8.0 ASSESSMENT

8.1 SWOT Analysis

The extent of the MSCs success is dependent on the complex interaction of the various success factors identified in the preceding chapters. A SWOT analysis is conducted with the degree to which a success factor is present determining if it is considered a strength or a weakness. Possible technology opportunities are identified, which could propel the MSC into leadership of the next wave of technological revolution to take place. Threats to the MSCs success are also determined.

8.1.1 Strengths

Infrastructure

The MSC boast world class infrastructure in the form of the telecommunications, highways and other supporting amenities. Since the cybercities Cyberjaya and Putrajaya are new, some of the supporting amenities such as schools and shops are only emerging now. Time should however improve on the present scenario.

Venture Capital

Venture capital is available in Malaysia with the government recently announcing that a large sum of money will be allocated to Malaysia Venture Capital Management Bhd (Mavcap) to help spur the venture capital industry in Malaysia.

While venture capital may be present, the real issue is whether there are sufficient solid investment opportunities in Malaysian MSC start-up companies. Venture capital in Malaysia tends to be either invested in start-ups abroad or go unused. More will be said on this issue in the discussion section.
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Weather

Temperature's range from 21 degree C to 32 degree C with the days generally sunny and warm and the nights cool. Although can be hot and humid at times, nothing which cannot be resolved by switching on the air-conditioner which is pervasive in offices, homes and public transportation.

Entrepreneurship

Malaysia has a large business community who is always searching for opportunities. Venture 2001, which was held to encourage entrepreneurship in the Malaysian IT, e-commerce, telecommunications, electronics, manufacturing and life science sectors attracted 447 business plans far exceeding the 250 originally targeted.

The problem with Malaysian entrepreneurs with regards to forming technology companies is that they rarely ever come up with truly innovative proposals. Strictly speaking, a large percentage of Malaysian entrepreneurs involved in the ICT industry would not qualify for the term "technopreneur" as defined by a venture capitalist. A venture capitalist would see technopreneurs as individuals forming highly innovative companies (involving high risk which is managed well) with potential for extremely high rates of growth over a 5 to 10 year period as opposed to forming traditional technology related businesses. The relationship between entrepreneurship, venture capital and research based innovation is described in the discussion section.

Government Policy

Government policy with regards to encouraging the establishment or formation of technology related companies in the MSC is excellent with various incentives in the form of tax breaks to excellent infrastructure available.
English

Being a ex-British colony, English is widely spoken and understood with Malaysia's overall population literacy standing at 93%. MSC designated areas are likely to have achieved an even higher literacy figure due to the high concentration of educated workforce.

Cheap Labour

According to the latest World Banks development indicators, Malaysia's per capita gross national income in year 2000 stands at USD3,380 compared with the United States which has a per capita gross national income of USD34,100. Although wage levels in MSC designated areas would be higher than average due to the utilisation of highly skilled knowledge workers living in a city, we are much cheaper than other locations such as Singapore and Taiwan. Of course cheapness is relative and other technology regions such as Bangalore are even cheaper.

8.1.2 Weaknesses

Major Higher Education and Research Institutions

Technology regions tend to be associated with areas surrounding higher education institutions with strong research leanings such as Silicon Valley - Stanford, Boston – Massachusetts Institute of Technology (MIT), Cambridge – Cambridge University, Bangalore – IIS and Singapore – National University of Singapore (NUS) & Nanyang Technology University (NTU). This is because technology regions create new business opportunities by exploiting untapped innovative and creative ideas, which requires the presence of research capabilities and therefore a large number of researchers.

The Multimedia University located at the heart of Cyberjaya is meant to be the MSCs response in attempting to create a world class institution of higher learning with strong research credentials. Among the strengths of
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the MMU is that it has excellent facilities and collaborates very closely with industry in developing its programs to ensure relevance to industry with companies such as Nokia, Lucent, Nortel and Alcatel influencing course content. The glaring weakness of the MMU is however its failure to develop a critical mass of researchers so critical to the MSCs success.

Local Anchor Megasuccessful Companies

There are no local anchor megasuccessful companies in the MSC. MDC classifies companies such as CSA as world class. But the fact is although CSA is listed on the KLSE, it is controlled by CSC a US based company. Secondly CSAs activities are primarily concentrated around Malaysia. It may be a large Malaysian company but it is certainly not world class in the same league as Hewlett Packard or Infosys.

A local anchor megasuccessful company is important, as they would tend to contribute to the development of local research capabilities. There would also be less likely to relocate on a large-scale basis on the first sign of opportunities elsewhere thereby ensuring continuous contribution to the local economy.

Networks

The successful networking which characterises Silicon Valley can only occur once a critical mass of technically skilled people are concentrated in the MSC area. This has yet to occur. Without a strong research presence, the quality of the networks being developed in the MSC is also going to be compromised.

Specialised Support Services

Specialised support services to help start-ups launch is limited with the MSCs incubator being a good attempt to address this problem. If the MSC grows in success, support services such as incubators as well as other specialised services such as those provided by lawyers skilled in
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international patent protection and intellectual property rights are going to
become more readily available.

8.1.3 Opportunities

Chart 5 shows the past waves of innovation experienced by Silicon Valley.
Each wave had a boom period initiated by hype surrounding the new
technologies followed by a slowdown period caused by external shocks
such as intensifying competition. During the boom period, employment
would grow while the slowdown period would result in employment being
scaled down. Chart 6 shows the employment history of Silicon Valley
along with its associated waves of innovation. The waves of innovation
take on an 'S' shape, which is similar to the product life cycle shape. Each
wave of innovation built on previous waves of innovation with the adversity
from a slowing innovation wave driving the next wave.

