INFORMATION, COMMUNICATION AND TECHNOLOGY (ICT) NETWORKING PLATFORM FOR SMALL AND MEDIUM INDUSTRIES (SMIs) BUSINESS GROWTH

BY
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Dissertation submitted in partial fulfillment for the award of degree of Master of Science in Engineering Business Management

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MSc. PROJECT DISSERTATION PAPER

Information, Communication and Technology (ICT) Networking Platform For Small And Medium Industries (SMIs) Business Growth

by

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Abstract

This thesis addresses the issues which Information, Communication and Technology (ICT) networking platform will help up the Small and Medium Industry (SMI) in Malaysia moving out form Production-based economy (P-economy) toward Knowledge-based economy (K-economy).

The new industries, in turn, will have different human requirement than a P-economy. The P-economy is characterized by labour-intensive production and low technology industries. Consequently, the value added in the course of production is low. Furthermore, P-economies are quickly losing out on their competitiveness and even in agriculture.

This thesis uses Michael E. Porter's Generic Value Chain system and Competitive Five Forces framework to identify the new business entrances and transform the existing SMI Relationship Marketing strategy into a competitive technology and knowledge-based marketing strategy on top of ICT networking platform.

It implies that the future economy growth is solely depends on the competitive networking platform that can help up the SMI business growth beyond the exiting domestic market, toward globalization business environment. The transformation will take place to build up the core future of the Malaysia economy.

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Declaration

This project dissertation paper is the only paper submitted for the award of the Master of Science in Engineering Business Management. The project dissertation paper presented is my own and it has not been submitted for other award.

The manuscript paper is prepared by Lam Wai Yuen, using Microsoft Word and Microsoft PowerPoint.

List of Abbreviations

3PLs	- Third Party Logistics
AFTA	- ASEAN Free Trade Area
Agri	- Agriculture
AICO	- ASEAN Industrial Cooperation Scheme
APEC	- Asia Pacific Economic Committee
AS	- Advanced Systems
ASEAN	- Association of Southeast Asian
ASP	- Application Service Provider
B2B	- Business-to-Business
B2C	- Business-to-Customer
CBT	- Computer-Based Training
CEPT	- Common Effective Preferential Tariff
CoreCom	- Core Competencies
COS	- Card Operating System
CRM	- Customer Relationship Management
D&D	- Design and Development
D-SCM	- Dynamic Supply Chain Management
EDI	- Electronic Data Interchange
ERP	- Enterprise Resources Planning
EPF	- Employees Provident Fund
FDI	- Foreign Direct Investment
GDP	- Gross Domestic Product

GIE - Growth, Innovation and Export

HRD - Human Resource Development

HRDF - Human Resource Development Fund

HRM - Human Resource Management

i-Brain Trust - Intelligence Brian Trust

ICC - Industrial Coordination Council

i-CRM - Intelligence Customer Relationship Management

ICT - Information, Communication and Technology

IMP2 - The Second Industrial Master Plan (1996-2005)

IPIC - Industrial Policy and Incentive Committee

IRS - Information Resources Section

IS - Intermediate Systems

ISDN - Integrated Services Digital Network

ISO - International Standard Organisation

ISS - Information Systems Strategy

ITA - Investment Tax Allowance

JIT - Just-in-time

K-economy - Knowledge-based economy

KLSE - Kuala Lumpur Stock Exchange

K-management- Knowledge-based management

K-society - Knowledge-based society

LAN - Local Area Network

MDC - Multimedia Development Corporation

MIDA	- Malaysia Industrial Development Authority
MITI	- Malaysia International Trade and Industry
MNC	- Multinational Company
MSC	- Multimedia Super Corridor
MTDC	- Malaysia Technology Development Corporation
NATO	- No Action Talk Only
NGO	- Non-Government Organisation
NTB	- Non-tariff barrier
PC	- Personal Computer
PDA	- Personal Digital Assistance
P-economy	- Production-based economy
PKI	- Public Key Infrastructure
QoS	- Quality of Service
RM	- Ringgit Malaysia (Malaysia Currency)
R&D	- Research and Development
SAP	- Systems, Applications and Production data processing
SCM	- Supply Chain Management
SI1	- Strategic Initiative One
SIRIM	- Standard and Industrial Research Institute of Malaysia
SLA	- Service Level Agreement
SMI	- Small and Medium Industry
SME	- Small and Medium Enterprise
Smidec	- Small and Medium Industries Development Corporation

SVPN	- Secure Virtual Private Network
SWOT	- Strengths, Weaknesses, Opportunity and Threats
TFP	- Total Factor Productivity
TQM	- Total Quality Management
US	- United State of America
VAS	- Value Added Service
VC	- Venture Captial
VPN	- Virtual Private Network
WAN	- Wide Area Network
WTO	- World Trade Organization

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Objective

The information age is upon us. The cycle of technology development and implementation is accelerating. As we know, the number of Internet users worldwide continues to grow intensively. The Small and Medium Industry (SMI) are leaving the industrial age behind and moving into the information age. The future business growth is embodied with the newest information technologies in an era characterized by knowledge as the critical resources for business activity.

The new information and communication technology (ICT) platform has created global market for goods and services. It is important to realize that SMI is necessary to make a quick transition into information age by using the ICT networking platform to meet the challenges of an open market such as ASEAN Free Trade Area (AFTA) and Asia Pacific Economy Co-operation (APEC).

The government is giving out a lot of incentives and funds allocation aiming to boost the ICT industry by encouraging the further use of ICT training and enhancement of ICT skills that would ultimately raise the level of productivity to help stimulate higher economic growth.

The project paper would look into the business operations, marketing strategies, technology in use and management of information.

Having completed this project paper, we should be able to know how the ICT networking platform leading the SMIs in Malaysia for their business growth towards borderless

business environment and supporting Malaysia government in developing the K-economy in successful manner.

The following benefits may be derived for my organization through this project.

1. Deliver of the ICT business network solution for any SMIs in Malaysia regardless where they are.
2. All the business information and valuable data can be retrieved anywhere and anytime.
3. Complying with the new government economy plan (K-economy) through out the ICT networking.
4. A clear and valuable information to our clients to determine how important ICT is in the future business environment and how ICT enables K-society.
5. Providing cost-effective and value-added services (VAS) to our valuable customers toward borderless business world.

Chapter 1

Introduction

The effects of technological change are pervasive in almost every sphere of our modern life. Therefore, in the new modern business platform, the influence of Information and Communication Technology (ICT) revolution in the marketing environment has come greatly to be in force. Furthermore, the government is in a position to take actions that can substantially alter the Small and Medium Industries (SMIs) marketing environment.

The new economy is also about new technologies and designs. Malaysia must move away from assembly to design and development (D&D). The government has encouraged our people through education and lifelong learning and by investing heavily in research and development (R&D) is well position to take advantage in the new global market.

The use of ICT networking platform will enable manufacturing companies to be more efficient and productive through improved forecasting capabilities, and allow them to cater to the current market requirements. These companies, especially the SMIs, will be able to improve their internal management processes and streamline these processes effectively to weather market variances. Through ICT networking platform, they can have access to the global market and use it as a mean to strengthen their competitive advantage and cover a borderless market space.

And, the global technological revolution and the use of ICT has opened up new prospects and business opportunities. It has always been important in recent years as the main driving force in business activities, especially for the SMIs.

1.1 Existing Malaysian Economic Outlook

The existing Malaysia economy is still slowing down after the 1997 economy crisis. The world economic slowdown led by the slowdown in the United State (US) will impact local businesses. According to the International Monetary Fund's World Economic Outlook, global growth in expected to be 3.2 per cent in 2001, compared with 4.8 per cent in 2000[1].

The SMIs however need to adapt in the next five to ten years in view of the competition arising from the implementation of Asean Free Trade Area (AFTA), World Trade Organization (WTO), and world economic slowdown.

Therefore, the present situation in Malaysia can be described as "after the storm" (economy crisis). Although the Government has declared that the crisis is over, there is still uncertainties. The first quarter 2001 growth of 3.2 per cent was down from the 6.3 per cent enjoyed in the fourth quarter of 2000[2].

From last year till now, the foreign direct investments (FDI) have avoided Malaysia, especially from the West[3]. They would prefer to invest in China, which is a bigger market and forecasting the economy boom time will remain eight years down to the road. China has awarded be an organizer for the Olympic Games in year 2008. Thus, China's

advantage in attracting foreign investment is due to its ability to produce cheap and good quality sub-components.

1.2 Industrial Performance and Challenges

The industrial performance and challenges may be determined through an analysis of the industry's strengths, weaknesses, opportunities, and threats (SWOT). The SWOT framework is perhaps the most well known approach to defining strategy, having influenced both practice and research for over 30 years[4]. Application of the SWOT framework has dominated over the last 20 years by Porter's "five-forces" model[5]. An understanding of the external factor, (comprised of threats and opportunities), coupled with an internal examination of strengths and weaknesses assists in forming a vision of the future tailored with our government's vision and economy plans.

1.2.1 Strengths

- **Prime Ministerial support – IRS (Information Resource Section)**
  Malaysians need to be creative and come up with new ideas to move into the next level of the communication and information age[6].
- **Political Stability**
  Economic development plans[7], "Indonesia-Malaysia-Singapore Growth Triangle (IMS-GS)", Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT)", "Brunei-Indonesia-Malaysia-Philippines-East Asean Grwoth Area (BIMP-EAGA)".

- **Good Foreign Political Management**

Japan proposed a broad economic co-operation framework with Southeast Asia region[8].

- **ICT Infrastructure – Multimedia Super Corridor (MSC)**
  The MSC coupled with a notional knowledge/innovation system provides a good platform for knowledge diffusion in Malaysia[9].

- **Affiliated Academic Research Partners**
  The role of the universities in the K-economy is to supply graduates who will work in the new economy, to have a close working relationship with the industry, and to align their research to the needs of industries[10].

- **Excellent K-economy Foundations**
  The Human Resource Development Fund (HRDF), established in 1993, is designed to encourage workers to benefit from training and skills development. With the implementation of the Private Higher Educational Institutions Act in 1996, the Government has permitted private colleges to offer twinning programmes with varying degrees of flexibility. Foreign universities have been allowed to open branch campuses in Malaysia to develop more knowledge workforces[11].

- **Industrial Verified Frameworks**
  CRM solutions to improve customer interactions and services, e-procurement, Supplies Relationship Management (SRM) to improve operational efficiency, and Supply Chain Management (SCM) and Product Lifecycle Management (PLM) to improve product excellence[12].

- **Innovative Product Service Offers**

Application service provider (ASP) system will provide cost saving to the SMI by avoiding the purchasing of copies of software and periodic upgrades for every computer in the office and by reducing the need to train technical staff to maintain the system[13].

- **Fix Currency Exchange Rate (US Dollar against Ringgit Malaysia)**
  Following the imposition of selective exchange controls on 1st September 1998 to insulated the economy from the contagion effects of the global financial crisis, the Ringgit Malaysia (RM) has since 2nd September 1998 been fixed at RM 1 =US$ 0.2632 or US$ 1 = RM 3.80[14].
- **Highly trainable labour in view of flexible language capabilities, especially English**
  The culture of using English is well established within private company and multinational company (MNC). And in the information technology industry, English is the de facto standard for technical communication.

1.2.2 Weaknesses

- **Lack of enthusiasm in investment on information technology**
  Asian companies generally do not want to invest heavily in information technology[15].
- **Lack of innovation and response from the private sector**
  Malaysian manufacturers have been asked to be more vigilant, innovative and responsive to the quick change in the business environment[16].

- **Low rate of commercialization of R&D findings**

The low rate of commercialization of R&D findings from Government-funded research and the minimum linkages between industry and researchers through collaborative R&D[17].

- **Low adoption to use information, communication and technology**
  A survey figure indicates that only about 30 per cent of some 100,000 SMI in Malaysia have established some kind of Web presence and use ICT in their daily operations, as opposed to 80 per cent in Europe and North America[18].
- **Lack of awareness in information technology security**
  Asean should pay attention to the rising incidents of cybercrime and misinformation through the Internet in the region[19].

1.2.3 Opportunities

- **Malaysia Learning Society**
  Adopt online e-learning environments to formulate K-society[20].
- **Strong Internet and e-Commerce Growth**
  Internet penetration in the country will rise from 9 per cent to 10 per cent by year end 2001, and increase to 25 per cent by the year 2005[21.]
- **Engines of Growth are recovering**
  Malaysian Institute of Economic Research (MIER) forecasting 3.2 per cent GDP 3.2 per cent growth by year 2002 compared with 0.4 per cent on year 2000[22].

- **Business Culture of non - Government Interference**

Government encourages Malaysian businesses to continue adopting information and communication technology to manage the economic downturn while preparing for global recovery[23].

- **International Business Growth**
  Use of e-commerce in trading of commodities would greatly enhance transparency and enable Malaysian primary commodities and services to have a global reach[24].
- **Venture Capital (VC) Funding**
  Government has allocated RM 1 billion[25] in venture capital funds which is managed by various VC firms such as Malaysia Venture Capital Management Berhad, Mayban Ventures, and Commerce Asset Ventures. This fund will be aimed at ICT-related companies and technopreneurs.

1.2.4 Threats

- **AFTA – Asean Free Trade Area**
  "All the companies should realize technology is an important asset to keep up with competition when AFTA to come into effect[26]".
- **WTO – World Trade Organization**
  "All the companies should realize technology is an important asset to keep up with competition when WTO come into effect[27]".
- **Globalization – Borderless Marketing.**
  Globalization would bring about intensified competition, and the weakening of a country as a community[28].

- **Shrinking of FDI (Foreign Direct Investment) in Manufacturing Sector**

Which accounted for 63.3 per cent or USD 1.85 billion of total FDI in 1991, fell to 32.9 per cent or USD 1.24 billion in 2000[29].

Chapter 2

Malaysia's New Challenges

Malaysia is a developing country and located at the South East Asia region. Established the Association of Southeast Nations (ASEAN) with other neighbor countries like Singapore, Indonesia, Philippines, Thailand, Vietnam, Loas, Brunei Darulssalam, Myanmar and Cambodia for better relationships in business trading and attracting foreign investors for developing their own country respectively.

An ASEAN Summit in Singapore in 1992, which included the launching of a scheme toward an ASEAN Free Trade Area (AFTA). The new members of ASEAN shall maximize their tariff lines between 0-5 per cent according to Common Effective Preferential Tariff (CEPT) Tariff Rate.

Starting from now, the SMIs need to overcome their weaknesses, or lose competitiveness in the regional and global economy. National Information Technology Council (NITC) secretary Tengku Datuk Dr. Azzman Shariffadeen said that Malaysia "has a long way to go" before it could catch up with countries identified as technology leaders by the Technology Achievement Index (TAI)[30].

Malaysia is exposed to the global economy and it has initiated revolutionary changes to meet the challenges. Competition for capital, markets, technology and skilled labours is fierce. Ever increasing performance and quality is demanded.

2.1 ASEAN Free Trade Area (AFTA)

ASEAN was established for doing business and trading among the Member Countries was significant. An ASEAN Summit was held in Singapore at year 1992, which included the launching of a scheme toward an AFTA business environment.

The new members of ASEAN shall maximize their tariff lines between 0-5 per cent according to Common Effective Preferential Tariff (CEPT)[31] Tariff Rate.

The strategic objective of AFTA is to increase the ASEAN region's competitive advantage as a single production unit. The elimination of tariff and non-tariff barriers among countries is expected to promote greater economic efficiency, productivity, and competitiveness.

Today, ASEAN economic cooperation covers the following areas: trade, investment, industry, services, finance, agriculture, forestry, energy, transportation and communication, intellectual property, small and medium enterprises, and tourism.

Malaysia has delayed full AFTA CEPT tariff rate for car market by year 2005. The agreement provides for maximum import tariff of 5 per cent on car product, which connected ASEAN members or minimum regional content of 40 per cent import tariff right now.

However, this situation may not last that long. Under the CEPT agreement, all quantitative restrictions will have to be eliminated immediately upon enjoyment of the CEPT preferences, and all non-tariff barriers (NTBs) will have to be abolished in stages within five years of the CEPT implementation.

This means that all trade measures that limit and/or distort trading by the strict definition of the currently being enforced by the Ministry of Domestic Trade and Consumer Affairs, too, will have to be discontinued.

One wonders how our competitiveness would be affected, once all aspects of the CEPT agreement have been fully implemented.

For car manufacturing, they would like to deliver high quality products at competitive prices, something that would ultimately benefit consumers. Thus, manufacturers would have to buck up and churn out quality goods at reasonable prices for competing with other ASEAN car manufacturers when AFTA throws the market wide open to foreign car manufacturers.

2.2 Globalization

The advent of globalization and liberalization has necessitated the adoption of new technologies and ways of doing things. As a Malaysian, we now need to acclimatize ourselves to the Knowledge-based economy or called K-economy.

As consumers, they use an array of products and service, most of that were undreamed of a few decades ago.

Producers in almost every industry face a stream of competing innovations that must be matched or improved upon to survive.

The next manufacturing revolution is under way, and companies are bringing airplanes, cars, and even household products to market faster and cheaper by leaning on their suppliers to help engineer and bankroll new products.

2.3 International Marketing

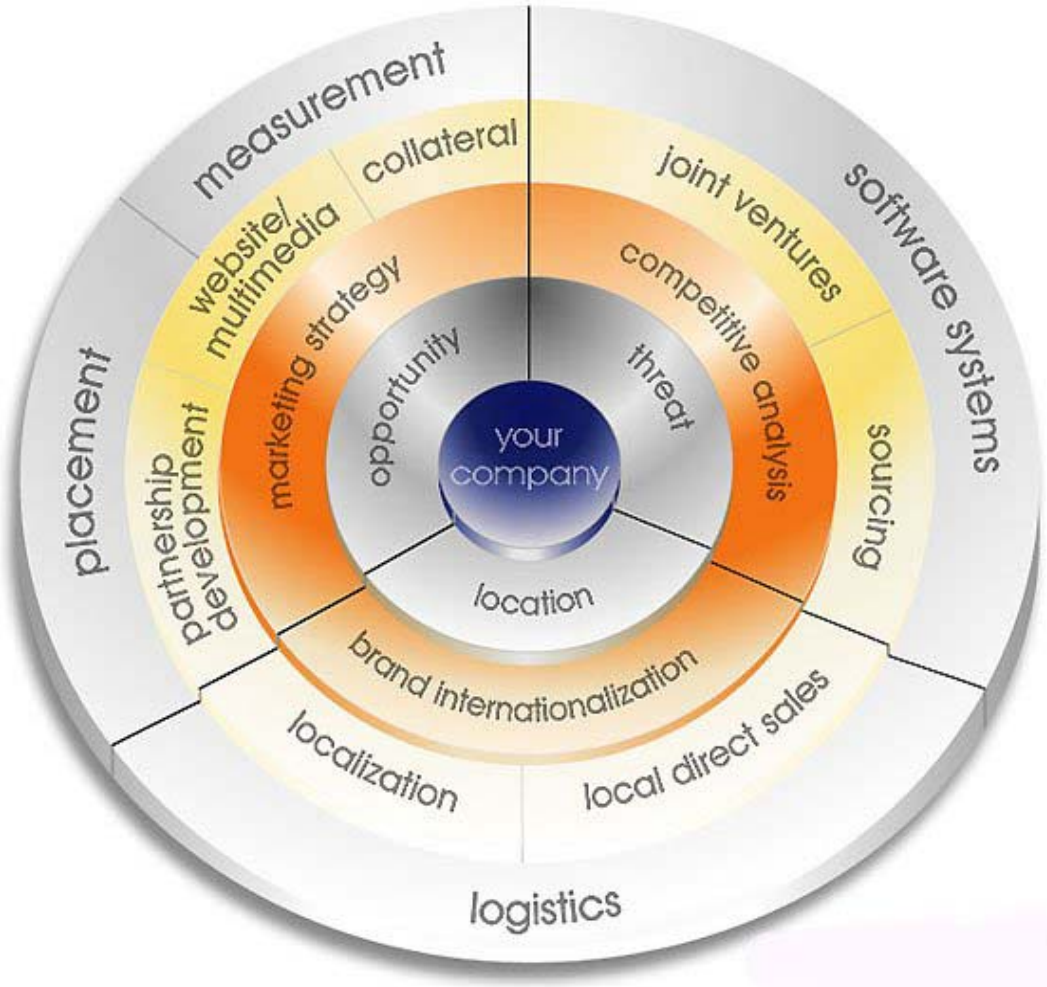
International marketing is tough, threat of new competition grows, and fraught with risks. In today's interconnected global economy, the SMIs has to go global to succeed and survive by understanding that geographic boundaries are only the beginning as they face difference in language, culture, legal aspect and local business practices to sustain or accelerate their export performance. To participate more meaningfully in the export arena and a sustainable and growth basis, SMIs must be strong or, at least, highly competitive. This is because of pursuing export marketing is concerned for various kind of situations:

- Demonstrated international demand for the products.
- Higher international prices for the manufactured goods.
- Relatively low labour or capital as compared with foreign manufacturers.
- Competitive pressure in the domestic market reducing prices and margins.
- Moderate or slow domestic market growth with strong, unsaturated or growing markets abroad.
- Competitors leveraging their profitability in foreign markets to increase their market share in the domestic market.
- Strategic needs, such as capital costs, technology, capacity, partners, government assistance, and financial funding.

- Intangible needs conforming with multi-cultural or internationally oriented corporate culture.

Being modern, informative, progressive, and professional are added advantage to enter the market or make a calculated postponement of the international marketing. Figure 2.3-1 shows out a competitive international marketing concept[32].

Figure 2.3-1: Model Concept of International Marketing



Chapter 3

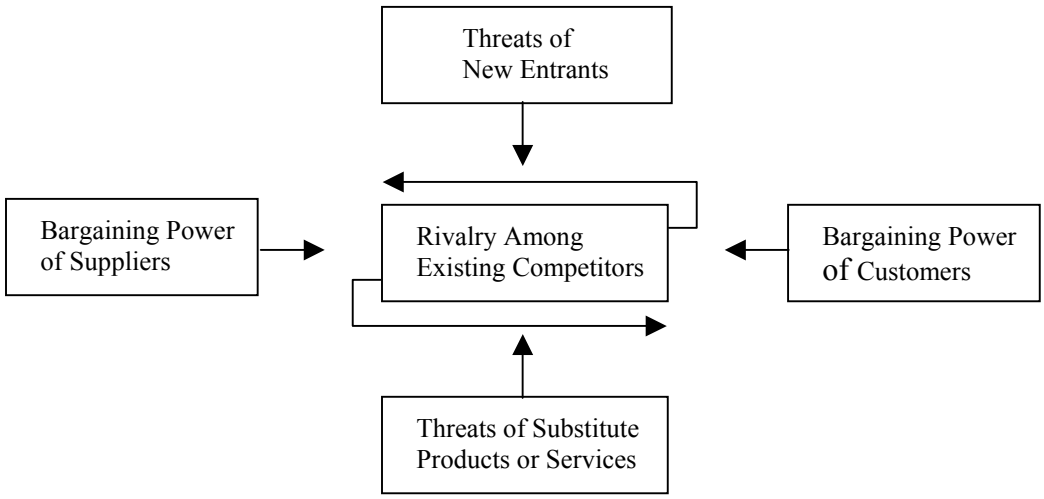
Literature Survey and Models Applied

To formulate the competitive business framework for SMI to implement into its business, marketing, technology and operation, several models were uses, such as well known industry analysis tool - SWOT Analysis, Michael E. Porter's generic value chain, and competitive strategy, five forces analysis for analyzing industries and competitors. Furthermore, the Porter's generic strategies is used to apply at the business unit level for achieving competitive advantage: cost leadership, differentiation, and innovation.

3.1 Five Competitive Forces

The Five Competitive Forces framework, shown in Figure 3.1-1, is used to determine industry profitability because they influence the prices, costs, and required investment of firm in an industry – the elements of return on investment.

Figure 3.1-1: Element of Industry Structure



New Entry Barriers

- Economics of scale
- Proprietary product differences
- Brand identity
- Switching cost
- Capital requirement
- Government Policy

Determinants of Supplier Power

- Differentiation of inputs
- Switching costs of suppliers and firms in the industry
- Presence of substitute inputs
- Supplier concentration
- Importance of volume to supplier
- Cost relative to total purchases in the industry
- Threat of forward integration relative to threat of backward integration by firms in the industry

Determinants of Substitution Threat

- Relative price performance of substitutes
- Switching costs
- Buyer propensity to substitute

Determinants of Buyer Power (Bargaining Leverage & Price Sensitivity)

- Buyer concentration versus firm concentration
- Buyer switching costs relative to firm switching costs
- Buyer information
- Ability to backward integrate
- Price/total purchases
- Product differences
- Brand identity
- Impact on quality/performance
- Buyer profits
- Decision makers' incentives

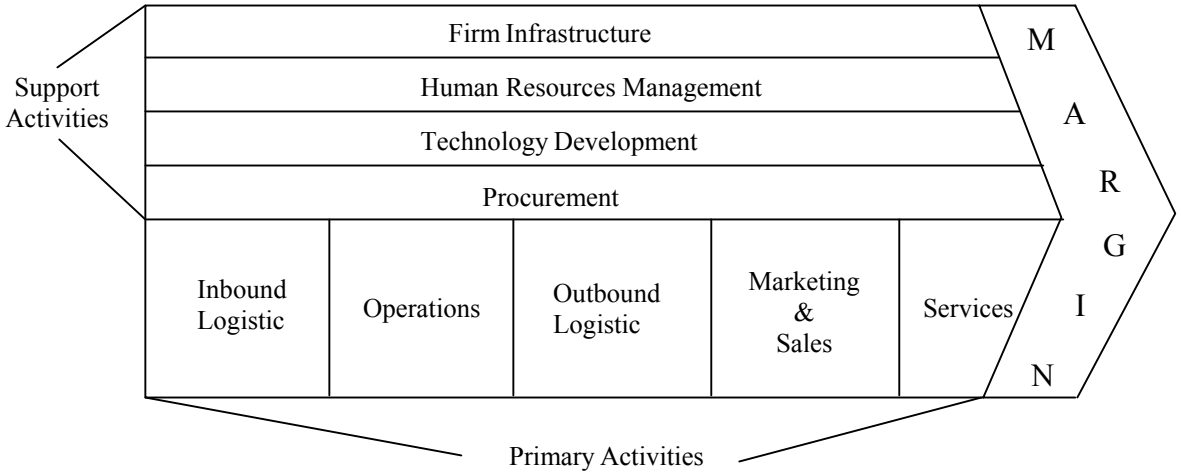
Rivalry Determinants

- Industry growth
- Fixed (or storage) costs/value added
- Intermittent overcapacity
- Product difference
- Switching costs
- Concentration and balance
- Informational complexity
- Diversity of competitors
- Corporate stakes
- Exit barriers

3.2 Generic Value Chain

The Generic Value Chain, shown in Figure 3.2-1, is used to demonstrate how a value chain can be constructed for a particular firm, reflecting its respective activities are linked to each other and to the activities of its suppliers, channels, and buyers, and how these linkages affect competitive advantage.

