320.96
6 W.Persakutan	16	7	10636	6604	2021.63
7 N.Sembilan	27	10	5240	2727	267.41
8 Melaka	12	4	1374	791	190.5
9 Johor	36	14	11150	7173	763.1
10 Keantantan	3	3	1006	666	32.16
11 Terengganu	8	3	636	501	30.09
12 Pahang	21	8	6559	4063	415.35
JUMLAH	261	100	88410	58685	8,043,165

Source: Ministry of Housing and Local Government

Through innovation of technology and new approach of management, the hope that the construction quality and safety also their performance can be improved to the higher level and more reliable once the project is completed. This is also including the environmental issues as the constructions work started whether the contractors follow the environmental rules given by the government. In order for all these to run smoothly and accordingly, we need to do something such as establishing a standard and strategies to be implemented.

1.1 The Issues of Construction Industry in Malaysia

The poor performance in Malaysian can be seen and heard on the news where the problems such as many construction projects was abandoned, safety at site problems and quality problems which lead the Malaysian Government to come out with some action to handle those problems. On the whole, the problems rises are in the management and technical aspects. The problems that contributed to the poor performance could be due to:

1.1.1 Management Incapability and Lack of Technical Knowledge

Lack of experience in management and making decision is the core problem that can caused businesses to fail especially in the construction industry. It is a must in every company to have a good management in order to make sure the job given can be run smoothly. Proper planning in managing the financial, resources such as manpower, materials, plants and equipment and their daily task which comprises the overheads of the company is crucial skill in good management.

Poor management of the above basically was the characteristic showing that the company owner's inexperienced in the business, lack of knowledge in management or unbalanced management training and experience. Too many things to be managed by one person also will result a failure in business because of the insufficient time. According to Tate, et al. (1982), the authors, lack of sufficient time to give to the various managerial functions accounts for the vast majority of failures among small businesses.

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As current situation on supply of common materials such as cements, steels, timber and concrete are unpredictable where there has been an increasing of price of these materials lately. For the steel especially the price increment are as high due to shortage of supply as it has also become one of the controlled item by the government. effect Not only the materials have to be available on site on time but also the quality of the material purchased as stated in the contract are also important. Good quality of materials will ensure a good quality of the building. However this price uncertainty of the materials can affect the quality of the end product since the materials with good quality are higher in price. Therefore more proper arrangement is needed for the materials to be as specified and on site as the work progress in order for the project to run as schedule. Building materials also have evolved over time. In today's market, there is a limitless variety of material types and usage that is used in constructing the buildings so contractors should be aware of this changing trends and evolving of technology around them.

Combination of knowledge in management and technical know-how can improve the project performance and developing their business further. As the construction industry is usually in non-consistent working conditions, knowing which part of the project can be run first, what equipment to use and when to use it, the materials to be used and gathering workers to be ready at site are something that can only be done by people who has experienced and knowledge in management and technical. Without having this kind of knowledge also will unable them to upgrade their technology level and becoming more innovative.

1.1.2 Financial and Inventory Management Inadequacy

Good financial management in businesses is vital since it will be the measure whether the business can survive in the industry. Failure to manage and gain profit and also limited access to financial institutional credit will cause the company to go ruined. This is because with insufficient working capital can caused construction projects failure or delayed.

Time is also a vital since every project taken need to be completed on time as there will be penalty imposed to the contractor if they fail to finish the work as schedule. This penalty can affect to the company budget and capital to complete the project or start new project. This is one of the reasons why we can see so many abandoned projects and projects that is still going on but has passed the completion date.

Poor inventory management also have an effect on the company financial flow because if the wrong estimation of time can result the company making loss. Materials availability on site is very important since it is the important element in the construction industry. Enough supply of materials on site will make sure that work progress is according to schedule. However there are times when late delivery of materials can affect the work progress. Too much wastage of materials due to wrong instruction or unsuitable place for keeping the materials also can affect the supply of materials on site and decrease of profit as the increase of cost.

1.1.3 Disorganized Planning and Scheduling

Experience only will not guarantee that the project can be a success without proper and organized planning and scheduling. As mentioned before, time is a vital in the construction industry as all the work progress done should follow the schedule. A contractor ought to know when a particular work can be done and who should do the work (Hatush, et al. 1996).