The opportunity therefore for technology regions is to identify what is
going to constitute the next wave of innovation and to hop on it. Figure 1
shows various technologies present today converging to form tomorrow's
technologies. Start-ups, which are able to come up with innovative ideas
based on the current transition of technologies, will have incredible growth
potentials and have the chance to grow into megasuccessful entities.
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Evolution of Silicon Valley
1950 - 2000

Chart 5: Waves of Innovation in Silicon Valley (Source: Silicon Valley Edge)

A Brief History of Santa Clara County Employment

Chart 6: Waves of Innovation with Employment Impacts (Source: Collaborative Economics)
Figure 1: Areas of Potential Future Innovations (Source: Joint Venture)
8.1.4 Threats

The MSC does not operate in a vacuum and must compete for foreign investment against competing technology regions such as Hinschu Park (Taiwan), Bangalore and Singapore. Vigilance is needed to ensure that our incentives are sufficient to make the MSC an attractive alternative with periodic benchmarking a must.

8.2 Discussion

The MSC is expected draw investments of no more than USD475 Million and a maximum of 7,300 jobs by the end of 2001 which makes it a modest success. In contrast, Bangalore has attracted USD1.3 Billion in foreign investment and employs around 80,000 software engineers.

No figures were available on the amount of venture capital invested in the MSC, Klang Valley or Malaysia while Bangalore attracted USD275 Million in venture capital financing in the year 2000. The government is attempting to spruce up the local venture capital financing industry by pumping funds into Mavcap. But the problem of lack of venture capital financing in the MSC is probably not due to the lack of funding but the lack of good ideas. According to Jayaseelan (The Edge July 16 2002) “while there’s a lot of so called venture capital money out there, most of it has not been invested.” The shortage of good ideas in Malaysia has resulted in even the government making provision for Mavcap to invest some of the funds assigned to it in overseas ventures. Entrepreneurs involved in the technology sectors in Malaysia complain that venture capitalists do not provide them with funding. They fail to understand venture capitalist only fund start-ups with highly innovative ideas with the potential of generating very high rates of return over a 5 to 10 year period. Many of the local technology entrepreneurs are instead unsophisticated peddlers of ideas with low market potential and profit margins.
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Without a solid base of research capabilities within the MSC or its surroundings, the MSC will continue to be a struggling technology region hoping to get lucky on some start-ups. Even if innovative discoveries or inventions were made, it would be difficult for MSC companies to maintain entry barriers, as imitators would quickly rise unless the capabilities of sustainable research are developed which allows for continuous improvements to the original offerings. Malaysian venture capital funds will continue to seek opportunities abroad or go unused. The entrepreneurial energies available among Malaysian’s will continue to be dissipated on lacklustre ideas.

8.3 Recommendations

1) Develop at least 1 higher educational institution with world class research leanings with the aid of federal funding

MMU should be developed into the world class institution situated in the heart of the MSC. In order to do so a detailed benchmarking study needs to be carried comparing MMU with other world class institutions such as Stanford, MIT, NUS or the Indian Institutes of Technology to identify parameters to improve upon. Possible comparisons, which need to be made, would be on staffing levels (number of Professors, Associate Professors, Doctoral holders, Masters holders, full time researchers etc), number of technical research papers published annually, number of postgraduate research candidates and on facilities (laboratories, student accommodations etc). Based on these figures, corrective steps need to be taken such as recruiting more staff perhaps internationally if not available locally. In order for some of these improvements to take place government funding in the form of grants may be required as MMU is currently run as a profit centre being a subsidiary of Telekom Malaysia. As a profit centre, the will to undertake major structural reforms may be limited by dollars and cents issues.
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Steps should also be taken to increase the attractiveness of postgraduate education in particular doctoral studies. In United Kingdom, students are allowed to pursue PhD programs immediately upon completion of their undergraduate degrees. Should the quality of the research produced by the candidate fail to meet the requirements for a PhD qualification, the candidate is awarded a Masters in Philosophy degree. Adopting a similar approach over here in Malaysia would reduce the hurdle of postgraduate education without reducing the quality. Allowances for postgraduate candidates should also be increased to ensure that taking up postgraduate studies are attractive.

Professors and Doctorate holders should also be strongly encouraged to take under their wings postgraduate candidates.

MMU needs to generate a critical mass of researchers for the MSC to achieve its full potential.

2) Attract best young minds from developing countries

The government should set up a scholarship fund to attract the best minds from developing countries to come and study at the governments designated MSC university namely MMU. These students should be made to sign contracts requiring them to work in the MSC / Malaysia for a couple of years upon completion of their studies similar to what is being done by Singapore under their Asean scholarship scheme. As the MSC has no restrictions on employing foreign workers this should not be any problem.

The presence of these bright minds at MMU will increase the competition experienced by the Malaysian students and will contribute to spurring them to work even harder to beat their competition thereby improving all parties.
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3) Encourage entrepreneurship at technical higher educational institutions by actively promoting it to student and staff

Staff and students of technical / science faculties in universities should be made aware and encouraged to take up entrepreneurship. Universities should ensure exposure to venture capital fairs and provide final year undergraduate students with the subject of entrepreneurship as an optional elective. University linked technology parks such as the ones formed by Cambridge and Oxford should be studied and feasibility determined if it should be set up to help staff commercialise their inventions.

4) Reverse brain drain

Malaysians who have left the country for opportunities to do advanced research overseas should be encouraged to return and take up places within MMU or other companies within the MSC. Incentives should be given in order to attract them to return and contribute their knowledge to making the MSC a success. This could be in the form of titles or positions e.g. Professorship in MMU.