Figure 3.2-1: The Generic Value Chain



Primary Activities

The primary activities involve five competitive categories in any industry, as shown in Figure 3.2-1. Each competitive category is divisible into a number of difference activities in its respective industry and firm strategy:

- Inbound Logistic – Activities associated with receiving, storing, and disseminating inputs to the product.
- Operations – Activities associated with transforming inputs into the final product form.
- Outbound Logistic – Activities associated with collecting, storing, and physically distributing the product to buyers.

- Marketing and Sales – Activities associated with providing a means by which buyers can purchase the product and inducing them to do so.
- Service – Activities associated with providing service to enhance or maintain the value of the product.

Support Activities

The support value activities involved in competing in any industry can be divided into four competitive categories, shown in Figure 3.2.

- Firm Infrastructure – It consists various of activities business operation, planning, finance, accounting, legal, government affairs, and quality management.
- Human Resource Management – It consists of activities involved in the recruiting, hiring, training, development, and compensation of all kinds of personnel.
- Technology Development – It provides value activity embodies technology, be it know-how, procedures, or technology embodied in process equipment.
- Procurement – Procurement refers to the function of purchasing inputs used in the firm's value chain, not to the purchased inputs themselves.

3.3 SWOT Analysis – Strengths, Weaknesses, Opportunities, Threats

The SWOT analysis has been a useful tool for industry. The application of the SWOT tool for use as decision-making aid as new economy program are planned.

Strengths and weaknesses are essentially internal to be the industry and relate to matters concerning resources, programs and organization in the key areas. These include:

- Sales, marketing, distribution, promotion, support.

- Management, systems, expertise, resources.
- Operations, services, quality, pricing, features, range, competitiveness.
- Finances, resources, performance.
- R&D, effort, direction, resources.
- Costs, productivity, purchasing.
- Systems, organizations, structures.

The external threats and opportunities confronting a company, can exist or develop in the following areas:

- The company's own industry where structural changes may be occurring (size and segmentation; growth patterns and maturity; established patterns and relationships, ermergence/contraction of niches; international dimensions; relative attractiveness of segments).
- The marketplace which may be altering due to economic or social factors (customers, distribution channel, economic factors, social/demographic issues, political, and environmental factors).
- Competition which may be creating new threats of opportunities (identities, performances, market shares, likely plans, aggressiveness, strengths, and weaknesses).
- New technologies which may be causing fundamental changes in products, processes, and transactions (substitute products, alternative solutions, shifting channels, cost savings, and value chain).

The process of utilizing the SWOT approach requires an internal survey of strengths and weaknesses of the program and an external survey of threats and opportunities. Structured internal and external examinations are unique in the new economy planning and development.

3.4 Porter's Generic Strategic

The Generic Strategic, shown in Table 3.4-1 illustrates that the primary determinant of a firm's profitability is the attractiveness of the industry in which it operates, and the secondary determinant is its position within its industry. Even though an industry may have below-average profitability, a firm that is optimally positioned can generate superior return.

Table 3.4-1: Porter's Generic Strategic

Target Scope	Advantage	
	Low Cost	Product Uniqueness
Broad (Industry Wide)	Cost Leadership Strategy	Differentiation Strategy
Narrow (Market Segment)	Focus Strategy (Low cost)	Focus Strategy (Innovation)

By applying these models, the SMI will break though the existing business situation, and get ready to confront the regional impact and globalization. The few implementation plans and analysis that were carried out to support the writer's ideas and business development concept in this thesis.

Chapter 4

Industry Outlook

The SMIs or Small and Medium Scale Industries are generally defined as Malaysian-owned companies that have paid-up capital of not more than RM 2.5 million and which primary businesses involved in manufacturing, engineering and printing. The Small and Medium Industries Development Corporation (Smidec), the umbrella body of SMIs, are actively assisting the SMIs to various Government aids and grants; constantly organizing seminars and workshops to update their knowledge with new technologies and innovative methods of marketing, management and production; and organize trade missions, trade talks and other related activities.

These activities are crucial as it will help SMIs thrive and compete in international market place. SMIs form 90 per cent of all operating business nationwide and contribute more than 30 per cent of industrial output[4]. They helped the country recover from its economic crisis through exports by supplying multinational corporations in the manufacturing sector.

4.1 The Existing Marketing Strategy

In the existing marketing environment, SMIs are looking at the customer as an individual and tries to establish a relationship. Relationship marketing is concerned with the lifetime value of the customer.

Figure 4.1-1, illustrates how to establish the relationship marketing approach to SMIs valuable customers on customer service, quality and marketing.

The relationship marketing is based on the following information, shown in Figure 4.1-1. A regular relationship marketing survey is organized to strengthen and increasing the market value.

- Define the competitive arena – with the SMIs is compared to by their customers and with whom do SMIs want to be compared.
- Identify the key components of customer service as seen by customers themselves.
- Establish the relative importance of those service components to the valuable customers.
- Identify the customers' position on the key service components relative to competition.
- Perform data analysis to see if service performance matches customers' service requirement.

Figure 4.1-1: The Existing Relationship Marketing

From the collected information and data, SMIs can easily identify its competitors' strengths, existing market trend, sales opportunities, customer behavior and needs.

However, most of the SMIs do not fully utilize the ICT networking facility into its daily business process and re-positioning its market out of the country.

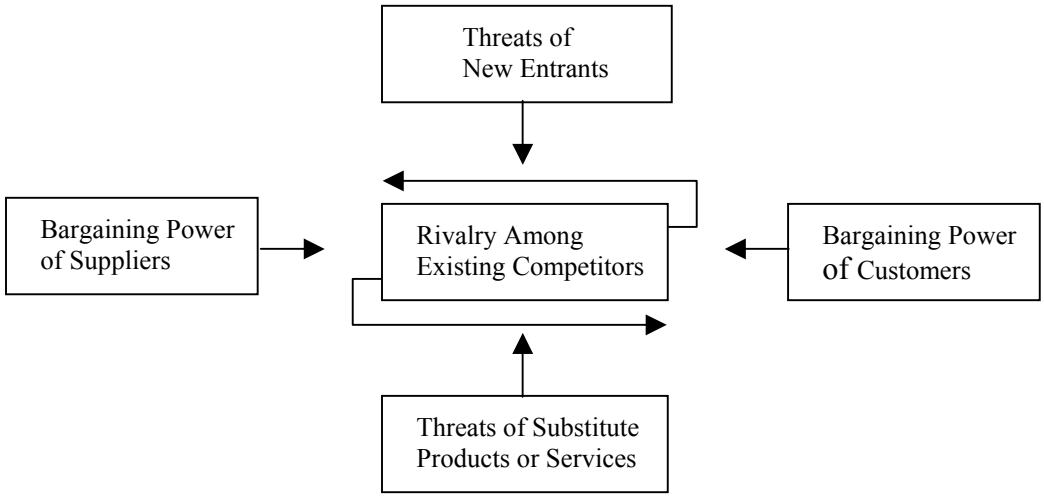
Thus, we classify the existing SMIs are the "old economy thinkers" and they must change their mindset about doing business in the traditional way if they want to compete globally, Deputy Prime Minister Datuk Seri Abdullah Ahmad Badawi said[5], "They always think in such conservative way- No Need, No Money, No Hurry, and No Trust".

4.2 The Competitive Industry Analysis

The five forces analysis helps the SMIs to contrast a competitive business industry. This formulated strategic marketing framework will combine with ICT platform for creating an efficient operation, effective management, and competitive advantage to over come the competitive forces that SMIs are facing now in the regional and global market.

The model portrayed in Figure 4.2-1 illustrates Michael E. Porter's five forces view of what determine an industry's attractiveness. There are: (1) rivalry for competitors within their industry, (2) threats of new entrants, (3) threats of substitutes, (4) the bargaining power of customers, and (5) the bargaining power of suppliers.

Figure 4.2 -1: Five Competitive Forces In Industry Structures



(1) Competitive Rivalry

- This is most likely to be the high entry – threat of substitute products, and suppliers and buyers in the market attempt to control. This is why it always shows in the center of the diagram.

(2) The threat of new entrants

- The competition in an industry will be higher, the easier is it for other competitors to enter this industry. In such a situation, new entrants could change major determinants of the market environment (e.g. government influence, new technology, economies of scale, prices, market shares, and customer loyalty) at any time. There is always a latent pressure for reaction and adjustment for existing players in this industry.

(3) The threats of substitutes

- Threats from substitutes exists if there are alternative products with lower price and of better performance parameters for the same purpose. They could potentially attract a significant proportion of market volume and hence reduce the potential sales volume for existing players. Such as, current trends, brand loyalty of customers, close customer relationships, switching costs for customers, and the relative price for performance of substitutes.

(4) The bargaining power of customers

- The bargaining power of customers will determine how much customers can impose pressure on margins and volumes. It is likely to be high when
  - they buy large volume, there is a concentration of buyers,
  - the supplying industry operates with high fixed costs,
  - the product is undifferentiated and can be replace by substitutes,
  - switching to an alternative product is relatively simple and is not related to high costs,
  - customer knows about the product's quality and cost related.

(5) The bargaining power of suppliers

- The term "suppliers" comprises all sources for inputs that are needed in order to provide goods and services. Therefore, the bargaining power of supplier is likely to be high when:
  - The power of suppliers tends to be a reversal of the power of buyers.
  - The market is dominated by a few large suppliers rather than a fragmented source of supplier.

- Where the switching costs is high, e.g. switching from one software supplier to another.
- Power is high where the brand is powerful, e.g. Microsoft, Kentucky Fried Chicken.

Knowledge of these underlying sources of competitive pressure provides the groundwork for a strategic formulation of action. They highlight the critical strengths and weaknesses of the SMIs, animate the positioning of the SMIs in their industries, clarify the areas where strategic changes may yield the greatest payoff, and highlight the places where the industry trends promise to hold the greatest significance as either opportunities or threats. Therefore, understanding all the sources can prove to be of help in considering areas for diversification.

4.3 The Competitive Marketing Strategies

Those five industry drivers or forces determine the relationship of SMIs to their industry, which in turn is a major factor in establishing the organization's opportunity to make profits and sustain reasonable growth rates. The five forces model explains why some industries are highly profitable and others are not. Showing that ICT should be used to change the balance of power in the industry by techniques such as locking in clients or customers and creating barriers to new entries. If uses correctly in this respect, ICT can either transform the business or alternatively can lead to the creation of new products or even new ventures or enterprises. However, there will be several competitive marketing strategies that are required to be developed to help SMIs confront those competitive forces, which are shown in Figure 4.2-1. Therefore, by applying Porter's generic strategic

at the business level in SMIs, they can position themselves by leveraging their strengths in the market. These generic strategies have attributes that can serve to defend against competitive forces. These including the following:

- **Cost leadership strategy:** The way for SMI to acquire cost advantages are by improving process efficiencies, gaining unique access to a large source of lower cost materials, making optimal outsourcing and vertical integration decisions, or avoiding some costs altogether. It can find the ways to help the suppliers or customers wisely spending their costs or to increase the costs of our competitors. This will indicate every single cent they have spent and the value is there.
- **Differentiation Strategy:** Developing ways to differentiate products and services from competitors or reduce the differentiation advantages of competitors. As technology improves, the competition may be able to leapfrog the productivity, thus eliminating the competitive advantage and finally achieving a niche market segment.
- **Innovation Strategy:** Finding a new way of doing business. This may involve the development of the new business platform and marketing strategy in existing service package line for entering into new market places or market segments, or establishment of new business alliances. It may also involve finding a new way of offering the products and services that is different from the way business has been conducted that they alter the fundamental structure of the similar industry area to align with our government new economy and development policies. As a result, the SMI will enjoy a high degree of customer loyalty, and this entrenched loyalty discourages other foreign firms from competing directly.

The Table 4.3-2 shows a summary comparison of the characteristics of the generic strategies with the industry five forces.

Table 4.3-2: Generic Strategic and Industry Forces

Industry Force	Generic Strategic		
	Cost Leadership	**Differentiation**	**Focus**
Entry Barriers	Ability to cut price in Retaliation discourages Potential entrants	Customer loyalty can Discourage potential entrants	Focusing develops core Competencies that can act as an entry barrier
Supplier	Better insulated form Powerful supplier	Better able to pass on supplier	Suppliers have power because of low volume, but a differentiation
Buyer	Ability to offer lower Price to powerful	Large buyers have less power to negotiate because of few close alternative	Large buyers have less power to Negotiate because of few alternatives.
Threat of Substitutes	Can use low price to defend against substitutes	Customer's become attached to differentiating attributes, reducing threat of substitutes.	Specialized products and core Competency protect against Substitutes.
Rivalry	Better able to compete on price.	Brand loyalty, innovative and creative to keep customers from rivals	Rivals cannot meet differentiation Focused customer needs.

Therefore, by fully understanding all the collected competitive marketing information, SMIs will develop the needed information to evaluate performance, detect problems, and create new marketing opportunities

Next, by fully utilizing the ICT networking platform, SMIs can fully transform the existing marketing strategy (Relationship Marketing) to a new ICT business platform, embodied with Intelligence Brain Trust (*i-BT*), which will be discussed more in Chapter 5, and finally towards Knowledge-based economy.

Chapter 5

Information, Communication and Technology (ICT) Networking Platform

The global landscape for industrial development is fast changing. The emergence of a new economic framework, in which knowledge is increasingly recognized as vital source of economic growth, determinant of wealth and basis of comparative advantage is rapidly taking shape.

The ICT networking platform is the enabler of new business change. It is best regarded as the facilitators of knowledge creation in innovative societies. A survey by the Organization of Economic Cooperation and Development[1] (OECD) and APEC suggest that economic growth and trade competitiveness in the current environment are most sustainable for those countries that are strong in all of the following dimensions:

- Innovation systems
- Information, communication and technology infrastructure
- Business environment
- Human resource development

With these strengths, a country is moving closer to what OECD calls a knowledge-based economy (K-economy) [2].

Therefore, the ICT sector has a powerful multiplier effect in the overall economy compared with manufacturing. The new economics looks at ICT networking platform not only as drivers of change but also as a business tools for new business development.

Wealth-generation is becoming more closely tied to the capacity to add value using ICT network platform in products and services offer.

5.1 The New Challenges For SMIs

SMIs are considered the backbone of supporting the industry in most economies. With the change in the landscape of world trade and industrialization, Malaysian SMIs need to adapt and change their mode of operations, attitude and participating in government affirmative action programs.

Government prepared various programs for SMIs are aimed to develop and grow into strong and viable enterprises capable of meeting the challenges of globalization.

The Global Supplier Program[3], is designed to upgrade local suppliers toward "world class", can assist SMIs not only in expanding their own operations, but also in forming strategic alliance with global suppliers to leapfrog into technology-advanced components and products manufacturers.

At present, most SMIs lack manufacturing management practices and other modern management techniques. This stunts the growth of employees and also the productivity and efficiency of the companies concerned. Besides, lack of marketing information and skills, lack of knowledge of business conditions in other countries and they are outside distributors, unfamiliarity with export documentation, procedures and licensing.

5.2 SMIs Innovative Operational Strategy

For achieving a new business development plan, we can use a simple way to describe how the innovative operational strategy can be executed in the Malaysian's SMIs by going through the process of "Stop – Start – Continue", shown in Table 5.2-1.

Table 5.2-1: Innovative process "Stop-Start-Continue"

Stop	Start	Continue
• Building hierarchy • Delay in decision making • Formalities • Centralization control • NATO (No Action Talk Only) • Communication barriers • Labour intensive industry • Environment pollution • Nepotism • Tradition	• Incorporation of ICT environment • Building network business (e-commerce and K-economy) • Effective Time Management planning • Organizing appropriate training programs • Focus on quality work and production	• Education and training • Implementation and improvement • Explore new opportunities, technologies and develop new platform • Apply quality management and technique (ISO, TQM, Kai-Zen and etc.) • Developing ICT culture • Focus on CRM & SCM

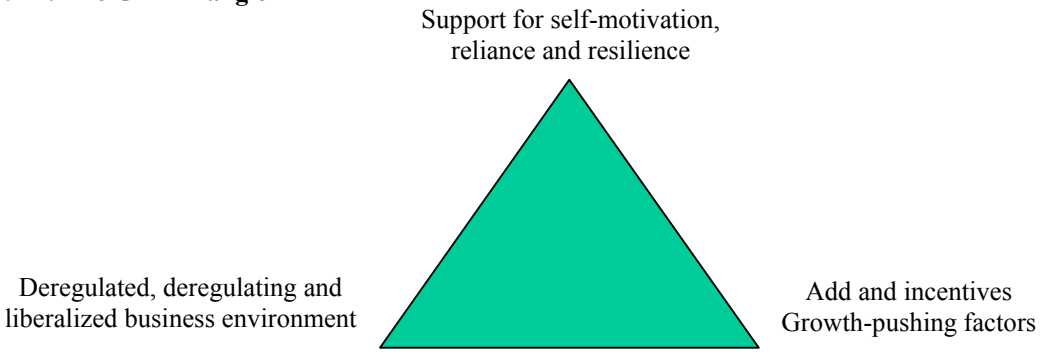
Note: SCM – Supply Chain Management, CRM-Customer Relationship Management, TQM-Total Quality Management

The slow market growth causes the SMIs to fight for market share. However, in a growing market, the SMIs are able to improve revenues simply because of the expanding market. For SMIs to continuously to enjoy their profit from the domestic market and international market as well, they should think about that the profit to be made in exports is much larger than the local market.

- Exports are key to sustained high growth rates
- Exports have tremendous "dynamic externalities" when it comes to strengthening local business capacity, creating jobs and diffusing new technology

In order words, the SMIs are linked, directly or indirectly to the Growth, Innovative and Export (GIE) process and creating a "dynamic indigenous" business community, consisting of highly efficient, technologically advanced, and employment-intensive businesses. It is called "dynamic externalities" and used to further strengthening the SMIs marketing strategy, shown in Figure 5.2-1.

Figure 5.2-1: The GIE Triangle



5.2.1 Support for self-motivation, reliance and resilience

SMIs will have to be encouraged or stimulated to think about themselves. They must identify their own key success factors, monitor market trends (local and international), recognize opportunities for conversions and acknowledge constraints requiring corrections or adjustment, and through all these, stay competitively ahead.

The efficient provision of infrastructure, particularly transportation, in-house training program, public utilities, market facilities, trade associations, commercial enterprises, clubs, exhibitions or wherever people congregate for meetings, discussions, enjoyment or mere socializing. The SMIs may hail from any of these information and communication settings and when they do so, they had better conceptual thinking from what they have learnt from it and creating a new business thinking system that can tailor with the existing market development trend.

5.2.2 Deregulated and liberalized Business Environment

Minimum government interference, business infrastructure, strong business culture, strong interlinks and intralinkages among business, industry and education, information consciousness and competitive market environments are basic ingredients of this environment. Therefore, the SMIs can grow and flourish without being hampered by unnecessary rules and regulations.

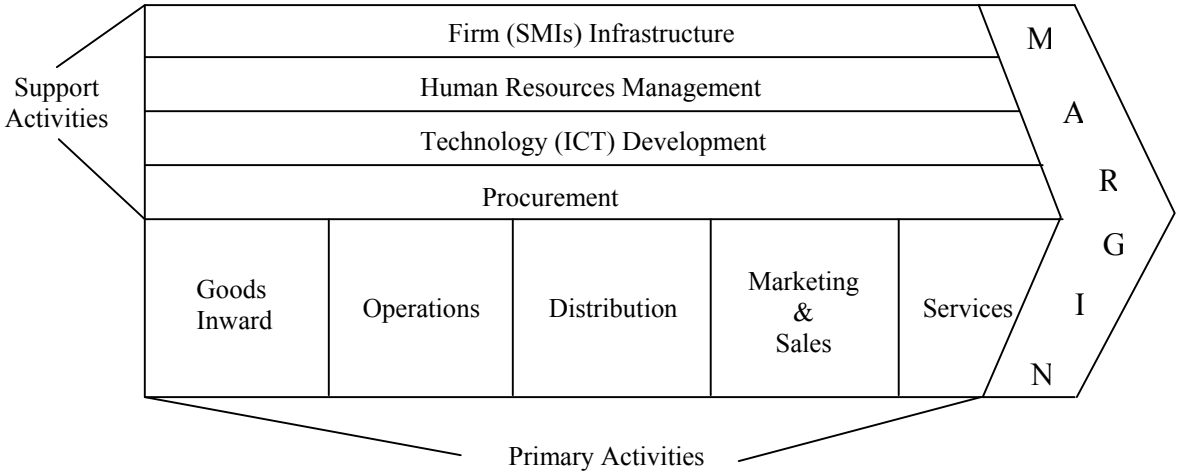
5.2.3 Aid and Incentives

Aid and incentives should be provided by the government or related industry bodies and agencies to the SMIs to encourage and facilitate growth and innovation. The entire range of fiscal, financial and technical incentives already in place will have to be strengthened or expanded upon for these to function as "lubricant oil" or "adrenalin" to SMIs in their business growth.

5.3 The Value Chain Transformation

The Porter Value Chain Model shown in Figure 5.3-1 provides a sustainable business transformation strategy for SMIs through ICT networking platform.

Figure 5.3 -1: Porter's Value Chain



The value chain is described as the interrelationship of the value activities for SMIs. Value activities divide the SMIs' operations into technologically and economically distinct activities which is a must in order to perform their daily business. Therefore, by the nature of its business, its strategy and the industry in which it functions, SMIs will have distinctly different value activities and therefore distinctly different value chains. Differences among competitor value chains are a key source of competitive advantage.

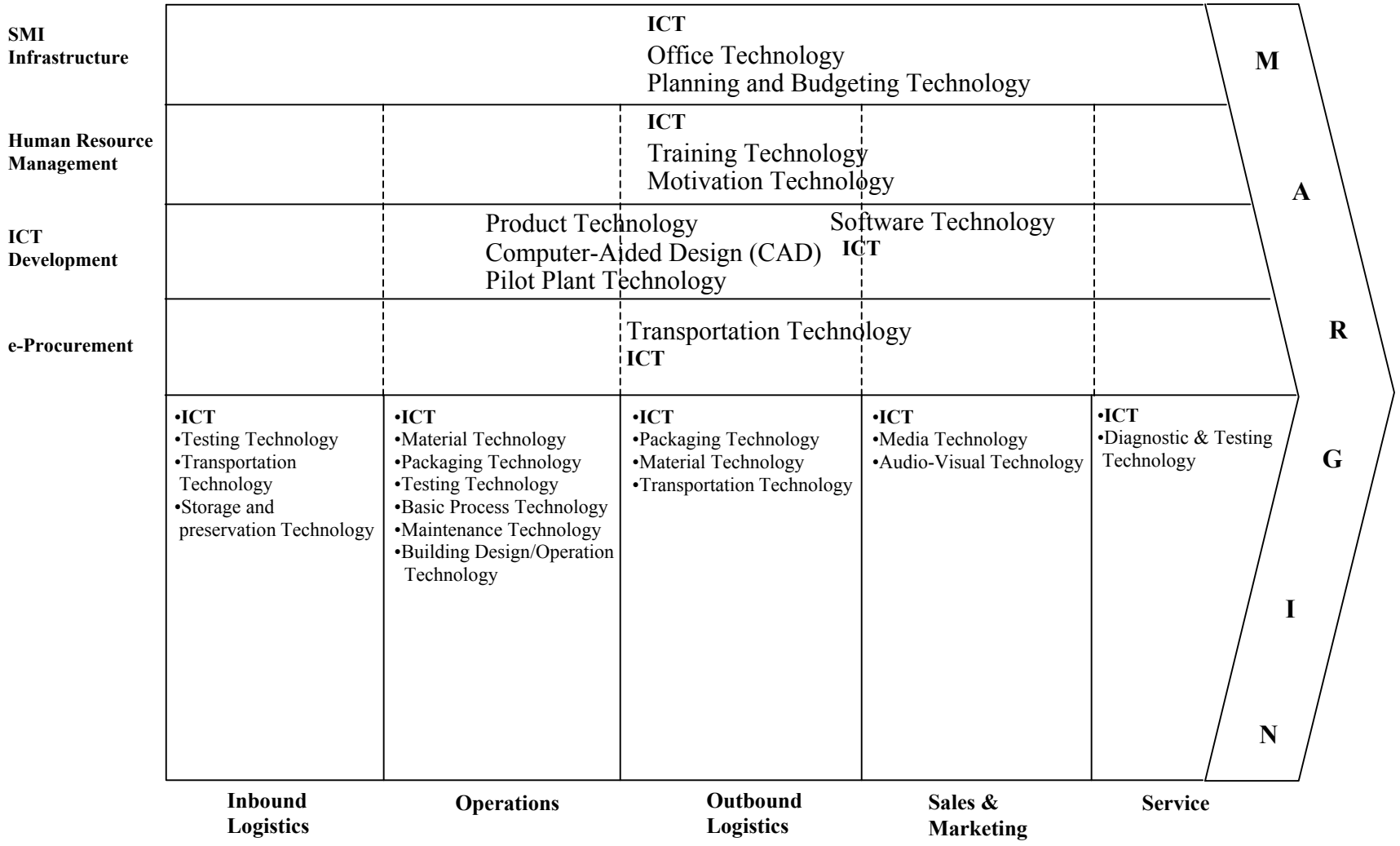
5.3.1 ICT and The Value Chain

The main concept for understanding the role of ICT in competitive advantage is the value chain. A SMI, as a collection of activities, is a collection of ICTs. ICT is an important activity in every value activity in a firm, and technological change can affect competition through its impact on virtually any activity. The ICT's value chain can derive value from information at three stages:

1) Visibility – the SMI acquire an ability to "see" physical operations more effectively through information flows.
2) Mirroring capability – parallel value created in the market space as activities go virtual.
3) New customer relationship – SMI will draw on the information flow of its ICT's value chain to deliver value to customers in new innovative ways.