Through an effective systematic planning and scheduling will help the contractor in determining the optimal utilization of labour and materials used in order to bring profit to the company. By using the system will give the contractors a control over decisive activities which need to be done first according to the priority. Even if problems occurs unexpectedly because of something that can't be avoided such as heavy rains for few days that can hinder other progress work, backup plan can be done by doing other work that are not really affected by the heavy rain just to fill in the work progress.

A proper planned on manpower also is crucial in the construction industry in order to evade the shortage of manpower. The result from the shortage can lead to negative effect the moral of the workers and also financial problem as the productivity become lower and lower. When the productivity is low, it can lead to delay since the progress is also slow and can bring huge loss and failure to the company.

1.2 The Problem Statement

The construction industry is one of the sectors that have been an important element which constantly contribute to the Malaysian economy. This is because of the broad linkages with other sectors and economy especially the manufacturing sectors such as basic metal products and machineries.

However since the 1998 financial crisis, the construction industry growth rates are not really that much different as it's fluctuates depending to the economic stability. Due to this crisis and instability have make the contractors to under price their cost of preliminaries which will give the impact to the cost cutting and false economies in the set up and safety of the site itself in order for them to survive. Supposed in construction industry high technology working process is needed in order for it to have high productivity level as the sector is usually related to pollution, non-consistent working conditions that resulting in late projects completion from the stated schedule.

Generally proper management and application of technology innovation in construction management in Malaysia is not widely used base from the high number of abandoned and delayed projects. This problem may due to many reasons related to the management of the projects. Supposed a standard of procedure integrated with innovative technology in construction management should help the company to come out with strategies and a well-planned project milestone as a guide to achieve the goal that is completed the job in time, within specifications and budget given and it is even possible to reduce and save the overall cost.

1.3 Objectives of the Study

The main objective of the research is to conduct a study on the applications of innovative technology in construction management in Malaysia. In construction industry in Malaysia, innovation is still not widely used and applied by the construction firms. The main concept of the application of innovative technology is to improve the performance and image of the construction industry in Malaysia itself. This is to be accomplished by:

- Understanding the current scenario, standard and procedure of a construction company used in managing a construction project and handling problems on site.
- See the effectiveness and need of the application of innovative technology in construction management.
- Using Almatlab Sdn. Bhd. as a case study to evaluate their project performance and innovation.
- Determine and recommend improvement to find solution for current issues in Malaysian construction industry.

1.4 Limitation of Study

The study limits only on Malaysian construction industry for the large and mega projects valued between RM 15 million and above for a Class A contractors although there are other categories and size of projects available in the industry. Hopefully there will be extended research on the other categories and project size in the future.

The issues discussed in this study limited to national level issues based on the innovative technology of the construction management perspective. Even though there are many other Class A construction companies, only a company is selected for this study. In addition, in preparing this case study, there are few obstacles that may limit the efforts in establishing detailed and ample data collection for analysis on the need of innovation in construction industry such as:

1.4.1 Almatlab Sendirian Berhad has been selected for this case study to observe their daily task and routine in managing the construction process. However I was not allowed to have and see all the details of work procedure and information as the project is rather confidential. Yet, I have try my best to obtain as much as information from the observation I have done and also from the interview session. In providing the evaluation, some assumptions have been made.

1.4.2 Restrictions on certain information from the company that I have interview which limit the data acquisition.

CHAPTER 2

REVIEW OF ANALYSIS

SECTION 2A: Malaysian Construction Industry

In order for Malaysia to be competitive in the world construction industry, it is vital for Malaysia to build a sustainable platform that emphasizes professionalism, quality and productivity to become a world class, innovative and knowledgeable global player.

According to Deputy Minister of Works, Datuk Mohd Zin Mohamed, said that the construction industry needed to address key challenges such as inefficient and ineffective processes, procedures and practices, inability to attract local workforce, inability to provide total integrated solutions and financial disabilities. He also said that in order for Malaysia to achieve the multifarious objectives it is no longer sufficient for the industry to depend on the knowledge and experience of the past. The advent of new technologies that can provide higher capacities calls for new and innovative approaches. (Source: Bernama, September 20, 2007)

Even the Construction Industry Development Board Malaysia (CIDB) chairman, Tan Sri Jamilus Hussein, said industry players were encouraged to use the industrialized building system and modular coordination in their projects to reduce dependency on foreign workforce. He believed that the Malaysian construction industry can no longer afford traditional construction techniques which require a large number of workers. This may result in poor work quality