Figure 5.3.1 -1 illustrates the range of ICT's functionality in a SMI's value chain.

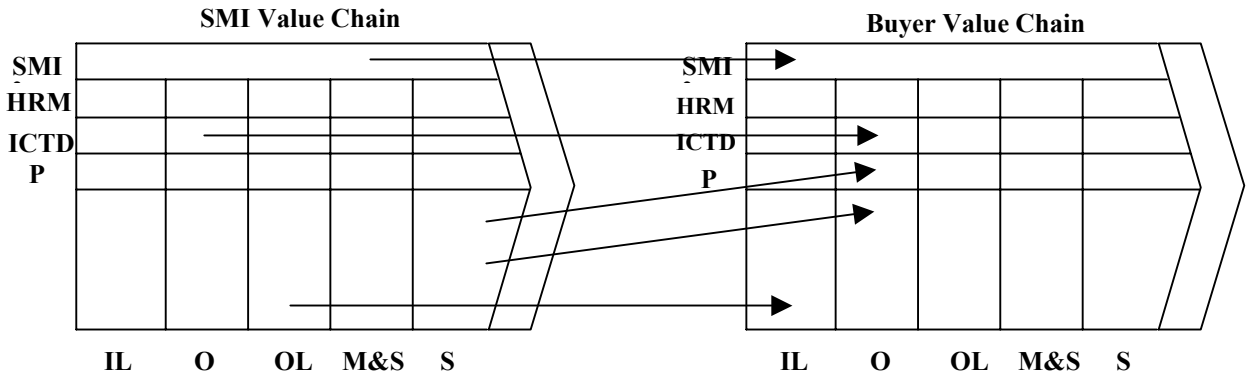
Figure 5.3.1-1: ICT in a SMI's Value Chain



5.3.2 ICT Networking Platform In Value Chain

The important consequence of the value chain analysis is the notion that SMIs may link different elements of their own value chains to the value chains of other firms in the industry. Figure 5.3.2-1 shows how a SMI may link its operations to a buyer' s distribution system (B2B), and its distribution (outbound logistics) to a customer (B2C) or client's goods inwards (inbound logistics).

Figure 5.3.2-1: The Value Chain Showing Interlink with different SMIs

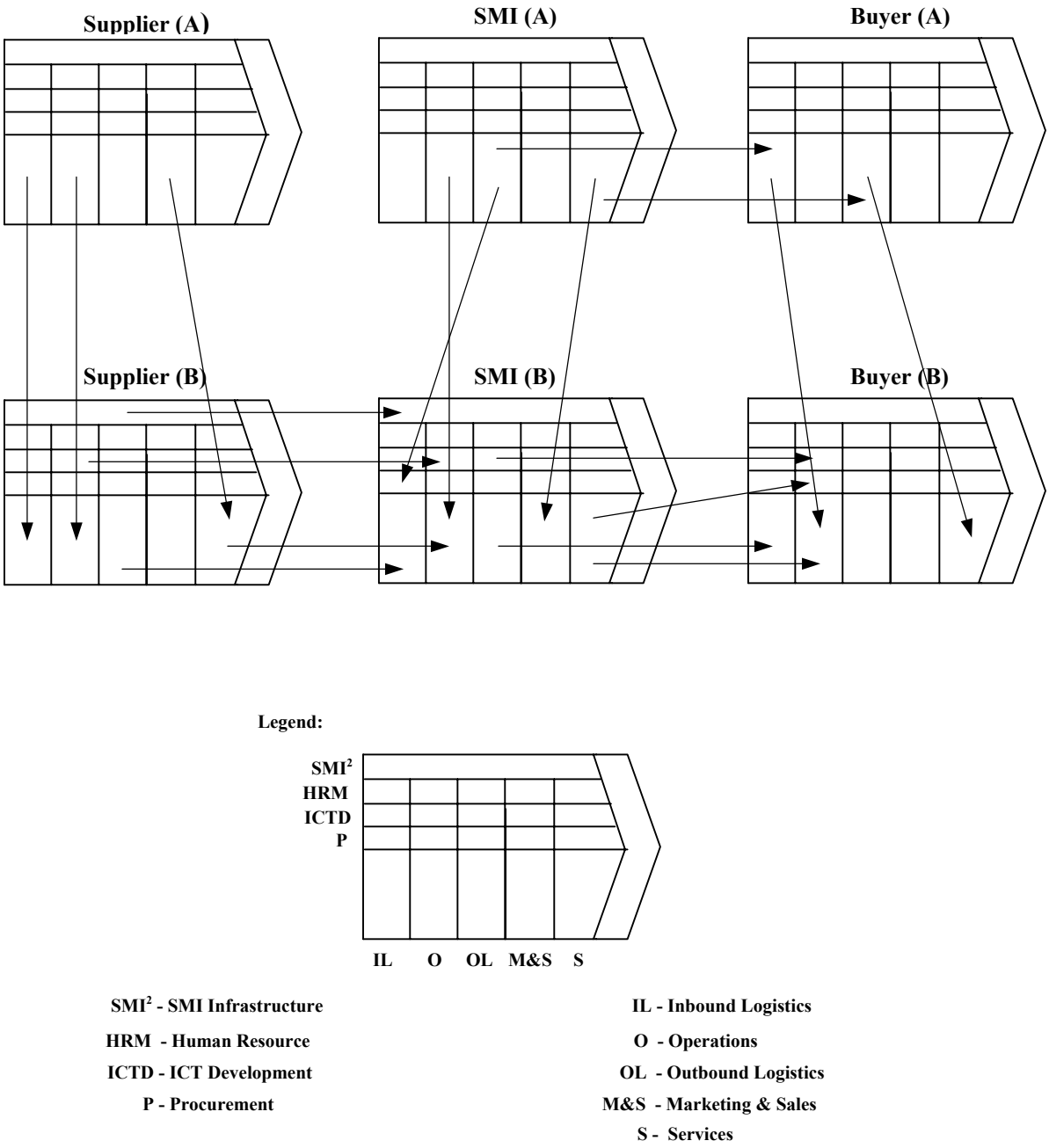


SMI[2]	SMI	IL	Inbound
HRM	Human Resource Management	O	Operations
ICTD	ICT Development	OL	Outbound Logistics
P	Procurement	M&S	Marketing & Sales
		S	Service

Therefore, the SMIs may also make useful connections on the support activities level as well as interrelating between primary and support activities respectively. Those links or joins may really only be effective through the use of ICT networking platform, and show how a SMI may take advantage of its industry value chain, as shown in Figure 5.3.2-2. As a result, business cooperation will be established in different value chains, and it is usually referred to as establishing strategic alliances.

In Figure 5.3.2-2, shows the related value chains with suppliers, SMIs, and buyers. It also indicates how a strategic alliance could be achieved via ICT network platform. The SMIs which have successfully use ICT in their business operation platform, and may have in numerous instances transformed their business, or given themselves very significant advantages in the e-business marketplace.

Figure 5.3.2-2: The Value Chain Showing Strategic Alliances with competitors (SMI), Buyers, and Suppliers



The linkages between suppliers' value chain and a SMI's value chain provide opportunities for the SMI to enhance its competitive advantage. It is often possible to benefit both the SMI and suppliers by influencing the configuration of suppliers' value chains to jointly optimize the performance of activities or by improving business co-operation between a SMI's and supplier's chains.

The buyers also have value chains, and a SMI's product represents a purchased input to the buyer's chain. By understanding the buyer's value chains of industrial, commercial, and institutional buyers are intuitively easy because of their similarities to that of a SMI.

The strategic alliance relationship between the two SMIs will form out a new business relationship called co-opetition – coordination and competition. By sharing the marketing information and business coalition activities among the SMIs that can go beyond normal market transactions but fall short of outright mergers. Examples of co-opetitions include technology licenses, supply agreements, marketing agreements, and joint ventures. The co-opetitions are way of broadening scope without broadening the firm.

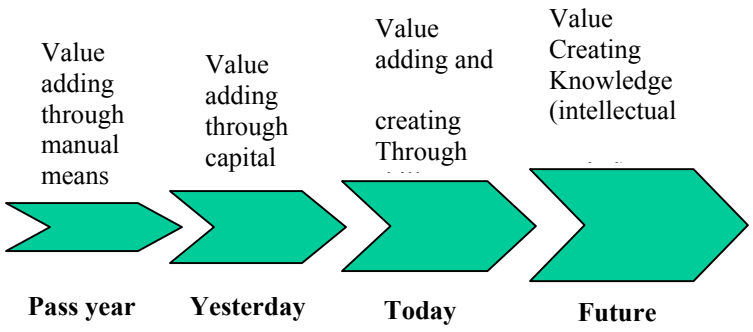
5.4 The Technology and Competitive Advantage

The technology interactive framework also known as knowledge-based management (K-management) builds up and houses key information and data stored in a secured place. It capitalizes on the seminal difference between the information and pre-information age paradigms. In the past, mass communication was entirely one-way – companies talking to customers. Unlike ever before, customers can easily and efficiently communicate with companies, no matter their size or location.

To become knowledge driven, SMIs must learn how to recognize the changes in intellectual property in the worth of their business and how shared information can help the company position itself better.

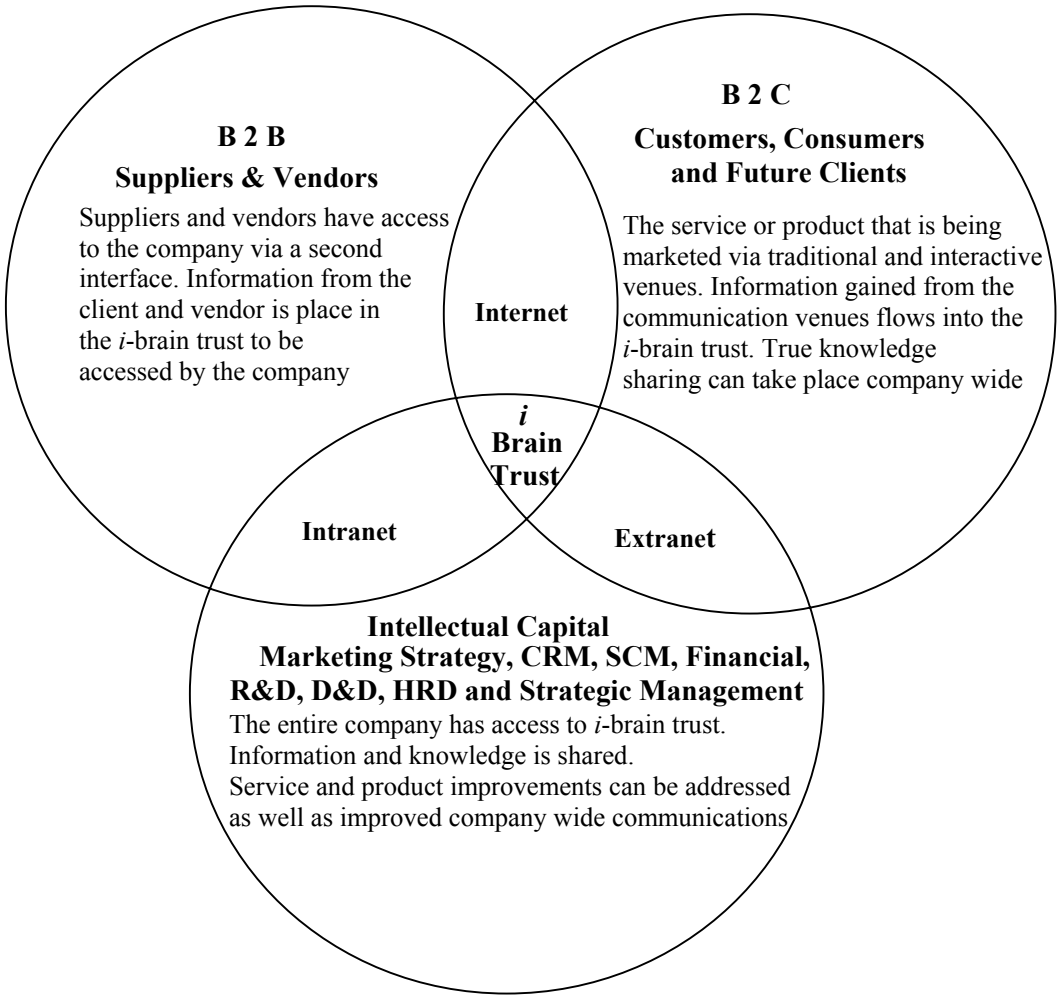
A firm's intellectual capital involving employees' knowledge, brainpower, know-how, know-who and process, as well as their ability to continuously improve those processes, built up a source of competitive advantage. The value change paradigm[4] is shown in Figure 5.4-1.

Figure 5.4-1: The value chain paradigm



The business world is undergoing more rapid change ever before in its history. To thrive, or even survive, the SMI business must adapt to change. It is the right time to build structures that use the information to improve the way SMIs do their business. "Create a knowledge strategy that rewards collaboration and nurtures virtual communities, then use technology to add an infrastructure to this network", advises Jason Park[5]. And, we are to regard information and knowledge, then, the resources must be strategically collected, shared, and stored securely. The strategic informative location is called intelligence brain trust (*i*-Brian Trust), located in the center circles, shown in Figure 5.4-2, and it is integrating with difference segments for retrieving and use of the information in their daily business processes.

Figure5.4-2: Intelligence Brain Trust (*i* – Brain Trust)



The SMIs can ideally share information to drive growth in all sectors, not only just for marketing and communications. The centre circle represents shared information or the intelligence brain trust (*i*–Brian Trust) – the most important resources for SMIs in this age. The outer circles represent traditional business divisions: marketing and communications, business-to-business (B2B) and business-to-customers (B2C) relations, and internal business processes.

Therefore, all three sectors have access to the key data in the *i*-brain trust and are able to make contributions as well. The interface at the Internet level allows for a dialogue

between the SMIs' companies and its customers. As a result, the information gleaned from that dialogue is then housed and organized in the *i*-Brain Trust. It is fully available to all the key players in the operation of the business, e.g. sales, distribution, purchasing, R&D, D&D and etc. All can be connected through out the Intranet. The customers' feedback on a continuous database in such decisions as product improvements, distribution schemes and 1:1 marketing can be achieved.

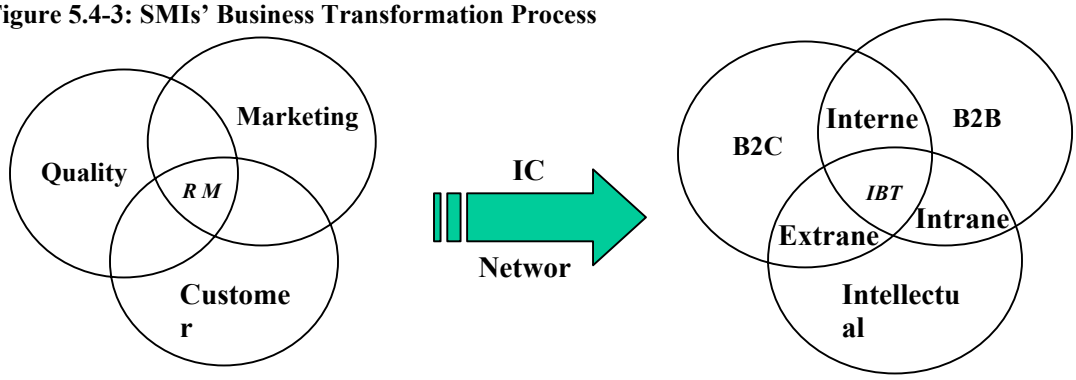
These are the tailor made challengers for developing knowledge management for SMIs by creating a culture of knowledge sharing, ensuring the quality, utility, and currency of information, deploying systems and technology for K-management; and scaling up the K-management initiative to the organization.

Furthermore, the business partners, e.g. clients and vendors, can also be connected to the information data via an Extranet. This secured interface allows for access to relevant data and also makes such tasks as invoicing as efficient as possible. Besides, it can provide structures to get continuous feedback and ensure relationships are as strong as possible.

By putting the relevant information in the intelligence brain trust and making it available all the time for all the company departments via Intranet connection, the value of the ideas driving the company, it is better informed than ever possible. The improvement of the SMIs companies business process and communications with key business partners. Unlike ever before, a business now can truly benefit from integrating and interactive technologies across the board.

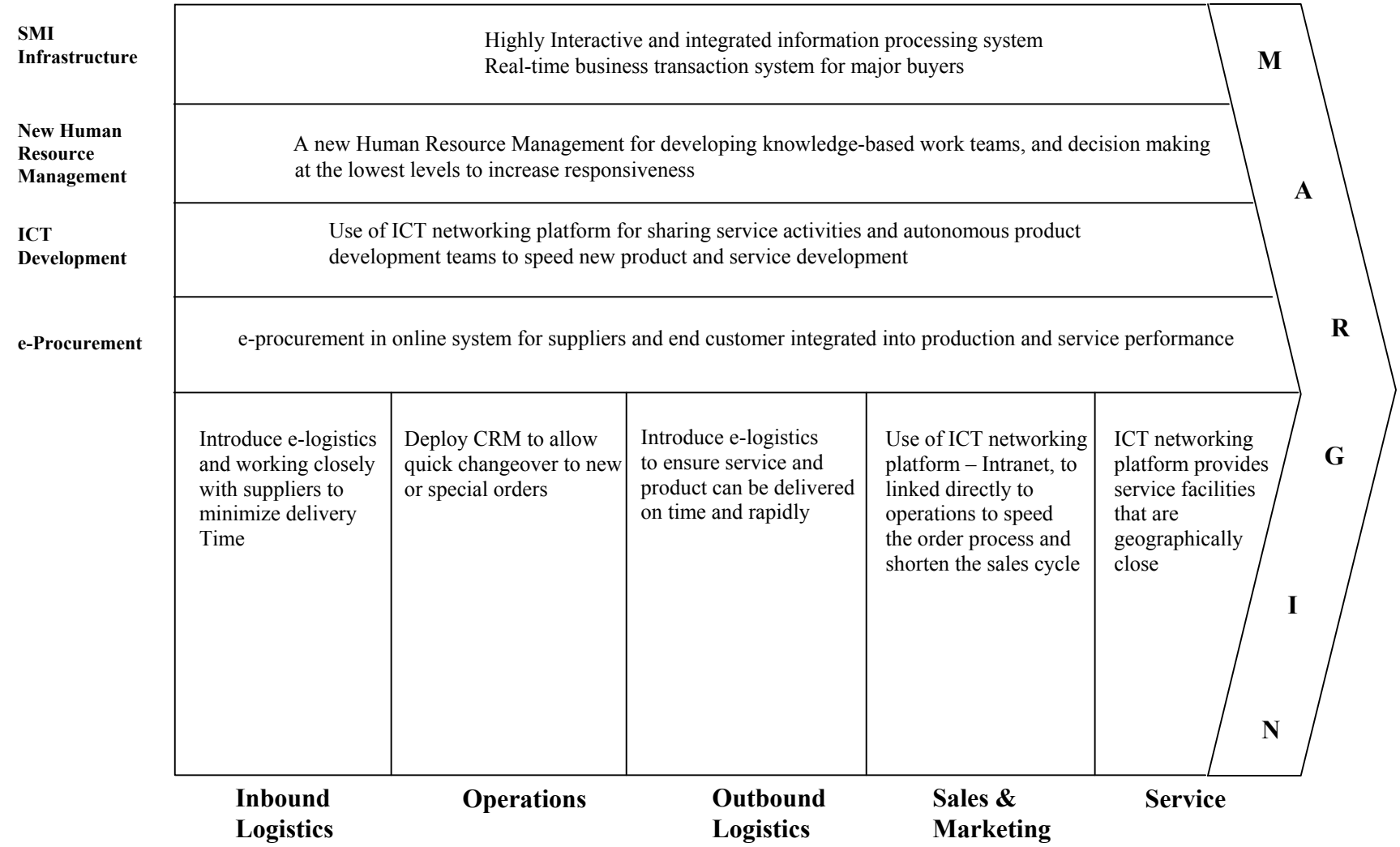
The private communication network, Intranet, that use the type of interface popularized by the Web but are accessible only by authorized employees. All the employees can obtain broadly useful information such as recent company's news, new product information, company's policies, telephone directories, product pricing, and support. The Intranet and Extranet were built to ensure that all divisions can share in the information and apply it to their respective daily work. Thus, this information could be used to inform and improve business process and used for such task as information R&D and D&D to improve products for validating product price points. It could also be used to strengthen relationships with distributors. As a result, they have a more centralized company that shares in the value of information and can innovate more quickly then ever before. As they say, Knowledge is power. The SMIs' business transformation process shown in Figure 5.4-3, where *RM* represented Relationship Marketing and *IBT* denoted as Intelligence Brain Trust respectively.

Figure 5.4-3: SMIs' Business Transformation Process



The businesses have been very good at recognizing the success of using interactive technologies to improve marketing and communications, illustrated in Figure 5.4-4. For a business to truly benefit from the technology, it must adopt a progressive philosophy that integrates interactive technology with its business process.

Figure 5.4-4: An Integrated and Interactive ICT Networking Platform



5.5 Developing Knowledge Management (K-management)

The SMIs should use Customer Relationship Management (CRM) in their marketing strategy, Enterprise Resources Planning (ERP) in their human resources and finance section, while manufacturing focuses on Supply Chain Management (SCM). Jason Park, marketing manager for knowledge management products at Lotus Development Corp stated, "For a knowledge management system implementation to be successful, the companies must be frank about the weaknesses in their organization. What works in one place could be disastrous in another environment."[6].

Therefore, by deploying a knowledge management system, the SMIs will automatically detect, communicates and updates changes in technology and markets. Its ability to inform, transmit and transform work practices greatly augments the SMIs' adaptability, thereby preserving its core competency.

Ideally, a knowledge management system's infrastructure functions as a hidden incentive, silently motivating employees to transform preserved core competencies into higher value products, services and methodologies.

5.5.1 The Importance of K-management In Business Growth

The concept of Knowledge Management (K-management) has been around for more than two decades. However, in Asian countries, although K-management is in its nascent stage compared to US, and now it becomes an important aspect in the new business world. "The essence of K-economy comprises organizations that are based on ICT and Internet. It is the use of acquired knowledge to stay ahead competitively in business. We have to

consider putting knowledge contents into the production line, and in governance, both government and private sectors", addressed by Tan Sri Datuk Dr. Haji Omar Bin Abdul Rahman, science advisor, Prime Minister's Department.

Several reasons have led to the proliferation of K-management deployment in SMIs, one of which is the recognition of the imperative need to capture, retain and distribute knowledge to improve productivity and overall business performance in the competitive business world. In fact, knowledge is the key to surviving in the new economy trend.

K-management is not limited to only managing in-house information between co-workers. It is also about tracking customer information and using that knowledge to push up business performance and efficiency.

Today's leading businesses are increasingly aware that their employees' knowledge is one of their primary assets. Knowledge has more competitive significance than physical assets because the physical assets can be replaced or replenished more easily.

5.6 A Dynamic Supply Chain Management (*D*-SCM)

With ICT network platform, the SMIs can develop a Dynamic Supply Change Management (*D*-SCM) via web-enabled. This underlines and demonstrates the critical importance of managing the whole process – securing production raw materials, just-in-time (JIT) inventory controls, reaching the end-user on time via an efficient supply chain.

The SMIs have to ensure products reach customers' doors within hours and days, not weeks or months. Therefore, the SMIs have to use the new advancement technology network platform to satisfy the new rules of the global economy trend.

Thus, *D*-SCM gives the ability to change the SMIs from being functionally focused to being process-oriented. Also, deals with optimizing e-logistics by integrating processes and competencies across the entire dynamic supply chain especially via the Internet.

The Internet and e-commerce can help the SMIs tackle critical inventory and logistics problems. Many companies have already discovered this and have opted to go online. By anchoring its direct marketing in information, Dell Company was able to reduce its inventory turnaround time to less than eight days compared with previous time, it usually take 60 to 90 days[7]. Therefore, by integrating the partners with real-time access to ordering and manufacturing systems (SAP & ERP), SMIs will eliminate inefficiencies in the supply chain.

5.7 A Key To Competitive Success via e-Logistics

From the pass, the logistics function is largely served by third party logistics (3PLs) providers, has focused on the here-and-now (point-to-point) associated with the business of moving products in a supply chain. Although, they can provide an outsourcing solution, the SMIs are still burdened by the ordinary logistics management style; inefficiencies and service disruptions remain. The 3PLs did not provide any value added service to SMIs in any business deal.

In a supply chain, logistic is pivotal to competitive success. By using ICT network platform, SMIs manage to push their products and services through the supply cycle more quickly and at lower costs, supply network need to be able to respond to changes in customer or supplier demands in real-time in order to realize savings in inventory and expensive corrective actions taken.

The e-logistics driven by ICT network platform is providing logistics customer with more than basic traditional management of goods and products. It effectively can manage the entire information flow plus updating trading information and relationships to cater for the increasingly intense and dynamic nature of supply networks.

The ICT network platform works as a supply chain integration tools and process management provides the new business platform, and visibility applications enable the shared data to be turned into value added information to solve business problem before they happen in a supply network.

Logistic customers in Asia-Pacific[8] such as Evergreen, TNT, and Mayne Nickless are using online logistics system to provide a flexible integration platform, enabling them to communicate to any business partner in a supply chain, regardless of their own ICT infrastructure or technological sophistication.

Therefore, by enabling and end-to-end flow of business information, the cycle times are reduced significantly as much as 50-60 percent. And yet, the ICT network platform agility enables SMIs to be far more adaptive to the changing circumstances of its customers' supply network. Not only can communicate with their customers and their suppliers, but also to add additional value by providing value added services to complete the entire transaction, like light assembly, merge-in-transit, reverse logistics and etc.

5.8 Customer Relationship Management (CRM)

The ICT networking platform has given way to the business relationship economy. Businesses everywhere depend on the ICT networking and its related technology to run their daily business and marketing operations and to compete in an increasingly competitive environment. This is even more relevant in today's rocky economic times, especially for the SMIs.

Most of the people agreed that technology revolution is much more powerful and intelligent than human being. But the innovation of technology is coming from human brain and technology is only one kind of human intelligence system. Therefore, technology belongs to human innovation and creativity.

CRM is a new innovation management system that uses ICT networking platform to fulfill different kind of customer's requirement and providing professional technology support. The main system structure including sales, marketing, commerce, and support. It involved technology, commercial strategy, security system, sales management, product distribution network, training program, and system administration.

The use of CRM strategy is mainly for collecting all the customers' information, such as up-to-date customer registration, catalogue, order and inventory data across all their sales channel. All information will be stored into a secure database system, managed, analyzed, and built up a perfect and smooth collaborative operation or network with customers. It can help to upgrade the normal service delivery to high value professional service offer.

New technology can reduce the gap between the customers and create a new marketing innovation. This is called personalizing service and customer system management strategy. The personalizing collaboration will provide a respective feeling to the customer, and it will upgrade the normal commercial profit to build up a personalize relationship. This is a collaboration system and also a good customer relationship management spirit.

Normally, the customer will consider the products reliability and services capability as a main point of loyalty. It is also a main competitive factor of the new marketing service. The current SMIs' service delivery should not only focus on product selling or distribution, they should be more concern with service performance especially in after sales service sector.

For example, the increasing value of customers and importance of customer knowledge have put CRM as the top agenda of most companies. The customers' expectations are also surging due to market education of consumer rights and wider option and selection of preferred customer services, retaining customer loyalty has been a big task for the companies.

Customers always demand for customized solutions and service offers that meet their specific needs and requirement. With the ICT network platform in place, the customers are expecting a shorter response time with efficient quality of service to be delivered.

Getting a good competitive marketing strategy from the current business situation, every individual customer is also seen as a supporter of the company. By getting a detail customer's information, requirement and need, the company can beat potential competitors because CRM is a powerful business tool.

Therefore, a good and appropriate innovative and creative management system is very important in the globalization of business and the challenging international marketing.

The deployment of a CRM tool will "improve customer and suppliers' relationship and increase profitability," stated by Willi Kramheller, managing director at International Business Systems (IBS) Asia Pacific Competence Center Sdn. Bhd[9]. For a first step, the SMIs should understand their management style, consists of product specification, marketing plan, and type of customers. Secondly, plan out a new marketing strategy, re-engineering, training program, or inviting outsider business and technical consultants to accelerate the change of internal value chain.

The customers now have access to many different sales channels. The SMIs should maintain close customers relationships and implement the ways to maintain efficient, ongoing, and consistent dialogues with their customers across different media and through multiple channels.

The new marketing revolution via CRM has become clear that there must be a different approach towards customer satisfaction, improved efficiency, increased productivity, reduced cost, informed decisions, and bottom-line result. Finally, creating a win-win situation for SMIs and their customers.

Therefore, by gathering high-quality customer information, SMIs can improve their understanding of buying patterns and preferences as well as being able to implement more effective targeted marketing campaigns, and to meet the demands of their fast-changing global market.

More importantly, SMIs can improve the overall quality of customer interaction while streamlining customer requests and orders. As a result, SMIs are achieving increased customer loyalty and satisfaction and ultimately greater profitability. The greatest and most important challenge is nurturing and maintaining a "personal" relationship with the customer.

5.8.1 Intelligence CRM (*i*-CRM) in Marketing Strategy

Technology capability represents the ability to deliver technologies for upgrading or implementing SMIs process, quality products and services via ICT networking platform.

However, the customers are no longer satisfied with mere product functionality or quality and price. They demand better service in exchange for their loyalty. This is most prevalent in the Internet arena where employing personalization techniques, collaborative sales, and real-time round-the-clock support is expected as the norm.

Intelligence CRM will enable SMIs to identify, grab, satisfy and grow each customer. It is aimed at improving the people and processes that touch customers and anticipating existing customers' desires, to producing add-on sales or customer prospecting.

Therefore, *i*-CRM prime function is to make money more efficiently by using ICT networking platform and data to better service customer needs.

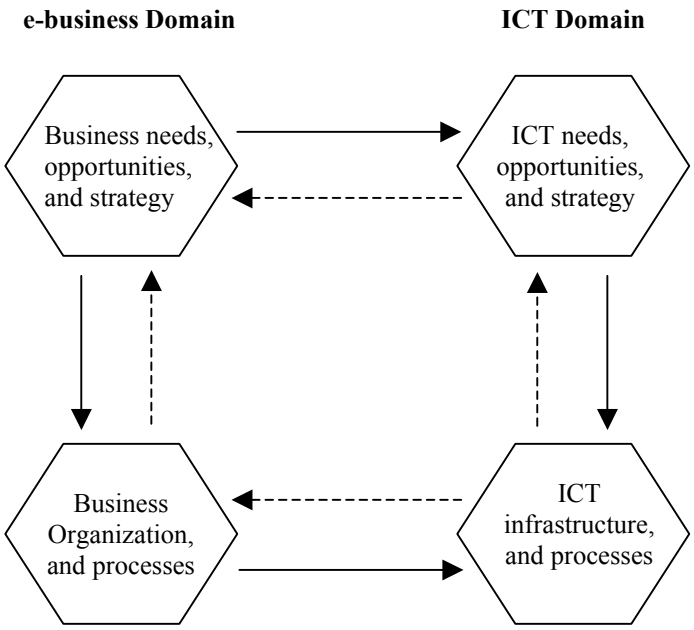
The *i*-CRM is seen as the only business methodology that, once successfully implemented, will ensure SMIs survival in the e-business trend. Merely keeping the customer satisfied is not enough; SMIs have to exceed expectations in every way in order to keep their business growth in the borderless marketplace. This, truly, is intelligent Customer Relationship Management (*i*-CRM).

5.9 Strategic Alignment – Application Service Providers (ASPs)

Internet-based services require an infrastructure that enables providers to rapidly develop, price, and provision effective new service. It can manage the customer usage and billing successfully while remaining flexible enough to respond to changing market requirements.

Therefore, Strategic alignment of the business effort and ICT effort should be the central issue in ICT networking platform, shown in Figure 5.9-1. It would help the Internet-based service providers to implement the business application infrastructure that functions as an active, up-front service solutions rather just a passive, back-office system.

Figure 5.9-1: Strategic Alignment of e-business with ICT



The primary rationale (indicated by the solid arrows) is that the business needs, opportunities, and strategy should determine both how the SMIs and their processes are organized and how their ICT information systems should operate. In fact, both domains' processes and organization, and their ICT needs, opportunities, and strategy should dictate the form and operation of the ICT infrastructure (indicated by the dash arrows).

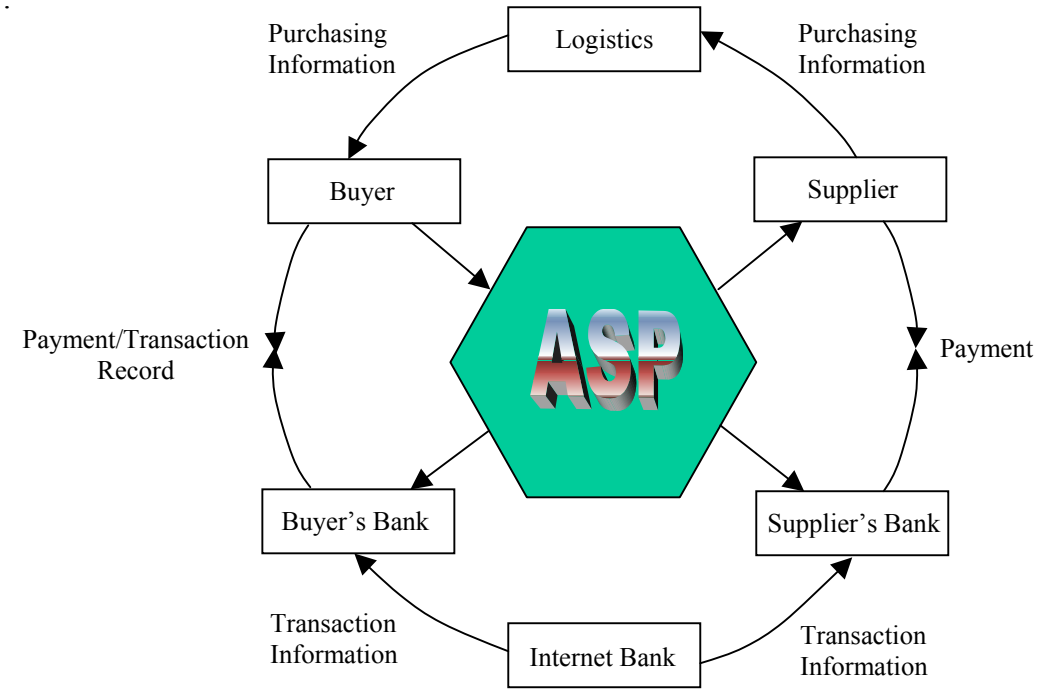
Today's ICT infrastructure is a key determinant and limiting factor in how the business can actually operate today. It is also determinant of needs for changing ICT as well as being a limiting factor in how much can be accomplished at what pace. In turn, business organization and processes and ICT needs are both limiting factors that constrain a business's realistic opportunities and strategic options.

Figure 5.9-1, shows its looks at critical success factors, which use to foster strategic alignment by identifying information needed for the business to succeed. It continues by discussing ICT related ideas often used as the rationale for changing business processes and organizations. These ideas include reengineering, quality of service, and the trend toward enterprise information systems and interorganizational systems.

The strategic alignment is addressed directly through a method for articulating a business-driven ICT infrastructure.

Another key issue in attaining strategic alignment is the extent to which ICT infrastructure, training, business process and support, finance transaction, and other ICT business related activities would be managed by ASPs, illustrated in Figure 5.9-2.

Figure 5.9-2: ASP Business Relationship



Therefore, the SMIs can focus on their unique functions they do best, such as manufacturing high quality products at the lowest cost or providing excellent customer service in retailing.

Working with ASPs will minimize the risk due to reliance on an outside firm to perform essential functions including building and maintaining business application systems.

However, the SMIs should have focused on maximizing flexibility and control so that it could pursue the best options as conditions changed. By well-defined service level agreements (SLA) are important to help iron out any business related issue on security and control over resources, in a way that permitted competition to provide the best ICT services over a long-term relationship and have the resources to back their commitments would stand to win. Thus, a win-win situation will come out in the new e-market place.

5.10 Enterprise Resource Planning (ERP) In e-business Platform

While far from being dead, Enterprise Resources Planning (ERP) has grown to become synonymous with competitiveness, particularly throughout the 1990s. ERP is now perceived as a prerequisite in most business environment to fully take advantage of the latest business information processing trends such as collaborative e-business and CRM.

The functionality of ERP systems began an expansion into its adjacent e-markets in ICT networking platform, such as supply chain management (SCM), decision support systems, CRM, and e-business, making these systems less inward-looking.

With an ERP system in place, the SMIs can look forward to better inventory management and lower stock level; they can also improve their customer service and do more accurate costing.

Therefore, the ERP can be the means for business process re-engineering, increasing flexibility and responsiveness by breaking down the barriers between functional departments, reducing duplication of effort and thus, eliminating unwanted costs.

An ERP solution is considered an implicit and essential part albeit non-strategic full-fledged e-business solutions those SMIs should deploy it, if they want to work with multinational companies (MNCs)[10] in the future when their business grows and prosper into the global market.

5.11 ICT Gives Agriculture A Time for Change

The agricultural sector is one of the three economic pillars of the country, besides the industrial and services sectors. However, over the coming two decades, the farming community which is presently clearly dichotomized into inefficient small holdings and commercialized plantations and estates.

The integration of ICT networking platform application in the agricultural sector is still not widely used in Malaysia. In general, it was commonly used cross the board in this sector in the area of administration, even in the case of the large farms and estates. To enjoy its full range of potential benefits, and appreciation of the important of ICT's value chain in the agricultural sector, they have to be well informed and understood the

versatility of ICT's value chain, creating an awareness to recognize its application beyond general administration and inventory control, into the basic areas of livestock and crop production[11]. They must be gradually transformed, which new generations of farm producers, and managers who can absorb and interface with ICT, and whose mindsets allow the farming sector to evolve into efficient and profitable operating entities.

Without the ICT networking platform in place, the agriculture sector has a stifling resistance to new ideas, methods, and synergies. However, it was changed via ICT networking platform for better ways of conducting business, reaching the customer, or supplying the market. As a result, it would help to break the monopoly of prices by large companies[12].

ICT networking platform provides an effective development in the Malaysian farming and rural sector over past two years[13] and enhance transparency and enable Malaysian commodities products and services to have a global reach. The people can learn from the ICT affirmative program, in terms of people attitude for training, skills and change; communication area like knowledge, information, media and promotions; projects like tasks and accountability; and market development for local and global.

With effective application of ICT, they show significant increase in efficiency and productivity. They need to understand how ICT networking platform can be utilized to the optimum, and to enable it to assist in decision making. The potential of ICT can only be fully exploited and benefited from, if the necessary network infrastructure is well in place, to enable its productive application, and to ensure that, as a competitive business tool, it should appropriately and efficiently utilized in the agriculture sector.

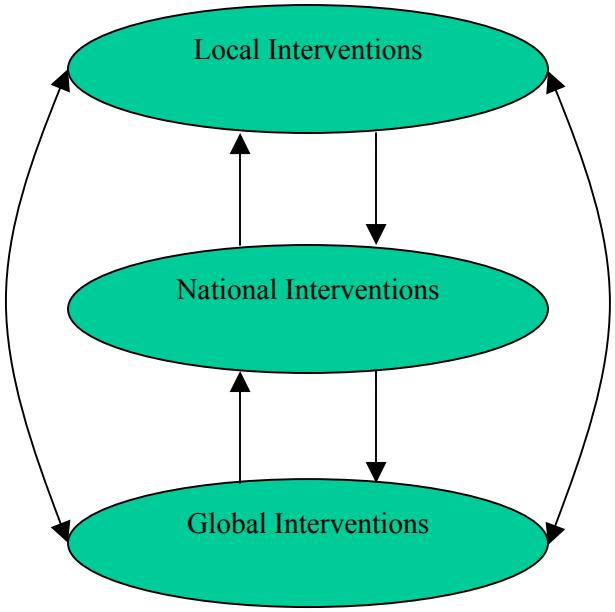
5.11.1 Agriculture-ICT (Agri-ICT) Development

The Agri-ICT Development that can promote the beneficial adoption of information and communication technologies (ICTs) by Malaysia farming and rural communities. The third National Agriculture Policy has identified several positive measures aimed at developing a modern, commercial and technology-intensive agriculture sector, covering packaging, marketing and distribution[14].

The application of ICT networking platform in the electronic charting and monitoring of all aspects of production schedules, and planning, implementation and control of harvesting operations. They all can benefit from information gathered on relevant matters such as weather, soil conditions, environment, and market conditions via Extranet connection.

Furthermore, ICT networking platform makes it possible for farm producers to dispense with market intermediaries, and deal directly with the customer (B2C), and at worst, to by-pass some levels of market intermediaries and to market directly to the last level of the distribution chain, shown in Figure 5.11.1-1.

Figure 5.11.1-1: Global, National and Local Linkages



The ICT networking platform can assist farm producers to be cost effective and derive optimum returns from their farms. Therefore, they can have better and more systematic control of available resources, with the improved management, production and marketing. Within the network connection (Intranet), a knowledge-based forming community can be built up which can cooperate, collectively share information (R&D) and coordinate farming decisions, and to operate, collectively, as large-scale farms, rather then individually determined, small-scale operations. Such collective effort can reap the benefits of large-scale operations, such as in the context of better supply management can control, more efficient mobilization of resources, and stronger bargaining power in the competitive market.

Thus, a total of RM 7.9 billion has been allocated under the Eighth Plan[15] to transform the agriculture sector into a modern, dynamic and competitive sector. The new strategies would be geared towards expanding food production, promoting private sector

participation in commercial food production and intensifying aquaculture development and land use. In addition, some of the Agri-ICT companies, such as ePOMEX[16] (the world's first electronic palm oil exchange),and Malaysian Rubber Export Promotion Council (MREPC), in co-operation with the Malaysian Rubber Products Manufacturers Association (MRPMA) can perform collaboration program, merged, and agreed to work together that can help them move into the new market places.

From the value chain transformation, we can clearly determine that the ICT networking platform provides supporting infrastructure facilities and services to recognize that close collaboration need to be evolved between the public sector agencies and the farm communities in order that a viable launching pad be established to bring the agricultural sector into the mainstream of ICT developments and vice versa.

Furthermore, the application of ICT to agricultural and rural development are appearing everywhere. They are profoundly transforming extension services through the use of multimedia technology and through the use of long distance education technology, as well as through the possibility of developing innovative approaches based on interactive knowledge development processes that involve researchers, policy-makers, development practitioners, and farmers.

The Internet access via ICT networking platform are opening the new opportunities and developing new approaches to the need confronted by rural people and by grassroots agricultural organizations to established vertical and horizontal communication channels to increase their capacity to generate and use knowledge, and thus increase the effectiveness of their development efforts.

For a developing country, such as Malaysia, there are five key services or functions that closely related to ICT applications:

1. ICT network platform can contribute greatly to relating people/institutions among them and facilitating the emergence of "virtual communities" that generate and exchange information and knowledge among themselves. If well managed, networking is a first step in the direction of developing interactive knowledge development processes that may lead to learning networks.
2. Education and communication Technologies that are playing a very important role in generating new approaches to learning and knowledge management.
3. Access to information through different types of agricultural information systems. It is a specific information subset of the Management Information Systems (MIS).
4. Decision-support systems provide appropriate tools and practices through which information can deliver knowledge inputs for informed decision-making. These tools are playing an important role in converting information systems into knowledge systems.
5. Monitoring the situation of natural resources and of environmental impact through different information processing tools, such as analysis of environment deterioration, soil erosion, deforestation, and monitoring of fish stocks.

Thus, the main objective of these various ICT networking platform applications, form a development perspective, is that of empowering people through Knowledge. And, the main characteristics of a knowledge society, which is one in which knowledge so much permeates its social fibre that it empowers people and communities, increasing the effectiveness of their development efforts through informed decision-making, and

through their capacity to harness science and various forms of knowledge to achieve the objectives of poverty eradication, food security and sustainable development.

As a result, an E-Agriculture will be established in Malaysia to ensure better outreach of such information to the individual farmers, all farmer's organizations and farmers groups must be an integral part of the e-business linked chain functioning and assisting as data and information "clearing houses" providing the essential coordination function for the small, independent smallholding.

Chapter 6

E-business World Requirement

Business now requires a complete ICT networking platform that can provide a effective way to sell goods or products and offering services anytime, anywhere. The success of e-commerce depends on attracting and retaining loyal customers. To prevent customers becoming dissatisfied and going elsewhere, SMIs should consider how e-commerce could fit into their daily business processes. “Knowledge on e-commerce is still very limited”, commented by Miss Molly Loh, managing director, Fujitsu Computer Systems (M) Sdn. Bhd. They need to think beyond adding a couple of Web servers to the existing back-end legacy systems. The ICT networking platform is capable to deliver 24 X 7 operation and flexible, reliable and secure. Without the proper ICT networking infrastructure, site design and performance, the SMIs will face difficulty for their business growth. “Businesses will need to have a secure and reliable system that will allow them to form instant relationships, track consumer behavior and build loyalty over the Internet”, said by Mr. Yohani Yusuf, country manager, Intel Electronics (M) Sdn. Bhd[1].

6.1 Opening Up Global Market and Forster Competition

Business rules have changed, creating a new economy characterized by speed, information, and global access. New technologies, new media, and new opportunities abound and markets are in flux. Information has become an important strategic corporate asset and a basis for competitive advantage, fundamentally changing traditional views of marketing strategy.

New markets have opened up and prices have dropped and quality has increased in comparison. With the advent of ICT networking platform, the vision of perfect competition is becoming a reality. Therefore, SMIs need to build a high performance and affordable ICT networking platform to drive their daily business in the competitive age. Customers should easily find out the prices offered, stock availability and delivery time frame for any kind of products and services.

The digital economy has turned traditional ideas about "how to market" upside down. The digital economy offers an unprecedented high-speed flow of business information that firms can use strategically to better meet customer needs, increasing revenue and profitability. When appropriately collected, mined, and disseminated, information can be used to strengthen customer, supplier, and intra-organizational relationships, resulting in higher revenues and lower costs.

Translate customer information into cost-effective, highly personalized marketing strategies. Employ alliances and partnerships that create and enhance customer-centric relationships in a constantly changing global marketplace.

6.2 Secure Virtual Private Network (S-VPN) Solution

A Secure Virtual Private Network (S-VPN) can offer the SMIs a cost-effective secure method to provide access to internal network (Intranet) using public network such as the Internet. Through private encrypted tunneling, S-VPN technology provides network level security for telecommuters, site-to-site communications for remote branches or offices, B2B and B2C for SMIs looking to securely communicate with business partners.

The S-VPN is not simply encrypted tunnels, but encompass an entire spectrum for technologies:

- Security
- Firewalls
- Encryption
- Authentication/Authorization/Accounting
- Intrusion Detection – Active Audit
- Tunneling
- Quality of Service (QoS)
- Network Management

6.2.1 Small Scale VPN Solution

A virtual private network, or VPN, uses encryption and tunneling to connect users or sites over a public network, usually the Internet. In comparison, a private network uses dedicated lines between each point and is usually a more expensive solution. A best suitable VPN connection for SMIs with more than two office's locations which require constant link and communication for daily business processing is shown in Figure 6.2.1-1. By using Integrated Services Digital Network (ISDN) infrastructure, SMIs is able to deliver two simultaneous connections, in any combination of data, voice, video, and fax over a single copper line.

When two data channels are bounded in a single connection, the user will get a speed of 128 Kbps, which about three times the actual top speed of the fastest analogue modems (56 Kbps). In many markets, it's actually cheaper than an isolated analogue line and provides advantage over shared, higher-bandwidth office connections.

With well configured VPN service, computers at different locations as if they are placed on the same company Local Area Network (LAN), 24 hours. The employees no longer need to attach files to an e-mail message, send it via the modem to another office, for colleagues at remote office or mobile users to receive it via modem and place the attachment on the hard disk.

After the VPN is deployed, the users need to do is to open a shared folder, drag the file to the shared folder, and colleagues at remote office or mobile users can instantly read the file from their computer.

For robust communication, a company e-mail server can be installed at the company LAN and connected to the Internet to send and receive e-mail. Security is assured by firewall level control that can selectively enable which computer can access what, e.g. computer A can browse the Internet only, computer B can only receive e-mail.

Figure 6.2.1-1: Small Scale VPN Diagram

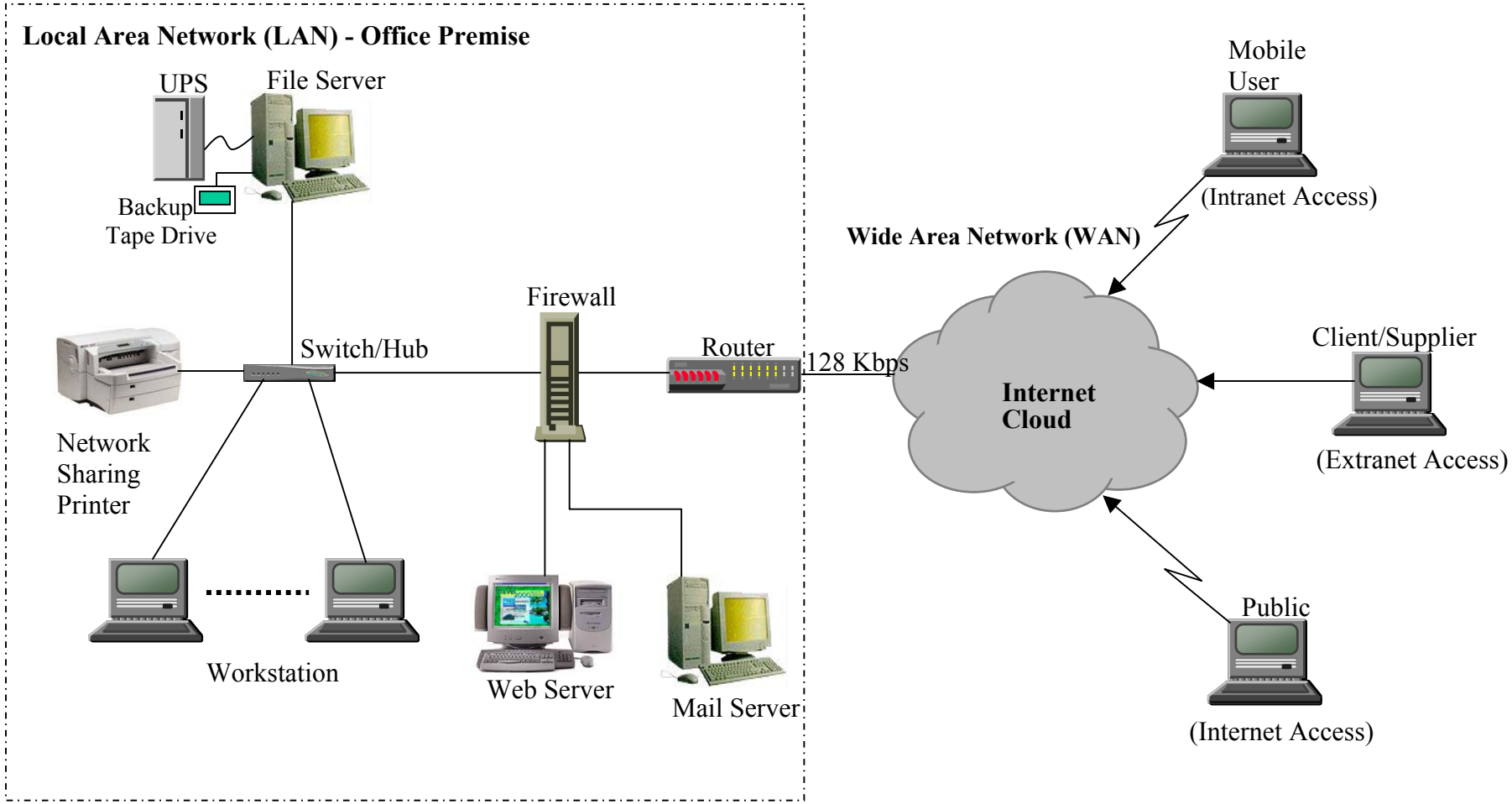
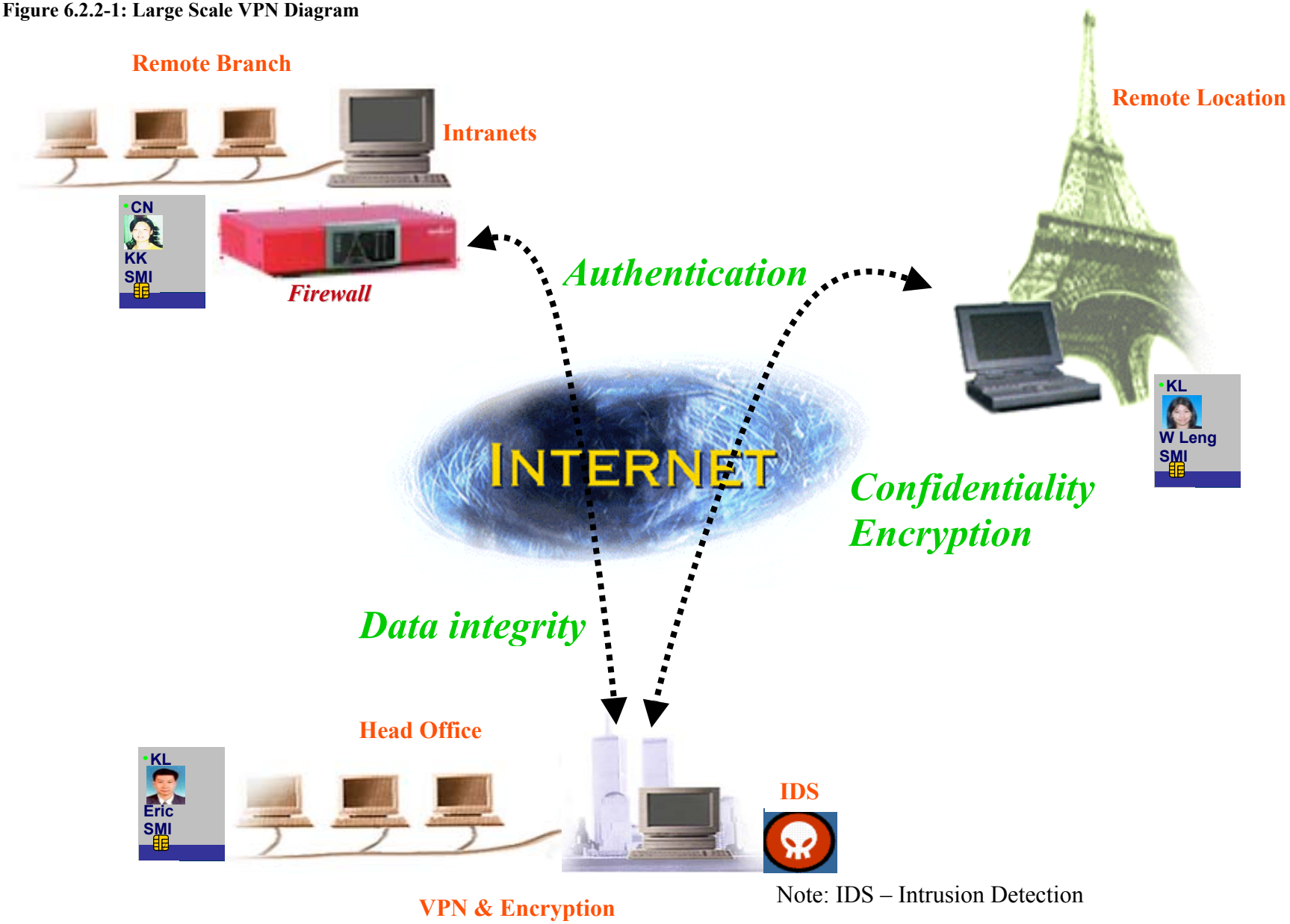


Figure 6.2.2-1: Large Scale VPN Diagram



Note: IDS – Intrusion Detection

6.2.2 Large Scale VPN Solution

Responding in real-time and electronically linking worldwide with buyers, suppliers and logistic companies, financial institutions, government agencies and other service support infrastructure would require a large scale of ICT business networking platform for SMIs, shown in Figure 6.2.2-1, could use a leased line connected to the nearest Internet Gateway to provide large volume of data and information for their daily business transaction in different locations for global e-business.

Access VPNs, are classical hub and spoke topologies with all the remotes connecting into one or two central sites. Intranet VPNs range from hub and spoke to being a full mesh. The Extranet VPN topology is least understood topology, and for one corporation appears to be hub and spoke, but when viewed for several corporations will be a partial to full mesh of links. These are all virtual topologies, not real topologies, so the underlying premise is that SMIs have ubiquitous any to any communication between endpoints, and impose the structure required.

Intranet VPN offer low cost, tunneled connections with each VPN service. All data are encrypted and QoS to ensure reliable throughput.

Extranet VPN will offer secured connectivity between the business partners and valued customers.

Remote Access VPN provides secure, scalable, encrypted tunnels across a public network with client software.

6.2.3 Smart Card Security Solutions

Firewalls and passwords alone are no longer effective solutions for the evolving needs of the security information age, especially for the e-business world. SMIs need to protect their business information, the most valuable asset, or managing physical access. A convenient, secure and cost-effective smart card based solution for enterprise security.

A smart identity business card, shown in Figure 6.2.3-1, looks and works like a traditional photo identity card, however, it contains advanced dual-chip technology. The contact chip has embedded cryptographic capabilities and stores the users personal identification and private keys, vastly improving the security of digital signatures. A "contactless" chip stores the unique identifier used to grant or deny physical access to facilities, such as door access or car parking. The smart card also stores data, such as e-cash, loyalty points and medical records. Integrating these features into a single card provides powerful security with significant benefits in cost, convenience and protection.

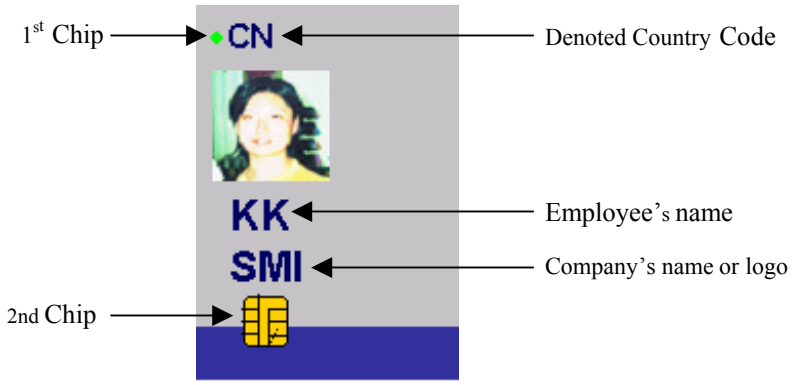
A secure smart card solution will contact its unique solutions:

- Providing secure physical and network access from a single, smart card based platform, anywhere any time.
- Strong authentication of employees, vendors or suppliers and enterprise partners to control building facilities, such as car park system, door access, etc. and network access.
- Easily combined with biometrics for very strong authentication (if requires).
- Seamless compatibility with multiple platforms and leading desktop application.

- Advanced, dual-chip technology provides onboard encryption and digital signing.
- Easy encryption of e-mail data and documents for secure storage and exchange of sensitive information over public or private networks.
- Enables rapid, cost-effective implementation of VPNs and customized web portals securely over the Internet.
- Private keys and digital signature stored directly on the card for improved security.

After the Public Key Infrastructure (PKI) deployment in the ICT business networking platform, every user can send and receive encrypted, digitally signed e-mail using common software such as Microsoft® Outlook, Qualcomm Eudora®, and Netscape® mail.

Figure 6.2.3-1: Dual-Chips Smart Card



6.3 E-Business Secure Connectivity Access

Since we are in the middle of a global e-business revolution. Borders and geographical divides are breaking down. There is a global trend towards the use of the Internet as a means for carrying information and conducting business. The primary reasons for this trend are the pervasiveness growth of Internet and the savings it offers on ICT network infrastructure costs. The trend is irreversible and uptake and usage are increasing at an exponential rate.

Information security is now a major issue facing today's electronic society. As the information highway transcends borders, locked doors are no longer sufficient to protect one of the corporation's most valuable assets information.

The level of awareness pertaining to electronic business (e-business) security among many businesses, especially SMIs, is still low compared to those in the finance, securities and insurance industries. They need to protect their valuable company assets, while leveraging the opportunities presented by e-business. This presents a challenge, as the more open a network becomes to e-business, the more prone it is to attack.

Information security is the solution to these demands. SMIs need it to protect valuable company information assets, critical to maintaining competitive advantage and enable them to exploit e-commerce opportunities to the fullest extent possible. Unless the SMIs have the same level of confidence and trust in the Intranet, Extranet and Internet as exists in the traditional marketplace, global e-commerce will not realize its true potential. It cannot be perceived as a risk laden medium for transacting business.

But, in the current world, we are able to sign a letter in our own unique handwriting, place it into an envelope and then seal it. By doing this, we solve the problems of authenticity – it is signed with verifiable signature; privacy – it is in a sealed envelope; certainty the recipient will get it – addressing the envelope; and clarity – it is written out. Can this be achieved in the ICT business networking with the required levels of additional security dictated by the medium and the environment?

The answer is yes. Public Key Infrastructure (PKI) is the means to achieve a similar outcome in the e-world, shown in Figure 6.3.1-1.

6.3.1 Secure Access Platform – Public Key Infrastructure (PKI)

In an electronic world, the PKI system gives users secure electronic keys, or certificates, to authenticate and encrypt transactions over the Intranet, Extranet, and Internet. It provides the framework and trust infrastructure necessary for e-business to flourish for increased competitiveness and reduced cost, shown in Figure 6.3.1-1.

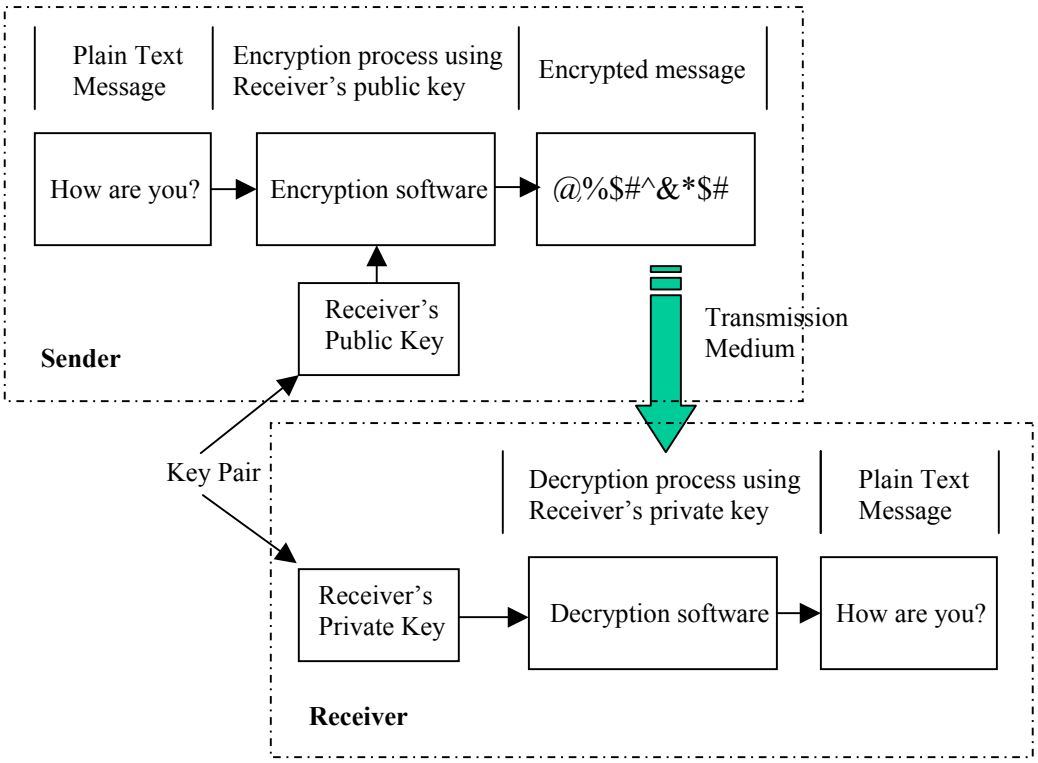
Yet, as above, where an envelope is used to provide a level of security, so too can an "envelope" be placed around an electronic message to provide a level of security. Cryptography[2] provides this, and is the envelope.

Figure 6.3.1-1: PKI Secure Applications

Securing e-business and private communications (Intranet) over ICT networking platform can be linked to and electronic equivalent of signing a letter and sealing it in an envelope. The act of signing the letter is evidence of authenticity and non repudiation and the act of sealing the envelope assures confidentiality and integrity.

Public key cryptography, shown in Figure 6.3.1-2, (or asymmetric cryptography) solves many of complex environments. In the public key model, two keys provided. One is a public key that is known to all users. The other is called private key known only to the owner of that private key. These two keys work as a pair. This key pair provides a means for sender to encrypt a message for an intended recipient and the recipient to decrypt the message. The public key does the work of encrypting, while the private key does the work of decrypting. The public key “knows” how to encrypt so that only the private key can decrypt. Without the corresponding private key, the message cannot be readily deciphered.

Figure 6.3.1-2: Public Key Cryptography



The public key mainly for multiple users need to be distributed, whilst a private key needs to be kept secret to its owner. This is one of the components of Public Key Infrastructure (PKI).

Thus, PKI's provide:

- Rules that detail how the keys in the system are handled.
- Software that is used to create, encrypt and securely store the keys.
- Rules about how gets what type of keys – called policies, and
- Agreement to follow the rules as set out under the PKI.

When properly implemented, administered and supported, a PKI provides the core framework for a wide variety of components, applications, policies and practices to combine and achieve the four principles security function in business transactions:

- Confidentiality – to keep information private
- Integrity – to prove that information has not been manipulated
- Authenticity – to prove the identity of an individual or applicator
- Non-Repudiation – to ensure that information cannot be disowned

As we know that lack of security is often cited as a major barrier to the growth of e-commerce, which can only be built on the confidence that comes from knowing that all transactions are protected by these core features.

We list, as examples, requirements relating to the quality and protection of digital assets or called intellectual capital. As explained earlier, the transition to a digital virtual environment means that businesses rely increasingly on digital assets, which may include design or product information for virtual organizations, digital goods for suppliers of multimedia content, or simply order, invoice, and payment information for online retailers. Requirements that have been identified in relation to digital assets are:

- Confidentiality of sensitive information, including customer, payment, and product information: SMIs may require either that the access to certain information is restricted, or that the purposes to which that information is put should be limited (e.g. while customers may be happy to give retailers their contact details to enable the delivery of goods, they may not be pleased if those same details are used for the purpose of mass-mailing).

- Integrity of critical information, including payment information and information to be used for commercial purpose: SMIs may require that both information (such as customer payment information) intended for internal use, and public (such as advertising) information should not be damaged or defaced.
- Availability of critical information: information (such as product information for customers) should be accessible to those who need it within and acceptable time frame.
- Identification of digital objects: to facilitate prevention of unauthorized copying and traceability of objects (see the following).
- Prevention of unauthorized copying or use of critical information or digital assets: SMIs supplying digital goods (such as music, pictures, or videos) are concerned that such goods should only be available to those who have paid for them.
- Traceability of digital objects: to enable the creation of audit logs for non-repudiation purposes.
- Quality of digital goods: both customers and SMIs may be concerned that the digital goods they purchase should be of the quality agreed upon with the supplier.
- Management of risk to critical information: businesses need to identify likely threats and to decide upon how to either guard against the threats or manage situation in which threatened events have occurred.

- Authentication of payment information: businesses need to be sure that payment information given by customers, or even other businesses, is genuine.
- Anti-viral tools on all or most client and server/messaging platforms: protecting valuable SMIs data being infected by viruses.

Chapter 7

An e-business Concept Model

Trust and trustworthiness are the foundations of security in which the complexity of the security problem of identifying in e-business requirement may be broken down by considering the important types of "things" – or objects – involved in an e-business transaction, and the relationships between them.

Figure 7.0-1 provides a graphical representation of important concept and the relationship between them. Again, this e-business concept model is simply a thinking tool, aimed at helping to identifying significant relationships between SMIs, information, and infrastructure in an e-business system.

Many different types of information (including payment information, customer contact details and interests, or company business strategy) may be involved in different ways, and also many components of the supporting infrastructure (including public telecommunications network, like Internet, as well as in-house Intranets and Extranets).

For example, customer contact details may be used in online retailing to support the delivery process, and may be stored on a company's in-house database (CRM), but transmitted to the separate locations (branches), using Intranet. Actions may also be divided into two types: those that should be supported, and those that should not be allowed if trust relationships are to be maintained. Actions to be prevented may include corrupting or destroying information or damaging the infrastructure. Similarly, a bona

fide actions may include seeing, copying, using, sending, and receiving information, or using parts of the infrastructure.

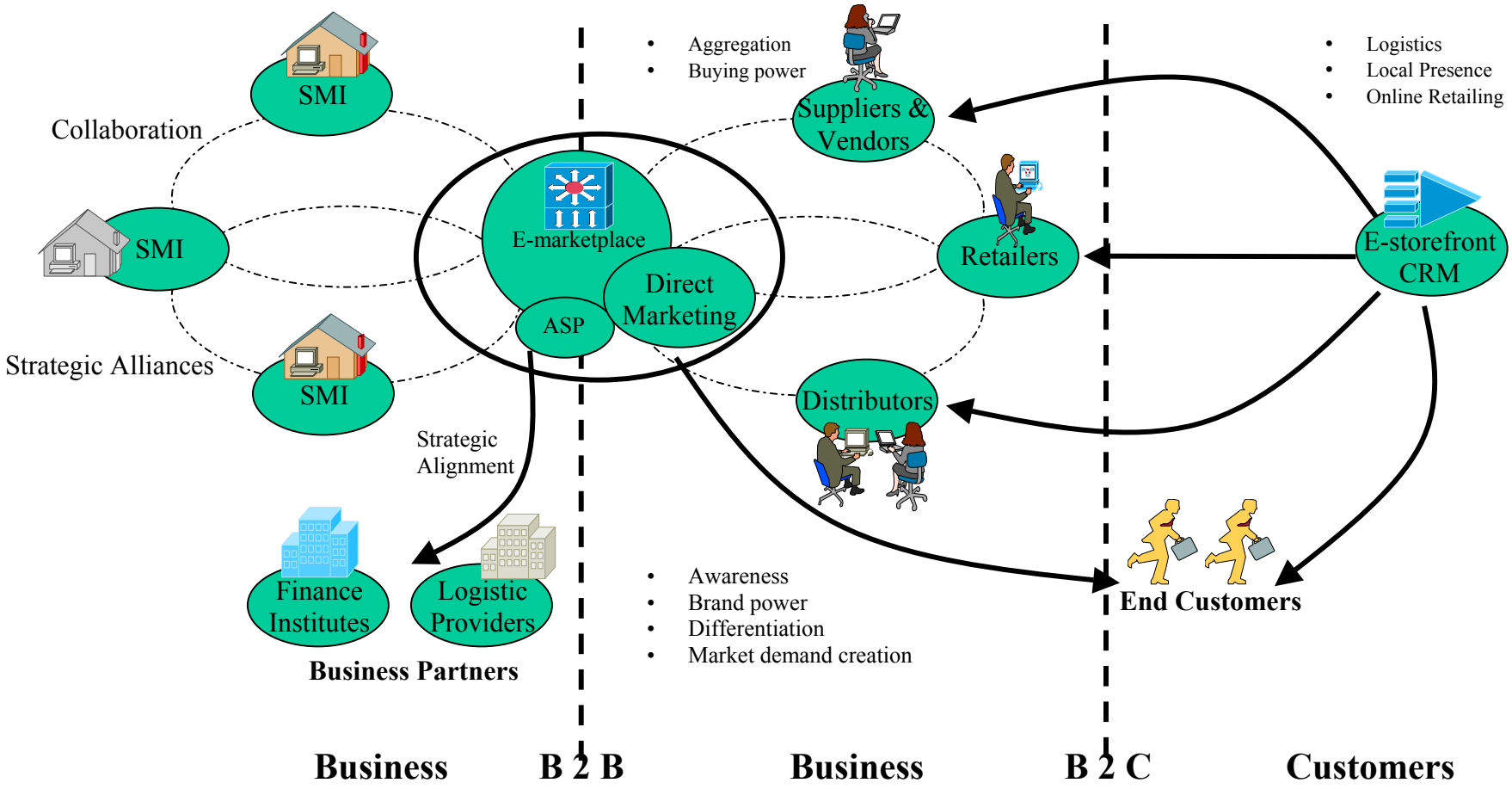
The SMIs can use an Extranet to:

- Exchange large volumes of data using Electronic Data Interchange (EDI)
- Share product catalogs exclusively with wholesalers or those "in the trade"
- Collaborate with other companies on joint development efforts
- Jointly develop and use training programs with other companies
- Provide or access services provided by one company to a group of other companies, such as an online banking application managed by one company on behalf of affiliated banks
- Share news of common interest exclusively with partner companies

The online exchange information through ICT networking platform will source, transact, and communicate between suppliers, distributors and customers via three channels:

- B2B – e-marketplace
- B2C – direct marketing e-marketplace
- ASP – application service provider services

Figure 7.0-1: An e-business Model For SMIs



The B2B e-marketplace will help connect suppliers, vendors and buyers, and feature services such as e-procurement, online stock ordering management, e-logistics, and fulfillment services.

Meanwhile, the B2C channel will provide a marketing channel for suppliers performing direct marketing and trading to end customers.

Lastly, the ASP feature in the e-business model will provide distributors with a solution to create other e-marketplace by offering web hosting and business applications, such as CRM, SCM, ERP, and logistic tracking system via the Internet.

7.1 Intellectual Capital in ICT Environment

With ongoing globalization, organizations are increasingly confronted with worldwide competition. In order to build and sustain their competitive advantage, the knowledge and expertise of an organization's staff needs to be seen as a critical strategic resource.

Intellectual capital is important to both society and organizations. Since, the technological revolutions are rising to pre-eminence of the knowledge-based economy and the networked societies have led to the realization that successfully companies at those creative and perpetually create new knowledge.

Knowledge is relevant, useful information about things that are important to the SMI , such as its customer, competitors, product development processes and marketing strategies. Intellectual capital is a firm's source of competitive advantage. To be

knowledge driven, SMIs must learn how to recognize in intellectual capital in the worth of their business and ultimately in their balance sheets.

7.1.1 Intellectual Capital

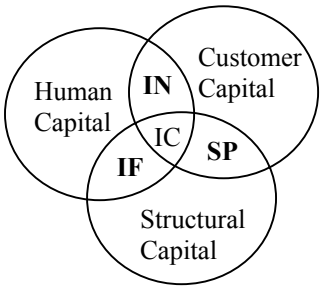
With the Intranet as a catalyst, Intellectual Capital has grown into Knowledge Management that information can be displayed, stored and retrieved without any geographical distance concern.

The intellectual capital (IC) can be described into three resources, shown in Figure 7.1.1-1, there are Human Capital, Structural Capital, and Customer Capital.

- **Customer Capital**: The relationships with people with whom a company does business. It is combined value of the goodwill or trust that a company has built with its customers, suppliers and distributors.
- **Human Capital**: The capabilities of the company's employees necessary to provide solutions to customers, combined with knowledge, skills and experience of a company's employees. In addition to individual capabilities, human capital includes the dynamics of an intelligent (learning) organization in changing the competitive environment, comprising of creativity and innovativeness. It is very difficult to be copied by other companies and can therefore be a sources of sustainable competitive advantage.
- **Structural Capital**: The infrastructure of human capital, including the organizational capabilities to meet market requirements. The infrastructure includes the quality and reach of information technology systems, company images, database (computer

source code), Intellectual Property (patents and trademarks), organizational concept and documentation.

Figure 7.1.1-1: Components of Intellectual Capital (IC)



The combination of these three different types of capital makes up the capital of a company, that providing information arbitrage, such as innovative (INV), supportive (SPT), and informative (IFT). Therefore, the Intellectual Capital will become one of the key success factors, the SMIs have to grapple with in order to continue providing clients and employers high quality, value-added services, and advice.

7.2 Venture Capital (VC) Funding

In the efforts to stimulate the nation's economic growth, the Government will intensify the development of several new growth sectors which characterize the economy of the 21st century. This includes K-economy, ICT and venture capital.

The Government is aware of the important role of venture capital as an alternative source of capital financing, particularly for ICT. Therefore, a total RM 500 million (USD 131.5 million) venture capital fund was established for the Budget Year 2001 and 2002. To ensure that the Fund is fully utilized, the Government is prepared to outsource the

management of the Fund. The Government recognizes that there are high risks associated with the venture capital industry.

As such, the Government is prepared to assist SMIs in investing equity in capital start-ups. However, to prevent abuse of this incentive, the investor is only allowed to divest his shares in the venture company after it has been listed.

In addition, an agency to coordinate the national development of venture capital will be established under the Ministry of Finance. This agency will act as a one-stop agency and be responsible for ensuring that the venture capital industry develops and expands more efficiently and effectively.

This agency will formulate, coordinate and monitor all policies, strategies and incentives as well as supervise the development of the venture capital companies to the capital market, several listing requirement on Mesdaq (Malaysian Exchange for Securities Dealing and Automated Quotation) will be liberalized, including reducing the requirement that 70 per cent of the listing proceeds be used in Malaysia.

7.2.1 Malaysian Technology Development Corporation (MTDC)

MTDC[1] is a venture capital-based company established by the Government and the private sector in line with the concept of Malaysia Incorporated. The main role of MTDC is to support the country's quest in the acquisition and development of new technologies and this are done through the following:

- The creation of large pools of financial support through the establishment of venture capital funds which is then channeled to investment in selected high technology areas.

- The provision of financial support for technology-based companies with good potential of being listed on the Kuala Lumpur Stock Exchange (KLSE).
- The development of specific manpower skills needed for the assessment of technology-based companies in selected growth sectors, and
- The formulation of strategic alliances with international high technology companies.

7.2.2 Internet-based Venture Capital Funding

vcod.com[2] is an independent internet-based business angel and financial advisory specializing in investing in and raising funds for young Asian enterpreneurs through its network of business angels, venture capitalists, venture catalysts, strategic investors or a public listing on the Stock Exchange of Singapore of the other exchanges.

vcod.com is very flexible compared to traditional private equity providers who demand detailed due diligence, time, board representation, profit guarantee, moratorium, right of first refusal, expensive legal counseling, minimum equity stake of 10 per cent and other restrictions.

7.2.3 Small and Medium Industries Development Corporation (Smidec)

Smidec[3] was established as a specialized agency to further promote the development of small and medium-sized industries (SMIs) through the provision of advisory services, fiscal and financial assistance, infrastructural facilities, market access, and other support programmes.

Smidec is offering Industrial Technical Assistance Fund (ITAF) and the E-commerce Grant for SMIs.

ITAF is a matching grant set up by Government in 1990. The fund is aimed to enhance the development of SMIs in to cost-efficient and competitive industry sector.

- ITAF 1 – The maximum grant allocated per company is RM 40,00. This fund is used to assist SMIs in business planning and development.
- ITAF2 – The maximum grant allocated per company is RM 250,000. Its main objective is used to assist SMIs on process and product development up grading purpose.
- ITAF 3 – The maximum grant allocated per company is RM 250,000. It is used by SMIs on productivity and quality improvement and certification.
- ITAF 4 – The maximum grant allocated per company is RM 40,000. This fund is being used on marketing development.

In addition, the E-commerce Grant is used to assist SMIs quickly integrate themselves into the mainstream of the ICT networking platform to ensure their survival in a changing globalized marketplace.

7.3 ICT Networking Platform Stimulating Economy Growth

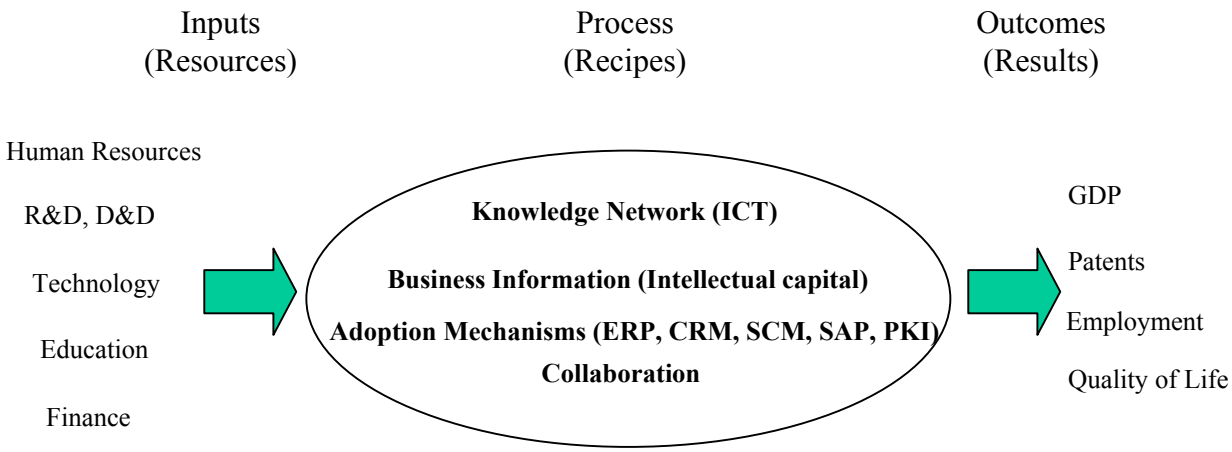
We must accept the realities of K-economy. We have no other alternative. We shall become citizens of the K-economy. The Government wants every people to be part of it and its convinced that Malaysians will reap enormous benefits from this transformation via ICT networking platform. The new economy will lead to increased productivity, higher incomes as well as a better quality of life.

Skills and entrepreneurship will together drive the new economy. In future, GDP growth will be spearheaded by knowledge-based industries in all sectors, particularly the manufacturing and service sectors.

Therefore, intensifying investment in ICT, education and the retraining of workforce. Our country needs knowledge workforce to constantly upgrade their skills and efficiency, given the K-economy is part of our daily lives.

Figure 7.3-1 shows the essential elements in K-economy transformation via ICT networking platform.

Figure 7.3-1: The Process of ICT Networking Platform



Profitability for a small business today often depends on a commitment to ICT. A firm that ignores ICT is vulnerable to missing competitive moves that lower product costs or improve performance. The percentages[57] of owners citing specific of using ICT were as follow:

Benefit	Percentage Citing
Responding to customers more effectively	50%
Improving quality	44%
Becoming more flexible	36%
Becoming more innovative	35%
Speeding up the introduction of new products or services	34%

7.4 Enhancing Competitive Advantage in Global Market

A global industry is one those SMIs whose competitive positions in major geographic or national markets are fundamentally affected by their overall global competitive positions. Therefore, the SMIs are encouraged to acquire international quality systems and standard certifications to enhance their competitive advantage. Thus, they are required to compete on a worldwide basis by enhancing their quality of work, services and product offer. They should broadly participate into an integrative management approach to focus on their customer satisfaction through a wide variety of tools and techniques to achieve high quality services and product offer that compliance with international standard.

Product standards that generate buyer confidence the world over have to be widened to accommodate more product offerings form SMIs. Standard institutes like Standards and Industrial Research Institute of Malaysia (SIRIM) should be provided with more funds to meet this need. Therefore, efforts should be made to priorities the needs of SMIs in consonance with SMIs, manufacturing trends, SIRIM, or ISO standards, and Hazard Analysis and Critical Control Points (HACCP).

The ICT networking platform will provide sufficient information for certain newer ranges of products for which the country is not regarded very strongly, should be made comparable with more established standards elsewhere through strengthening of current collaborative program and efforts with more established institutes in developed economics.

Compliance with those standards will result in internal cohesiveness and team building, reduction in waste and errors, greater customer satisfaction, and confidence. In general, greater control of an organization's resources and output. It provides a foundation of continuous improvement and a favourable linkage for Total Quality Management (TQM).

TQM is viewed as virtually a new organizational culture and way of thinking. It is built around and intense focus on customer satisfaction; on continuous improvement of products, services, and processes; and on work relationships based on trust and teamwork. An ICT networking platform will provide SMIs all the functionalities for achieving TQM in their products or services milestone.

This will help SMIs companies exploit their existing core capabilities to expand into overseas marketplace. For achieving this kind of situation, they need to be more responsible to and develop closer partnership with our customers. As a result, they must change to survive, and we argue that they should attack the problems, not the symptoms in the systematic and professional way.

7.5 ICT As Knowledge Enablers

IBM Advanced Business Institute, Stephe Heackel said, " To win, using the sense-and-respond approach". Such as, e-commerce for better business opportunities and growth, and e-mail for effective communication regardless geographical area.

E-business occurs when one firm connects its ICT network systems, such as Internet, Intranet, and Extranet connectivity directly to its critical constituencies – customers, employees, vendors, and suppliers. Doing business electronically has become a viable and attractive option for small companies.

E-mail is a highly effective means of communicating with others anywhere in the world. Businesses find that they can answer questions more rapidly and usually at lower cost through e-mail than by staffing a telephone system. Because e-mail become a common mean of communication.

All the SMIs can obtain the international marketing skills, which for the moment are found wanting, should be strengthened considerably via ICT networking platform. Overseas market information, statistical analysis presentation and above all negotiation skills need to be upgraded. Use of ICT networking platform, the SMIs can perform basic

program incorporating all industrial data collection, statistical analysis, presentation and negotiation skills in layman's terms also be cultivated. For example, in Holland, the average citizen speaks three to four European languages and they do so purely for commercial reasons.

Therefore, all SMIs personnel should try to socialize well at all levels with comfort and confidence to generate the necessary rapport for further business leads.

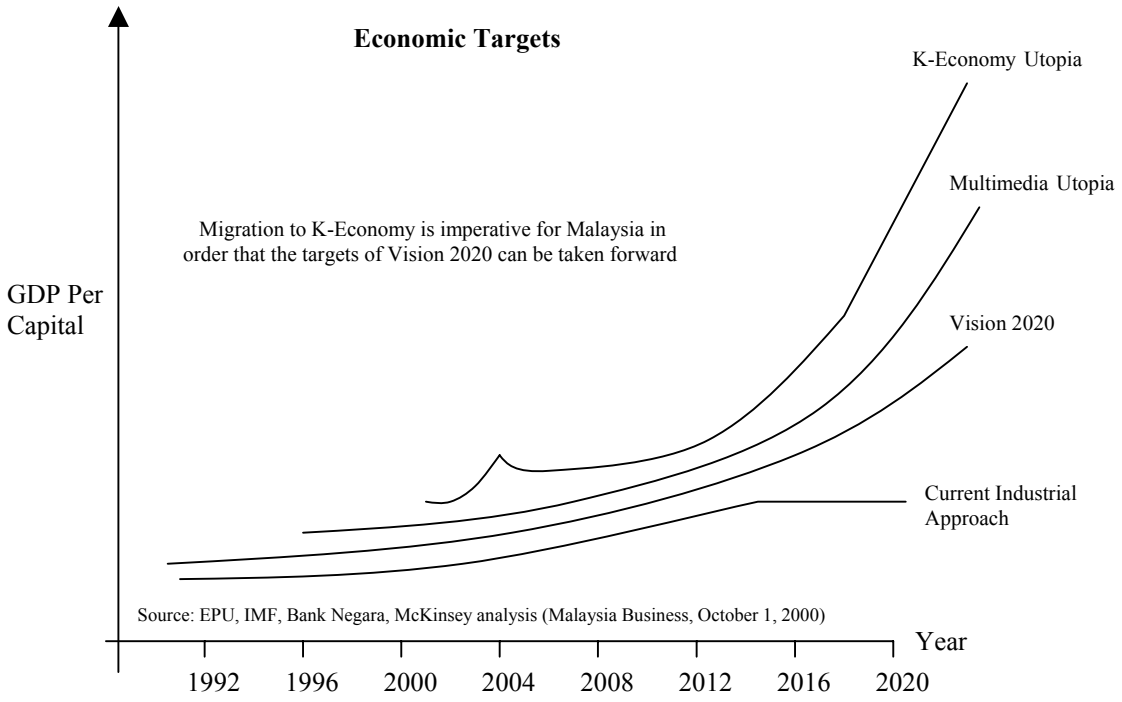
Chapter 8

A New Malaysia and Organizations

Malaysia has progressed from a predominantly agricultural economy to a manufacturing one. The industrial backbone – SMIs, currently contributes to more than 33 per cent of its Gross Domestic Product (GDP) and provides 30 per cent of all jobs. However, the K-economy is essentially based on four operative words: learning, de-learning, re-learning and applying. As such, building human resources of the right calibre becomes a central issue in this new economy. As Prime Minister Datuk Seri Dr Mahathir Mohamad told the Second Global Knowledge Conference in March: "We must remember to forget old ways, we must force ourselves into new habits. We must build new process, institutions that are necessary for the Information Age."

Therefore, Malaysian Government emphasizes a new Malaysia by putting efforts to ensure that Malaysians becomes fully integrated citizens of the Knowledge economy, or K-economy, and important component of globalization station, shown in Figure 8.0-1.

Figure 8.0-1: K-economy and Vision 2020



The MSC is a very important component for developing the K-economy. It was built to help our country leapfrog into a developed nation and all that implies. Its activities in creating an environment to enable R&D, D&D, the incubation of new technology-based industries are rooted in the belief that without this engine, Malaysia will likely remain a developing country for long time. It has been projected that without the drivers in Vision 2020, the likely per capita GDP will be USD 4000. With the drivers, the figure rises to about USD 10,000. With the success of the MSC project, our country can look forward to a per capita GDP of about USD 15,000 in the year 2020.

8.1 New Economy Strategy – Knowledge-based Economy (K-economy)

We are part of the global village in a borderless world. There is no difference in the way changes are sweeping across organizations and industries. This is an era of E-commerce and K-economy development in the new millennium year. A competitive and innovative economy that involved ICT equipment for building up the business network. The technology is being introduced or used improves overall industry structure, especially applied in the service sector.

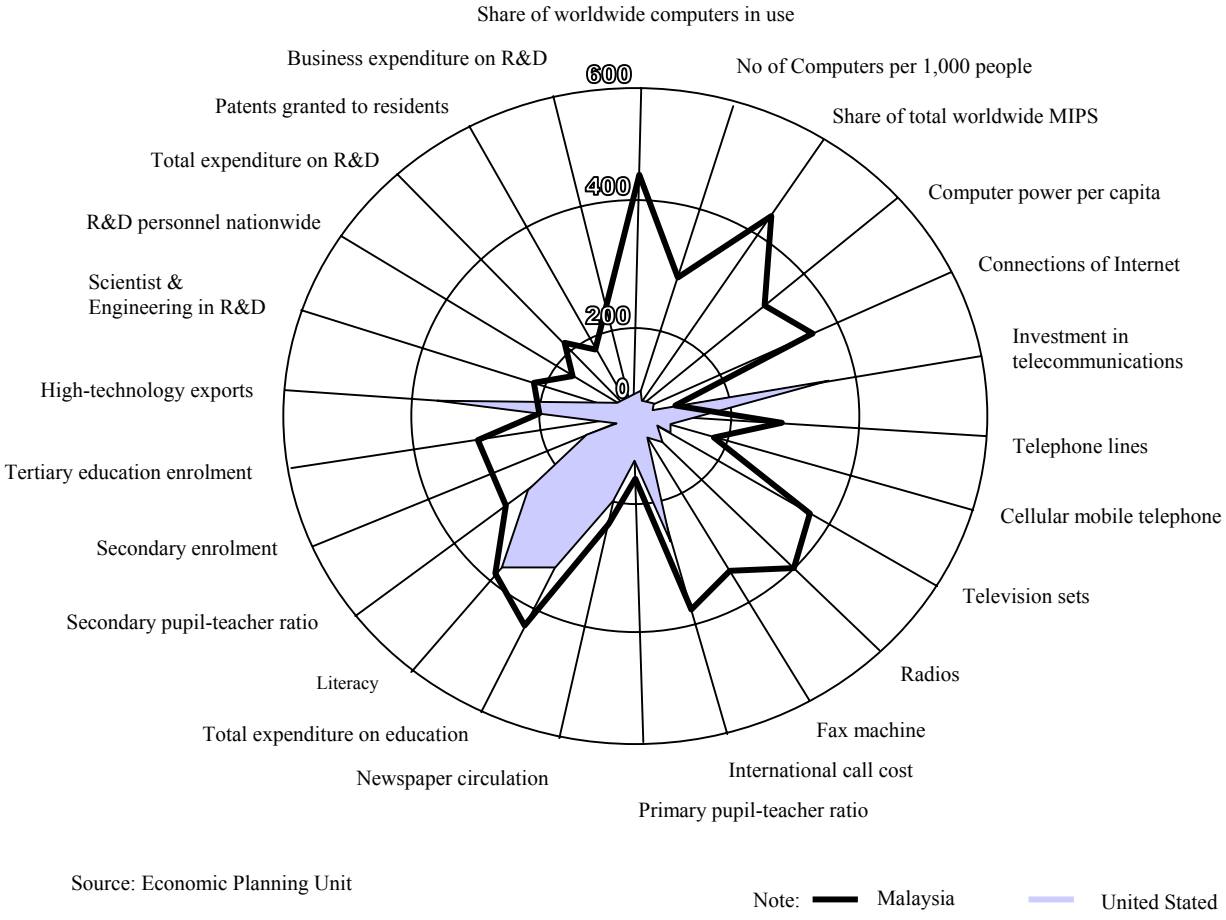
The launch of Strategic Initiative One (SI1) by our Prime Minister, Datuk Seri Dr. Mahathir Mohamad in March 2000 shows that as the digital economy or better known as the K-economy which everybody is talking about is already here whether we like it or not. This is a new innovation of network based business that involving the advanced ICT equipment and its infrastructure.

The K-economy is about increasing the knowledge of technology intensity in all sectors of economy – both traditional and hi-tech, and in all system of governance including both public and private sectors as well. K-economy is an economic structure, which requires many knowledgeable workers especially in electronic, robotic engineering, information and communication technology, nano-technology, telecommunication and bio-technology like bio-science, genetic engineering, sport science and pharmacy.

Today's global economy as one in transition to a "knowledge economy", or an "information society". At the same time, the various measures taken by the Government to widen public accessibility to Information and Communication Technology (ICT) have been hailed as yet another steps towards its aspirations of creating a knowledge society

(K-society). Figure 8.1-1, shows a knowledge wheel is determining Malaysia's preparedness for the knowledge-based economy. The wider the spread on the wheel, the more prepared it is.

Figure 8.1-1 Knowledge Wheel: Malaysia And United States, 2000



Source: Economic Planning Unit

8.2 ICT Enabled K-society

Since we're standing at the dawn of the new millennium and facing a world of greater inter-connectivity, accelerating flow of data, and shrinking time and national boundaries. Our Government has launched several strategic initiatives, including the establishment the Multimedia Super Corridor (MSC) as well as the bold initiative to target technology

and knowledge-based companies to locate within an area provided with world-class infrastructure facilities, attractive financial incentives as legislative and regulatory framework, tailor-made for the development of MSC.

The advent of the K-economy is now a reality and threatens the conventional concept of comparative advantage. And, the global technological revolution and the use of ICT have opened up prospects and business opportunities in various new fields.

The ICT have been the drivers of the knowledge society. They provide new and faster ways of delivering and accessing information, innovative ways for real-time communications, and new ways to do business and create livelihood opportunities. The technology is putting more and more information into the public domain leading to re-arrangement of societal forces and governance structures towards greater efficiency, transparency and accountability in functioning.

The countries with access to ICT innovations and having a capacity to capacity to absorb them and use them will have a capacity to reap social and economic advantages. And, for those without accessing the ICT will result the appropriate capacities risk being marginalized in the “knowledge societies” of the future.

8.2.1 Empowering Communities

The ICT can offer another unprecedented way for empowering each individual. Therefore, everybody is a potential recipient and generator of knowledge in a truly ICT networked world. This kind of inter-network equality aspect up immense opportunities

for people to absorb knowledge, triangulate the knowledge from different sources and form an informed opinion.

It will further provide a perfect bridge for matching demand and supply of information. It assists a recipient in locating strategic information and at the same time, creates potential users for particular information.

In well inter-connected economics, ICT will act as a force multiplier in enrichment of knowledge base of the society through quick dissemination of knowledge products and best practices to more number of people. Use of force multiplier attribute of ICT in education, training and business development field can result in creation of new societal capabilities.

8.3 Technology Access

To bring the technology closer to the people, it is important to provide either individual or community accessing to ICT. The Government, private sector, financial institutions and Non Government Organization (NGO) have an important role to play in improving ICT access by functioning as technology demonstrator, facilitator or propagator.

Therefore, each country should establish a national ICT strategy that is responsive to sustainable development goals and separate funds need to be leveraged for achievement for these goals. As a result, our Government has announced a few incentives to approach the development of ICT and continued focus on ICT and the need to transform a production-based economy to a knowledge-based one.

Among the measure proposed development were:

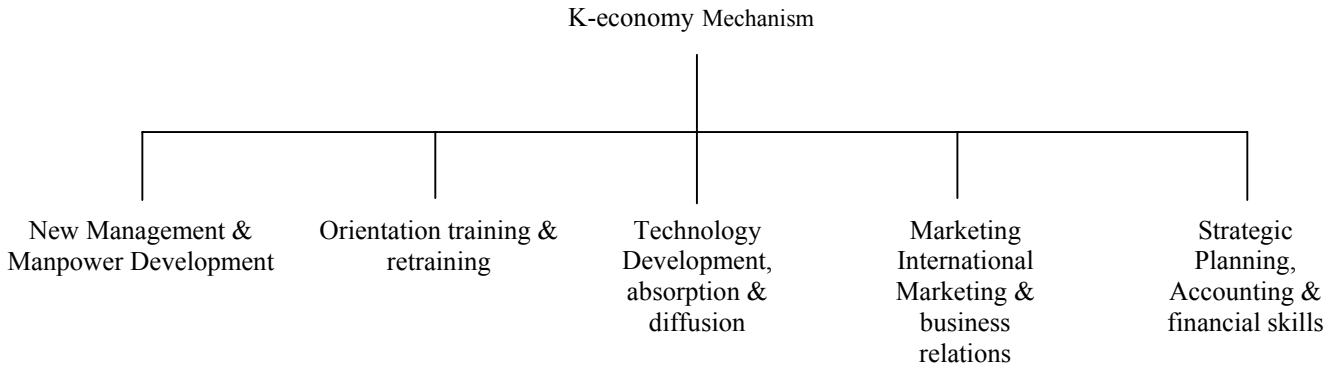
- Funds (Venture Capital) and capacity to build, operate, manage and service the technologies involved.
- Technologies and infrastructure, e.g. MSC project, to access information resources available in the public domain.
- Trained and skilled workforce to develop, maintain and provide the value added services or products.
- Conductive polices that promote equitable participation of civil society in the knowledge society as both procedures and consumers of information and knowledge.
- Absence of precedence of successful, replicable ICT project.

Malaysian Youth Council president Saifuddin Abdullah said "To have a competitive advantage, the country needs to be ready for the K-economy."

8.4 K-economy Mechanism

In order to help SMIs get involve into K-economy development platform, they should gone though a K-economy mechanism to make it work. A "five-steps mechanism" is proposed and illustrated in Figure 8.4-1.

Figure 8.4-1: K-economy Mechanism



8.4.1 Step 1: New Management and Manpower Development

The existing SMIs' management and manpower is usually family-type, loosely structured management requires tempering to take into account the complex demands of modern business through the adoption of effective management practices founded on direction, delegation and control. Therefore, management in SMIs will have to acquire skills in information gathering via ICT networking platform, data analysis, human relations, strategic planning, production, marketing and finance to manage and lead efficiently and effectively.

Manpower will have to be regarded not as passive factors, as is currently done, but as active participants in the welfare of the firm, creating more innovative and creative mindset and thinking system. The participative management styles tend to be more sustainable from a long-term perspective.

8.4.1.1 New Human Resources Development (HRD)

Competitive industrial practices which succeed in making consistent quality products are not complete without equally effective packaging practices. In view of the paucity of

product designing and packaging training institutes, it is necessary to setup such institutes urgently. In Hong Kong, for instance, such training institutes are widely available in the evenings to cater to the convenience of those who have to work. In the short term, large groups of students will have to be encouraged to take up courses such as footwear designing and product designing in leading centers (England, US, Italy and even Hong Kong or Taiwan). In the long term, either the government or the private sector or collaboration program training program with higher learning institutes. They should be revamped to provide for short-term training facilities in the evenings to public.

For the K-economy development, it requires knowledgeable workers, like individuals with high pattern recognisition skills, flexibility and tolerant ability who can work in team and better equipped with skills in collective "sense-making". And, the knowledgeable workers are versatile, autonomous and highly skilled. They leverage and build knowledge to produce useful action with very strong analytical skills. They are flexible and with high tolerant for ambiguity. The new HRD is clearly identified and differentiate some of the characteristics of yesterday's workers and today's workers, shown in Table 8.4.1.1-1.

Table 8.4.1.1-1: New HRD Paradigm

Yesterday's Workers/Manager	Today's Workers/Manager (Reality and Expectation)
• Waited to be taught	• Seek to learn
• Assumption that learning occurs in classroom	• Recognize the power of learning form work experience
• Held superordinate responsible from their careers	• Take responsibility for own careers
• Hold view there is completion of school	• View education as continuous, lifelong
• No link between training, performance, business	• See how learning affect business
• Left their learning to intuition	• Make decisions on what to learn
• Waited for others to envision future	• Envision own future
• No serious sense of urgency	• Serious sense of urgency for continual reinvention
• No passion for innovation	• Passion for innovation for wealth creation
• No sustained efforts for networking	• Serious networking efforts
• Not seriously competitive	• Thrives on healthy competition (co-opetition)

Human resources (HR) and knowledge management is emerging as the key competitive assets of organization. Therefore, HR practitioners by virtue of their knowledge of human performance are the best suited of any group to meet future competitive advantages and to exert breakthrough leadership. Additional, the following six key trends would have some profound effects on the innovative profession.

1. Changing technology
2. Increasing globalization
3. Continuing cost containment
4. Increasing speed in market change

5. Growing important of knowledge capital
6. Increasing rate and magnitude of change

"Having a CEO whom you can communicate with at a much lower level and who really understands the real problems ICT deals with makes a tremendous difference," said by Chas Di Fatta, vice-president of Systems Engineering at Freework.com., Inc. "They have a real understanding of the value of ICT"

8.4.1.2 Knowledge Worker Development

The arrival of K-economy has created a massive need for knowledge workers, which form the backbone of the future of our national economy. This requires knowledge workers i.e. individuals with high pattern recognition, flexibility and tolerant ability who can work in team and better equipped with skills and knowledge in collective "sense-making".

As described before, the knowledge workers are versatile, autonomous, and highly skilled. They leverage and build knowledge to produce useful action with very strong analytical skills. They are flexible and with high tolerance for ambiguity.

People are now familiar with the use of ICT facilities and the benefits of customization. No longer are they laying back and waiting for the information to come to them. Employees are now more actively involved in demanding various types of information at their fingertips

Therefore, ICT networking platform to provide human capital solutions and a form instant connectivity with the workforce. With ICT network platform in place, the SMIs and employees can gain form the following:

- Access to shared information such as organizational policies and procedures, or sales and marketing tools to promote sound planning and decision-making.
- Reduced costs – by given all employees access to online training, such as Computer-Based Training (CBT), the organization can realize savings in employee time and out-of-pocket costs incurred through travel.
- Improved employee productivity by leveraging the knowledge of the workforce through collaboration and providing speedier access to tools and information.
- Improved Web management – the collaborative networking in Internet could create and manage productive new employee communities.
- Attract talented employee – the online workforce values tools that allow them to identify career options, self-assess their competencies and readiness for advancement, and acquire new skills.
- Retain and leverage talent – an effective Intranet employee portal that has been customized to an employee's individual needs makes it easier to use and allows individuals to focus on value-added activities.

For better knowledge sharing program to be executed effectively, encouragement should be provided to SMIs to participate in international fairs, business and industrial gatherings. Encouragement could be also be in the form of fiscal incentives, and subsidized trips.

Furthermore, the SMIs also should be encourage to take an integrative approach, like effective product management practices rather than do things on an ad hoc basis as is done now.

8.4.2 Step 2: Orientation Training and Retraining Program

The SMIs should emphasize all the employees should be in the inculcation of right working ethics and attitudes, and the provision of or accessibility to regular appropriate training programs to keep pace with changes in technology and technological system. This will enable SMIs to grow and stay in the competitive age by using latest information tools in their daily business events or activities.

Responding to the challenges by working together, industry (SMIs) and government (Ministry of Human Resources Development, and Ministry of Education) have responded to organize the appropriate and up-to-date orientation training and retraining program.

- Linking Education to Industry: Co-operation or R&D programs with local universities and research centers.
- Promoting Interest in Science and Technology: Another set of responses focus on fostering the interest and commitment of students and teachers of math, science, and technology.
- Retaining and Developing Highly-skilled Employees: By in-house training programs, innovative human resource management strategies, individually-tailored professional development programs, and lifelong learning strategies.
- Incentives: Government provides more carrots for skills Malaysians working abroad to return home.

- International Initiatives: Policies and programs that facilities the immigration of knowledge workers may be an important way to alleviate short-term skill shortages.
- Science and Technology Infrastructure: Infrastructure policies and programs help to attract, support and retain the people engaged in R&D by supplying them with the tools they need to carry out their job function. ICT have been hailed as yet another step towards its aspirations of creating a knowledge society through our MSC project.

8.4.3 Step 3: ICT Development, Absorption and Diffusion

Use of effective technology and technological systems in SMIs should be encouraged all the time, especially use of ICT networking platform for their business growth. Table 8.4.3-1 shows out the ICT development for an organization change. The SMIs should be continuously upgraded or strengthened through various adoption or absorption processes. Otherwise, their output may become inappropriate or inconsistent with market demand in terms of features or costs.

Table 8.4.3-1: ICT Development

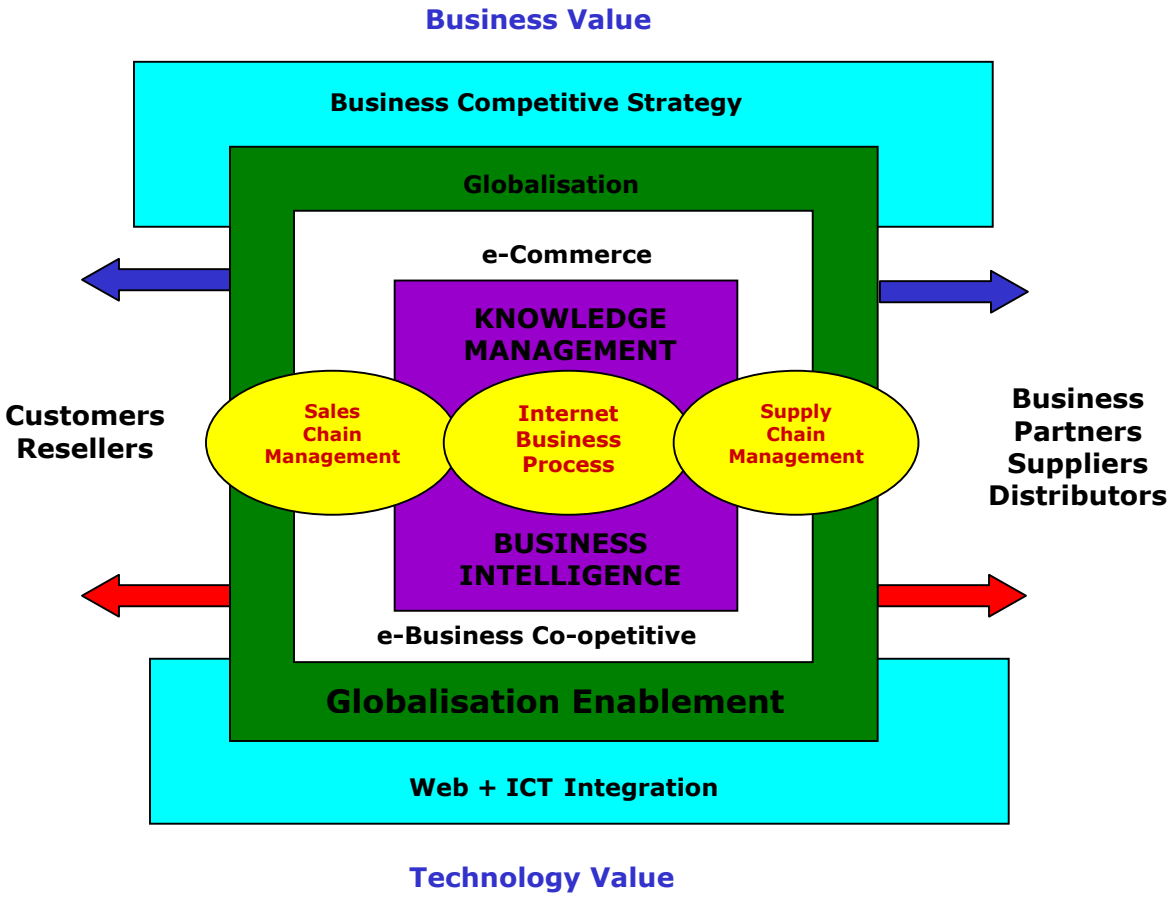
ICT Development	Organizational Change
Global networks	International division of labor: the operations of a firm are no longer determined by location; the global reach of firms is extended; costs of global coordination decline. Transaction costs decline.
Enterprise networks	Collaborative work and teamwork: the organization of work can now be coordinated across divisional boundaries; a customer and product orientation emerges; widely dispersed task forces become the dominant work group. The costs of management (agency costs) decline. Business processes are changed.
Distributed computing	Empowerment: individuals and work groups now have the information and knowledge to act. Business processes are redesigned, streamlined. Management costs decline. Hierarchy and centralization decline.
Portable computing	Virtual organizations: work is no longer tied to geographic location. Knowledge and information can be delivered anywhere they are needed, anytime. Work becomes portable. Organizational costs decline, as real estate is less essential for business.
Graphical user interfaces	Accessibility: everyone in the organization – even senior executives – can access information and knowledge; workflows can be automated, contributed to by all from remote locations. Organizational costs decline as workflows move from paper to digital image, documents, and voice.

8.4.4 Step 4: Marketing, International Marketing and Business Relations

Marketing proficiencies, especially international marketing skills, are hard earned. It demands constant awareness of changing environmental trends, familiarization with different international business cultures and nuances, a large pool of business contacts and the ability to generate business confidence and rapport, not forgetting of course negotiation skills of a high order.

Business relations can be established informally or formally through various strategic alliance between SMIs and their complementary counterparts through joint ventures, collaboration, outsourcing, licensing, subcontracting, and business alliance. These two important elements should put them together to enable SMIs to expand through forward and backward linkages or through horizontal combinations. Economies of scale can become one of the positive consequences, which, in turn, provide further strength and vitality to SMIs. A new international business competitive platform is illustrated in Figure 8.4.4-1.

Figure 8.4.4-1: International Business Competitive Platform



8.4.5 Step 5: Strategic Planning, Accounting and Financial Skills

Acquisition of such strategic planning, accounting and financial skills will enable SMIs to generate proper and balanced direction and concentrate focus for the business they are in, take account of impact of their actions or decisions making in financial terms, and manage the financial system effective.

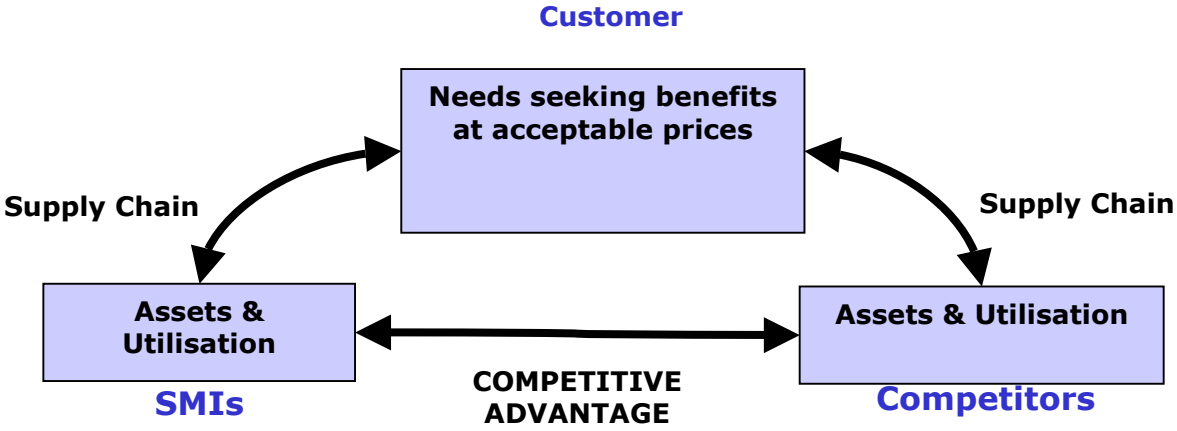
Developing a niche strategic marketing to identify the customer's needs, accesses competitors' strengths and analysis of the external environment. It works as investigation of industry/market factors to gain a perspective on new business opportunities and key

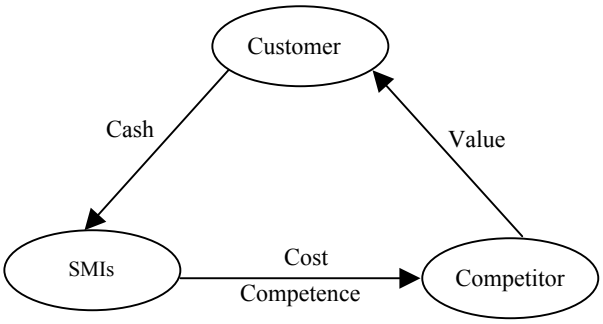
requirements for SMIs. Besides, it also reviewing of SMIs' internal factors including products, competencies, culture and customer relationships to determine the core capabilities.

And, the outcome is matching of SMIs opportunities and capabilities to formulate alternative strategic business or production directions.

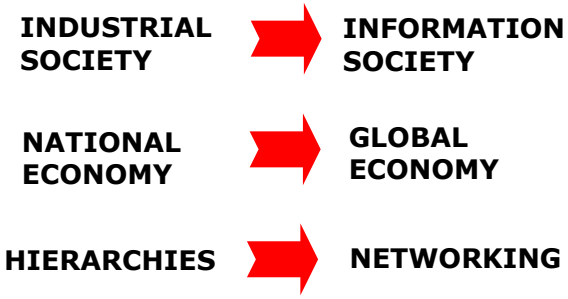
Therefore, the process of strategy development requires a number of elements that can offer as a total framework or a stand alone package that is tailor-made for SMIs business growth in the new information age. It is an economical and rapid for the particular appropriate strategic analysis to assist SMIs companies growth and align with their business opportunity. A summarized competitive strategic approach flow chart is shown in Figure 8.4.5-1.

Figure 8.4.5-1: A New Era of Competitive Development Strategy





$$\text{Customer Value} = \frac{\text{Customer - perceived}}{\text{Cost}}$$



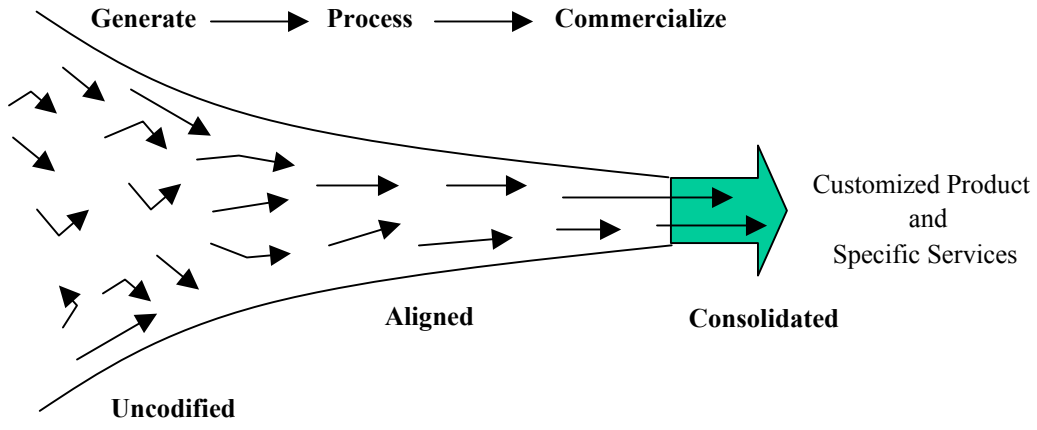
8.5 Knowledge As A Strategic Resource

While having unique access to valuable resources is one way to create competitive advantage, in some cases either this may not be possible, or competitors may imitate or develop substitutes for those resources. SMIs having superior knowledge, however, are able to coordinate and combine their traditional resources and capabilities in new and distinctive ways, providing more value for their customers than can their competitors[58]. That is, by having superior intellectual resources, and organization can understand how to exploit and develop their traditional resources better than competitors, even if some or all of those traditional resources are not unique. Therefore, knowledge can be considered

that most important strategic resources, and the ability to acquire, integrate, interactive, store, share and apply it the most important capability for building and sustaining competitive advantage[59]. The broadest value proposition, then, for engaging in knowledge management is that it can enhance the organization's fundamental ability to compete.

As we defined that knowledge as a strategic resource to provide commercializing knowledge and may involve some form of codification from tacit knowledge to knowledge in more explicit forms such as drawings, system processes, documents databases and computer software. Therefore, it will start from uncodified knowledge, often a set of idea, is gradually shaped through dialogue and expression into something more tangible, such as process description or product design. Finally, it emerges as product for sale and we do called it as information arbitrage, shown in Figure 8.5-1.

Figure 8.5-1: The Information Arbitrage



8.6 Knowledge Sharing For Development

Knowledge is empowering. Lack of knowledge is debilitating. Knowledge enables an individual person to think, to analyze and to understand the existing situation, and the inter-linkages and externalities of each action. Knowledge empowers the individual person to form his/her own opinion, to act and transform the existing conditions to lead to a better quality of life.

Knowledge sharing is the interactive process of making the right and useful information available to people at the right time in a comprehensive manner to enable them to act judiciously. Therefore, enriching the knowledge base in the entire mechanism. Knowledge sharing can occur at all levels, like between countries, within a country, between communities and among individuals. It can occur from local to global, form poor to rich and vice-versa. It can make themselves realize that lack of education and skills is one for the reasons why they are deprived of opportunities for growth and root of poverty is not just lack of resources but also bad governance and lack of political-will.

For a developing country, we would like to have the skills, well educated and top talent Malaysians who work aboard and encourage them come home to develop our own country toward the K-economy. Therefore, they will be given several incentives to return and work in Malaysia, including tax exemption for income remitted to Malaysia within the period of two years, and given permanent resident status for their husband or wife. Additional, more carrots for skills Malaysians working abroad to return home including allowing them to bring back two cars for free.

Apart from this, the new Budget 2001 introduces various incentives to increase computer ownership among Malaysians:

- Gifts of new computers by companies to their employees, which are at present deemed as benefit in kind, be exempted from income tax, and such expenses incurred by the company will be allowed as tax deductions.
- Contributions in cash and kind to projects promoting ICT culture will be allowed as tax deductions.
- All contributors to the Employees' Provident Fund (EPF) are allowed to make withdrawals for the purchase of computers for their own use.

8.7 Lifelong Learning

Today, we are in a new age – the age of information and of global competition. At the same time, new opportunities are opening up as we see the potential of new technologies to change our lives for the better. We have no choice but to prepare for this new age in which the key to success will be continuous education with livelong learning and development of the human mind and imagination. Lifelong learning means the continuous development of the skills, knowledge and understanding that are essential for employability and fulfillment.

The development of a culture of learning will assist to creation of personal independence, and encourage our creativity and innovation. Learning encompasses basic literacy to advanced scholarship. We learn in many different ways through formal study, reading, e-

learning, attending lectures, going on a training course, on job training, and technology transfer program.

Learning to learn is an essential skill for developing and maintaining employability. It is about how to remember the knowledge imparted to us, and the ability to apply this knowledge in a meaningful and profitable way in our job. Learning therefore represents an unforeseen opportunity for people development.

Learning develops the intellectual capital, which is now at the centre of competitive strength. Intellectual capital provides the engine for growth, the power to manage change, and helps generate ideas and innovation. As productivity and innovation depends on the whole workforce, we must encourage everyone to invest in lifelong learning.

The companies should tap the brainpower of employees and it helps to align the company towards achieving its vision, mission, goals, strategies and their environment. People skills to play a bigger role in business environment and implementation.

The information and knowledge-based revolution of the 21st century is being built on a very different foundation – investment in the intellect and creativity of people.

The organization also has created a systematic career development plan, skills and non-skills, personal development training and comprehensive training and comprehensive medical facilities to ensure the health of its employees.

For organization, providing learning opportunity to grow the business as well as venture into new fields. Learning therefore represents an unforeseen opportunity for people development. The new economy is all about opportunities.

8.8 New Competency – Self Knowledge

Due to global competition, new technologies and changes in place, every worker must expand their self-knowledge; recognize their interests to their vocational satisfaction, their strength and weaknesses in relation to their interests, and the way in which their interests and abilities are applicable in the changing social, economic and working environments. Self-knowledge is an integral competency area.

Self-knowledge is domain with many pathways. Historical self-knowledge is an understanding of past experience and influence that led to one's current level of development, success and failure is the key to shaping the future.

Experience is integral to knowing and understanding oneself and how one related to different situations, circumstance and roles. Whether through the varies learning process (brain-based learning, problem-based learning), educational methods (performance-based instruction), assessments (performance tests, other assessments), or documentation of performance (career records and interests), self-knowledge requires reflection on what was learned and what needs to be learned, the process by which learning occurred, and how that learning has enhanced what the worker know about oneself in relation to work.

Combining with the advent of the knowledge-based economy, the emphasis is on the importance of having workers take charge of their own learning. Whether through experiential, on-the job, classroom or self-study learning, work person can enhance their career development by continually summarizing and reflecting upon what they are learning as they continue contributing their progression through life.

For organization and businesses to meet the challenges of the new ICT driven knowledge-based economy and globalization, they need to have workers with a mindset who recognize self-knowledge of areas they need to enhance their competency and new competencies they need to acquire. But, the workers still need to be motivated, trained and coached about this self-knowledge to maintain their employability with their present employers, especially in SMIs.

Chapter 9

Conclusion

The SMIs should begin confirming or rethinking their desired competitive strategies and developing the current capabilities into alignment over the long term. ICT networking platform is one of the Information Systems Strategy (ISS) that support the SMIs' business strategies.

The first part of any SWOT analysis is mainly to collect a set of key facts about the existing industry environment and organization. This is including the facts about organization's markets, competition, financial resources, facilities, employees, inventories, marketing and distribution system, and environmental setting (e.g. technological, political, social, and economic trends).

Secondly, by using the Porter's five competitive forces framework to diagnosing the SMIs industry structure, built around five competitive forces that erode the long term average profitability in the respective industry.

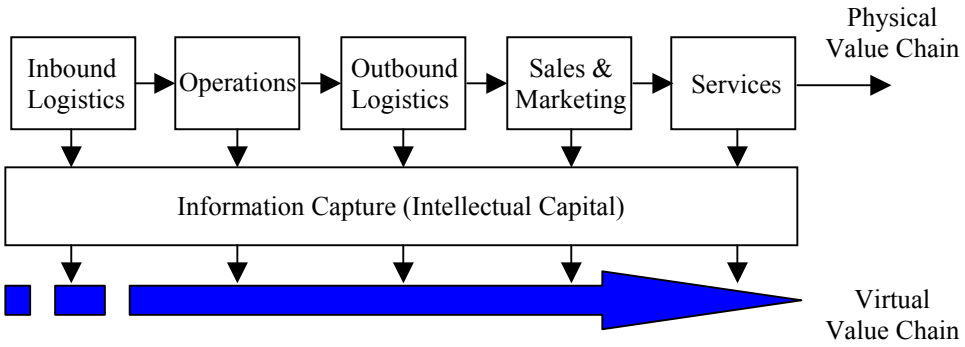
Then, the Porter's generic strategic is used to outline the three main strategic options open to SMIs that wish to achieve a sustainable competitive advantage. It will identify the two main aspects of the competitive environment: (1) sources of competitive advantage, and (2) competitive scope of the market.

And, the Porter's generic value chain is used for examining each element of the value chain that may be possible to determine the areas in which the SMIs organization may find more opportunities for lowering costs below those of the competition.

Lastly, the integration of ICT is important to SMIs to further identify stakeholders (customers, suppliers, shareholders, and even other participants to business such as government, public, and service providers) with the greatest potential for productive partnership (e.g. collaboration, and strategic alliance) and also identify the bases on which such partnerships can be developed (e.g. B2C or B2C).

Transforming the value chain via ICT network platform to examine how the SMIs can gain competitive advantage by examining how ICT can enhance the nine technologically and economically distinct activities of SMIs and linkage between these nine activities from value chain. Figure 9.0-1 shows the transformation of value chain by integrating the ICT networking platform to exploit the virtual value chain to build up the K-economy.

Figure 9.0-1: Exploiting The Virtual Value Chain



With an integrated information (Intellectual Capital) in place, the SMIs can begin to perform value adding activities more efficiently and effectively through and with information. In other words, the knowledge-based activities mirror steps in the physical value chain for the existing business environment.

When SMIs move a number of value adding activities from the marketplace to the marketspace, they will exploit more virtual value chain.

In this current economy situation, SMIs' business needs the flexibility and grows with emerging markets (e-business, and e-commerce), technology (ICT) and opportunities (AFTA, and globalization). Their business needs the flexibility to stop what no longer works, to change what can be better and to develop what is needed. By using ICT networking platform, their market by being attractive is interdevelopmental where the business and their customers act, react, and interact to the benefit of both. However, ICT networking platform needs to be planned in a manner that ensures the alignment of information strategies with the business strategies of SMIs' organization. Such ICT networking platform will result in the adoption of appropriate and compatible ICT solutions that will improve the business operations of SMIs organization, as well as provide them with a competitive advantage.

Furthermore, ICT also acts as a knowledge platform tool that can be used to develop a knowledge-based society towards K-economy. Therefore, the SMIs require to view knowledge as their most valuable and strategic resources, and bringing that knowledge to bear on problems and opportunities as their most important capability. They should realize that to remain competitive they must explicitly manage their intellectual resources and capabilities to form a new knowledge-based social relationships in the new information age. A competitive advantage based on resources and capabilities therefore is potentially more sustainable than that based solely on product and market positioning.

Thus, SMIs should leverage investment in ICT knowledge platform to their daily basic business processes to add value to their service product package, and providing real-time information to the valuable customers and suppliers in this competitive marketplace, especially in this globalization business trend.

SMIs are doing the transformation from relationship marketing to knowledge driven marketing, and proven strategies with new techniques to optimal marketing strategy. SMIs will acquire the tools, applications, and frameworks to strategically market their products and services under a new marketing paradigm.

And, the formulated substantial marketing strategy that is being used in SMIs company is leading out the new strategy – co-opetition, which is difference from those old marketers' strategy that they always think about to "killing" each other in the marketplace.

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Appendix A

The ASEAN Free Trade Area (AFTA) and Other Areas of ASEAN Economic Cooperation

Background

At the Fourth ASEAN Summit in Singapore in January 1992, ASEAN initiated the ASEAN Free Trade Area, or AFTA, which laid out a comprehensive program of regional tariff reduction, to be carried out in phases through the year 2008. This deadline was subsequently moved forward to 2003. Over the course of the next several years, the program of tariff reductions was broadened and accelerated, and a host of "AFTA Plus" activities were initiated, including efforts to eliminate non-tariff barriers and quantitative restrictions, and harmonize customs nomenclature, valuation, and procedures, and develop common product certification standards. In addition, ASEAN later signed framework agreements for the intra-regional liberalization of trade in services, and for regional IPR cooperation. An industrial complementation scheme designed to encourage intra-regional investment was approved, and discussions were held on creating a free investment area within the region. During the financial crisis of 1997-98, ASEAN reaffirmed its commitment to AFTA, and as part of a series of "bold measures," agreed that the original six AFTA signatories would accelerate many planned tariff cuts by one year, to 2002 from 2003.

When the AFTA agreement was originally signed, ASEAN had six members (Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand). Vietnam joined in 1995, Laos and Myanmar in 1997, and Cambodia in 1999. All four countries were required to sign on to the AFTA agreement in order to join ASEAN, but were given longer time frames in which to meet AFTA's tariff reduction obligations.

The US-ASEAN Business Council has long supported the ASEAN Free Trade Area and other initiatives to promote regional economic integration. The Council and its member

companies have pointed out that with ten integrated markets with a population exceeding half a billion people, ASEAN will be much more attractive to large-scale direct investment than it would as a collection of relatively small, segmented markets.

Common Effective Preferential Tariff (CEPT)

The CEPT is the mechanism by which tariffs on goods traded within the ASEAN region, which meet a 40% ASEAN content requirement, will be reduced to 0-5% by the year 2002/2003 (2006 for Vietnam, 2008 for Laos and Myanmar, and 2010 for Cambodia). The tariff reductions are moving ahead on both the "fast" and "normal" tracks. Tariffs on goods in the fast track were largely reduced to 0-5% by 2000. Tariffs on goods in the normal track will be reduced to this level by 2002, or 2003 for a small number of products. Currently, about 81% of ASEAN's tariff lines are covered by either the fast or normal track.

ASEAN members have the option of excluding products from the CEPT in three cases: 1.) Temporary exclusions; 2.) Sensitive agricultural products; 3.) General exceptions.

Temporary exclusions refer to products for which tariffs will ultimately be lowered to 0-5%, but which are being protected temporarily by a delay in tariff reductions. This is permissible under the AFTA agreement, and is spelled out under a Protocol Regarding the Implementation of the CEPT Scheme Temporary Exclusion List. Malaysia invoked this protocol in 2000, delaying tariff reductions on completely-built-up automobiles, and automobile knock-down kits, in order to protect its local auto industry.

A small number of sensitive agricultural products will be extended a deadline of the year 2010 for their integration into the CEPT scheme. In an agreement that has yet to be fully spelled out, the process of tariff reduction on these products will begin between 2000-2005, apparently depending on the country and the product.

General Exceptions refer to products which a country deems necessary for the protection of national security, public morals, the protection of human, animal or plant life and health, and protection of articles of artistic, historic, or archaelogical value. Approximately one percent of ASEAN tariff lines fall into this category.

The CEPT scheme will cover nearly 98 percent of all tariff lines in ASEAN by the year 2003; by then, the only products not included in the CEPT Scheme will be those in the General Exceptions category and sensitive agricultural products.

In the longer term, the ASEAN countries have agreed to enact zero tariff rates on virtually all imports by 2010 for the original signatories, and 2015 for the four newer ASEAN members.

Table A-1 shows out the average CEPT tariff rate of for products in the Inclusion will be approximately 2.7% by the year 2003, down from about 12.76% in 1993 at the start of the tariff reduction program.

Table A-1: Average CEPT Tariff Rates

Average AFTA / CEPT Tariff Rates						
	1998	1999	2000	2001	2002	2003
Brunei	1.35	1.29	1.00	0.97	0.94	0.87
Indonesia	7.04	5.85	4.97	4.63	4.20	3.71
Laos	5.00	5.00	5.00	5.00	5.00	5.00
Malaysia	3.58	3.17	2.73	2.54	2.38	2.06
Myanmar	4.47	4.45	4.38	3.32	3.31	3.19
Philippines	7.96	7.00	5.59	5.07	4.80	3.75
Singapore	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	10.56	9.75	7.40	7.36	6.02	4.64
Vietnam	6.06	3.78	3.30	2.90	2.89	2.02
ASEAN	**5.37**	**4.77**	**3.87**	**3.65**	**3.25**	**2.68**

Source: ASEAN Secretariat

Year 2001 CEPT Package

The 2001 CEPT package of tariff is illustrated in Table A-2, it cuts under the CEPT consists of 55,680 tariff lines (84.7% of total tariff lines) in the Inclusion list; 8,660 tariff lines (13.4% of the total) in the Temporary Exclusion List; 829 tariff lines (1.3% of the total) in the General Exception list, and 360 tariff lines (0.6% of the total) in the Sensitive list.

Table A –2: AFTA: Common Effective Preferential Tariff (CEPT) List for 2001

Country	Inclusion List	Temporary Exclusion List	General Exception List	Sensitive List	Total
Brunei	6,284	0	202	6	6,492
Indonesia	7,190	21	68	4	7,283
Malaysia	9,654	218	53	83	10,008
Philippines	5,622	6	16	50	5,694
Singapore	5,821	0	38	0	5,859
Thailand	9,104	0	0	7	9,111
ASEAN-6 Total	**43,675**	**245**	**377**	**150**	**44,447**
Percentage	**98.26**	**0.55**	**0.85**	**0.34**	**100**
Cambodia	3,115	3,523	134	50	6,822
Laos	1,673	1,716	74	88	3,551
Myanmar	2,984	2,419	48	21	5,472
Vietnam	4,233	757	196	51	5,237
New Members Total	12,005	8,415	452	210	21,082
Percentage	**56.94**	**39.92**	**2.14**	**1.0**	**100**
ASEAN TOTAL	**55,680**	**8,660**	**829**	**360**	**65,529**
PERCENTAGE	**84.74**	**13.40**	**1.28**	**0.55**	**100**

ASEAN Industrial Cooperation Scheme (AICO)

The AICO is intended to be an important feature of ASEAN economic cooperation. It is designed to encourage technology-based investments in ASEAN, and is open to any ASEAN-based company meeting the following requirements: 1.) incorporated in and operating in an ASEAN country; 2.) a minimum of 30 percent ASEAN equity; 3.) the

company engages in some form of resource sharing (such as sharing of technology, market sharing, or consolidated purchases of raw materials).

A minimum of two companies in two ASEAN countries must participate. Output of approved AICO projects will enjoy 0-5% tariffs immediately, as will raw materials and intermediate products. Such products will also enjoy local content accreditation and non-tariff incentives. The rules of origin will be the same as under the CEPT (40% ASEAN content). The non-tariff incentives will be determined by each country individually, and have not yet been specified. The above criteria for participation, particularly by the 30% ASEAN equity requirement, may be waived under certain circumstances. This will be settled by consultation.

The AICO was approved by the ASEAN Economic Ministers' Meeting in Singapore in late April 1996, was ratified by the then seven ASEAN members, and went into effect on November 1, 1996. Laos and Myanmar both acceded to the AICO agreement upon joining ASEAN in July of 1997.

A number of American companies have indicated their interest in the scheme, particularly those in the auto and autoparts sectors. There are currently more than AICO ventures that have either been approved or are awaiting approval.

Appendix B

Small and Medium Industries (SMIs) In Malaysia

Introduction

Malaysia has transformed from a commodity-based producing nation to being a manufacturer of industrial products, geared towards exports. With a good track record of economic growth exceeding 8% per annum, the country is well poised to fulfill its vision of becoming fully industrialised nation by the year 2020.

Following a period of rapid expansion in the last eight years, the Malaysian economy is estimated to expand at a more sustainable pace as the year progresses, where the main impetus to growth continues to come from the manufacturing sector which is envisioned to record a double-digit growth.

In the external trade scene, export of manufactured goods continue to remain the largest contributor to Malaysia's total exports; where product enhancement, competitive pricing and improved marketing strategies have enabled Malaysian manufactured goods to penetrate non-traditional markets like Africa and Oceania. In terms of composition, electrical and electronic products continued to compose the largest industrial linkages. The Second Industrial Master Plan (IMP2) recently announced by the Government, provides the basis for the achievement of a broad based, resilient and internationally competitive industrial sector. It has also set in place policies and programmes to further develop and integrate domestic SMIs as the critical and strategic link to develop and strengthen the cluster formation and to increase domestic value-added. The SMIs will assume these roles by complementing the activities of the large scale industries through integration into the mainstream of the industrial development through the provision of critical parts and components as well as expanding their market internationally. As the

SMIs grow, their progress will strengthen and widen the industrial base as well as enhancing export-led growth.

However, the SMI, majority owned by local industrialists, is normally conservative in nature and slow in adopting ICT to optimize its operation and to increase its productivity. The identified main reasons are that they lack of ICT awareness, expertise and resources to implement ICT solution. Majorities of the SMI adopt a wait-and see attitude in approaching the usage of ICT.

Thus, for the period 1994, MITI's efforts have been directed towards the qualitative rather than the quantitative development of SMIs. This is imperative for the development of a strong, viable and competitive support industry that is capable of meeting the requirements of larger industries. In addition to this, qualitative development also aims to develop more SMIs which are export oriented. Penetration into the export market demands improvements in product quality, production capacity, pricing and marketing strategies. MITI's SMI development programmes have been developed to achieve this aim.

Incentives For High Technology Companies

In addition to existing incentives under the Promotion of Investment Act 1986, several programmes for SMI development have been implemented. The programmes implemented to date cover the areas of finance, market, technology, training, infrastructure and information support. For the year 1995, existing programmes will be expanded and enhanced to enable more SMIs to be upgraded in line with Malaysia's vision of achieving a fully industrialised nation status by the year 2020.

High technology companies are defined as companies engaged in promoted activities or in the production of promoted products in areas of new and emerging technologies. High technology companies are eligible for the following incentives:

- Pioneer Status with full tax exemption at statutory income level for a period of five years; or
- Investment Tax Allowance of 60% on qualifying capital expenditure incurred within a period of five years. The allowance can be offset against the statutory income for each assessment year without any restriction.

The high technology company must fulfil the following criteria:

- Local research and development (R&D) expenditure to gross sales should be at least 1% on an annual basis. However, companies are allowed a period of three years from the date of operation/commencement of business to comply with this requirement.
- The percentage of science and technical staff having degrees or diplomas with a minimum 5 years experience in related fields should be at least 7% of total workforce.

High technology companies who are eligible should submit their applications for Pioneer Status or Investment Tax Allowance (ITA) to Malaysia Industrial Development Authority (MIDA).

Investment Tax Allowance (ITA)

As an alternative to Pioneer Status, a company may apply for ITA. A company granted ITA will be given an allowance of 60% in respect of qualifying capital expenditure

incurred within five years from the date on which the first qualifying capital expenditure is incurred. The allowance can be utilised to offset against 70% of the statutory income in, the year of assessment. Any unutilised allowance can be carried forward to subsequent years until the whole amount has been used up. The balance ie 30% of the statutory income will be taxed at the prevailing company tax rate.

As an added incentive, companies located in the States of Sabah, Sarawak, the Federal Territory of Labuan+ and the designated "Eastern Corridor"++ of Peninsular Malaysia will be granted an allowance of 80% in respect of the qualifying capital expenditure incurred. The allowance can be utilised to offset against 85% of the statutory income in the year of assessment.

+Only applicable to the hotel business and tourist industry.

++The "Eastern Corridor" of Peninsular Malaysia covers the States of Kelantan, Terengganu, Pahang and the district of Mersing in the State of Johor.

Incentives For Use of Information Technology (IT)

Computers and information technology assets are given an initial allowance of 20% and an annual allowance of 40%. Thus the full amount can be written off within a period of two years.

Effective from the Year of Assessment 2000 (current year basis), all operating expenditure including payments to consultants, related to the usage of IT in improving management and production processes in the manufacturing, agriculture and services sector are allowed as deduction in the computation of income tax.

Incentive For Multimedia Super Corridor (MSC)

The MSC is a 15-by-50 kilometre (9-by-30 mile) zone extending south from Malaysia's present national capital and business hub, Kuaia Lumpur. The MSC is a perfect environment for companies wanting to create, distribute, and employ multimedia products and services.

Companies with MSC Status are entitled to operate tax free for up to 10 years or receive a 100 percent investment tax allowance, and enjoy other incentives and benefits backed by the Malaysian Government's Bill of Guarantees:

- Provide a world-class physical and information infrastructure;
- Allow unrestricted employment of knowledge workers from overseas;
- Ensure freedom of ownership of companies;
- Allow freedom of sourcing capital globally for MSC infrastructure and freedom of borrowing funds;
- Provide competitive financial incentives including no income tax for up to 10 years or an investment Tax Allowance, and no duties on the import of multimedia equipment;
- Become a regional leader in intellectual property protection and cyberlaws;
- Ensure no censorship of the Internet;
- Provide globally competitive telecommunication tariffs;
- Tender key MSC infrastructure contracts to leading companies willing to use the MSC as their regional hub; and
- Provide a high-powered implementation agency to act as an effective one-stop super shop to ensure the MSC meets company needs.

Malaysia's Multimedia Development Corporation (MDC) is driving this bold initiative. The MDC is a fully empowered "one-stop super shop" wholly focused on ensuring the unconditional success of the MSC and the companies operating in it. Applications for MSC Status is handled by the MDC.

Appendix C

Malaysia Industrial Development Authority (MIDA)

Introduction

MIDA is the Malaysian Government's principal agency for the promotion and co-ordination of industrial development in Malaysia. It is the first point of contact for investors who intend to set up manufacturing and related services projects in Malaysia.

The Major Functions of MIDA

The major functions of MIDA are:

- To promote foreign and local investment in the manufacturing and related services sectors.
- To undertake planning for industrial development.
- To recommend to the Minister of International Trade and Industry policies and strategies on industrial promotion and development.
- To evaluate applications for:
  - Incentives provided under the Promotion of Investments Act 1986 for promoted manufacturing activities, tourism, R&D, training institutions and software development.
  - To facilitate new and existing companies in the implementation and operation of their projects, and offer assistance through direct consultation and co-operation with the relevant authorities at both the Federal and State levels.
  - To facilitate the exchange of information and co-ordination among institutions engaged in or connected with industrial development.
  - To enhance MIDA's role of providing assistance to investors, senior representatives from key agencies are stationed in MIDA. These include officials from the Ministry of Finance, the Ministry of Human Resources, the Immigration

Department, the Royal Customs and Excise Department, the Department of Environment and the Department of Occupational Safety and Health.

Appendix D

Federation of Malaysia Manufacturers (FMM)

The Voice of the Malaysian Manufacturing Industry

The Federation of Malaysian Manufacturers (FMM) is Malaysia's premier economic organisation. Since its establishment in 1968, the FMM has consistently led Malaysian manufacturers in spearheading the nation's growth and modernisation. Today, as the largest private sector economic organisation in Malaysia representing over 2,000 manufacturing and industrial service companies of varying sizes, the FMM is the officially recognised and acknowledged voice of the industry.

FMM Vision

To make Malaysian industries globally competitive.

Quality Policies

Total commitment to service excellence and quality.

Government Interaction and Representation

- Government interaction in a wide variety of areas from macro to micro-economic issues relevant to the manufacturing sector.
- Presentation of industry's views and recommendations at annual dialogues with Ministers of International Trade and Industry, Finance, Human Resources, Domestic Trade and Consumer Affairs as well as State Governments and local authorities.

Trade Promotion and Development

- Organising visits from foreign trade and investment delegations, including business meetings with local manufacturers.

- International business networking**,** including signing Memoranda of Understanding with industry organisations in India, China, Italy, Germany, Canada, Taiwan, Belgium, Hong Kong, Australia, Zimbabwe and USA.

Economic and Market Information

- Economic information and consultations on Government policies, incentives, regulations and procedures.
- Compilation of economic statistics on Malaysia and the world, sourced from Government, international economic organisations and FMM surveys.
- Collection of market intelligence, economic reports, foreign trade directories, industry newsletters, environmental and productivity publications, Government gazettes and legislation in the FMM Resource Centre.
- Advisory services from specialist professionals on government policies, regulations, procedures, information and liaison on members' problems.

Appendix E

Global Supplier Program

Vision

Local companies to be world-class suppliers of services and materials.

Mission

To develop and upgrade capability of local companies through training and smart partnership with MNCs.

The First Initiative

The first initiative is training for manufacturing and material suppliers in critical skills, and more importantly to acquire competencies to adopt and use new technologies. The focus is on the quality and productivity. There are three levels of training:

1. Core Competencies (CoreCom) 1

   The first level or Core Competencies involves 9.5 training days spread over a period of 4 months. It covers 13 courses. It is hoped that in future CoreCom 1 would become the entry standards for all suppliers.

2. Intermediate Systems (IS) 2

   The second level known as Intermediate Systems or IS 2 involves 7.5 training days spread over a period of 4 months.

3. Advanced Systems (AS) 3

   The Advanced Systems or AS 3 is the third level which elevates the SMIs into a predictive mode and requires a large investment and commitment form both vendors and buyers.

The Second Initiative

The second initiative is the linkage program where MNCs adopt local companies and "hand-hold" them for upgrading in leadership skills and technology. This initiative calls for investment of time and commitment of both the large corporations and SMIs. The success of this linkage would be apparent when suppliers have attained the level of competency and become global players themselves. Table E-1 shows out the various incentives given out to the respective sectors.

Table E-1: Second Incentive Program

Items	HRDF	45% HRDF + 50% SMIDEC	100% SMIDEC ONLY
Eligibility	You are currently contributing to HRDF	You are currently contributing to HRDF and also fall under SMI category	You fall under SMI category
Definition	Companies with 50 or more full-time Malaysian employees	Definition of SMI : Company with an annual sales turnover of RM 25 million or less for the preceeding year and with full-time Malaysian employees of 150 or less	
Procedures required to obtain funding	SBL Scheme: - Eligible for 85% rebate - Apply to HRDF for approval before CoreCom 1 commences - Use MPSM/SBL/1/93	Provide PSDC with the following documents: 1. Form 24 of the Companies Act 1965 2. Audited Financial Statement of the preceeding year OR Confirmation from your auditors that your annual sales turnover is less than RM25 million 3. Confirmation from Auditors or CEO of the Company that full-time employees is less than 150	
To obtain funding	SBL Scheme (to submit to HRDC after CoreCom 1): - certified true copy attendance list - MPSM/T/93 - receipts of expenses incurred	Note: Companies who are claiming for both funds, PSDC will have to supply form MPSM/ SMIDEC/ 1/ 98 for them to fill up details and then attach this form to the Prolus or SBL forms	Note: No documentation is required

Appendix F

The Second Industrial Master Plan (IMP2)

IMP2 For Year 1996 - 2005

Charts the policies and strategies in order to transform the manufacturing sector into a resilient, broad-based and internationally competitive sector. Two new strategies are introduced:

1. Manufacturing Plus-plus Strategy
    i. Moving along the value chain from assembly-based and low value-added activities towards higher value-added activities, such as:
        - R&D and Product Design
        - Distribution and Marketing
    ii. Shifting the whole value chain to a higher level through productivity-driven growth
        - Utilisation of High Technology (Automation / Robotisation)
        - Increasing Total Factor Productivity (TFP) with emphasis upon knowledge and capital intensive manufacturing, application of new technology, innovation, best management practices and a more efficient utilisation of resources
2. Cluster-based Industrial Development with emphasis upon:
    i. development of competitive industry clusters through integration of key industries, suppliers, supporting industries, critical supporting business services, requisite infrastructure and institutions
    ii. generating backward and forward linkages, domestic spin-offs and value added, and development of domestic SMIs

The Five Strategic Thrusts of the IMP2 are:

- Global orientation - adapt and respond to the changing global environment;
- Enhancing competitiveness - focus on cluster development through the deepening and broadening of industrial linkages and productivity enhancement;
- Improving requisite economic foundation - focus on the development and management of human resources, technology acquisition and enhancing absorptive capacity, physical infrastructure and business support services;
- Nurturing Malaysian own brand manufacturers - increased participation of Malaysian owned companies in the broad range of manufacturing and related activities specifically in the clusters that have been identified to be of strategic importance; and
- Information-intensive and knowledge-driven processes - in manufacturing and related activities such as in R&D, product design, marketing, distribution and procurement.

Eight Industry Groups identified in the IMP2 are:

- Electrical and Electronics
- Chemicals Industry Group
    - Petrochemicals
    - Pharmaceuticals
- Textiles and Apparel
- Transportation
    - Automotive

  - Motorcycles
  - Marine
  - Aerospace
- Materials
  - Polymers
  - Metals
  - Composites
  - Ceramics
- Machinery and Equipment
- Resource-Based Industry Group
  - Wood-Based Products
  - Rubber-Based Products
  - Palm Oil-Based Products (Food)
  - Oil Palm-Based Products (Non-Food)
  - Cocoa-Based Products
- Agro-Based and Food Products
  - Fish & Fish Products
  - Livestock & Livestock Products
  - Fruits and Vegetable
  - Floriculture

The Institutional Framework of the IMP2 comprise of :

- The Industrial Coordination Council (ICC), chaired by the Minister of International Trade and Industry, provides the overall policy guidance and

direction for the implementation of the IMP2. Its members comprise of key individuals from the public and private sector.

- The Industrial Policy and Incentive Committee (IPIC), chaired by the Secretary General of MITI, steers and guide the Industry Task Forces and considers policy proposals from these Task Forces before submission to the ICC. Its members comprise of representatives from the public and private sector.
- Effective 20 February 2001, the existing Industry Cluster Working Groups and Task Forces were merged to form ten Industry Task Forces as follows:
    - Electrical and Electronics
    - Automotive
    - Machinery and Equipment (including Engineering Services)
    - Pharmaceuticals
    - Petrochemicals
    - Palm Oil-based Products (Food) and Oil Palm-based Products (Non-food)
    - Wood-based Products
    - Rubber-based Products
    - Agro-based and Food Products
    - Aerospace

Each Industry Task Force will promote the further development of the industry cluster. The key focus is on enhancing cluster-based industrial development and Manufacturing ++ activities within the industry cluster, with a view to further enhance the competitiveness of the industry cluster. The members of each Industry Task Force comprise of public and private sector from the relevant industry group.

Appendix G

Malaysia Institutes Radical Exchange and Capital Controls

Foreign Exchange and Stock Market Information

On the foreign exchange market, the movement of the Ringgit during the first eight months of 1998 was generally volatile. However, following the imposition of selective exchange controls on 1 September 1998 to insulate the economy from the contagion effects of the global financial crisis, the Ringgit has since 2 September 1998 been fixed at RM1=US$0.2632.

At the start of 1998, the Ringgit as well as other regional currencies came under severe selling pressures as a result of developments in South Korea, Japan and Indonesia as well as market perception that China and Hong Kong SAR might also devalue their currencies to maintain their export competitiveness. These developments were taken advantage of by highly leveraged speculative funds to manipulate both the stock and foreign exchange markets in order to reap quick profits. As a result, the Ringgit depreciated against the United States dollar (US$) to an unprecedented low of RM1=US$0.2049 on 7 January 1998. Nevertheless, following the announcement of Malaysia's favourable external trade position and the introduction of further market stabilisation measures by the Government, against a background of positive external developments relating to resolution of corporate debt situation in South Korea and Indonesia, the Ringgit recovered to close at RM1=US$0.2745 at end of March. This is 6.7% higher than the rate as at end of 1997 (RM1=US$0.2572). Against the composite of major currencies, the Ringgit appreciated by 6.4% as at end of March 1998 when compared with end of 1997.

However, by end of June 1998, the Ringgit weakened to close at RM1=US$0.2395, a depreciation of 12.7% when compared with its closing rate at end of March. The depreciation was attributed to contagion effects of external developments, particularly the political unrest in Indonesia and the weakening of the Japanese yen and economy as well as the difficulty faced by the Japanese Government to effectively overcome the problems faced by its banking sector. Reflecting the contagion impact of the continued weakening of the Japanese yen on regional currencies, the Ringgit touched an intra-day low of RM1=US$0.2312 on 10 July but recovered moderately in line with the movement of the Japanese yen to trade at RM1= US$0.2369 as at end of August 1998. On 1 September 1998, the Ringgit appreciated to RM1=US$0.2618, following the introduction of selective capital control measures to contain speculation on the Ringgit and minimise the impact of short-term capital flows on the domestic economy. The following day the Ringgit strengthened further to RM1=US$0.2632, after which the Ringgit exchange rate was fixed at RM1=US$0.2632 effective 2 September 1998.

Capital Controls

In addition, the Bank Negara Malaysia (Malaysia's Central Bank) also announced other exchange and financial controls, including:

- Except for payments for imports of goods and services, residents are freely allowed to make payments to non-residents only up to RM10,000 or its equivalent in foreign currency.

Previously, this limit was set at RM100,000.

- Investments in any form abroad by residents and payments under a guarantee for non-trade purposes require approval.

- The prescribed manner of payment for exports will be in foreign currency only.

Previously, payment was allowed in foreign currency or ringgit from an external account.

- Domestic credit facilities to non-resident correspondent banks and non-resident stockbroking companies are no longer allowed.

Previously, domestic credit up to RM5 million was allowed.

- Residents require prior approval to make payments to non- residents for purposes of investing abroad for amounts exceeding RM10,000 equivalent in foreign exchange.
- Residents are not allowed to obtain ringgit credit facilities from non-residents.
- Resident travellers are allowed to import ringgit notes up to RM1,000 only and any amount of foreign currencies, and to export only up to RM1,000 and foreign currencies only up to RM10,000 equivalent.
- Transfers between external accounts require prior approval for any amount (previously freely allowed); transfers from external accounts to resident accounts will require approval after 30 September; sources of funding for external accounts are limited to proceeds from sale of ringgit instruments and other assets in Malaysia, salaries, interest and dividend and sale of foreign currency.
- There are also several new rules relating to securities, including that ringgit securities are required to be deposited with authorized depositaries.

Previously, there was no restriction on secondary trading of securities registered in Malaysia.

Appendix H

Smart Card

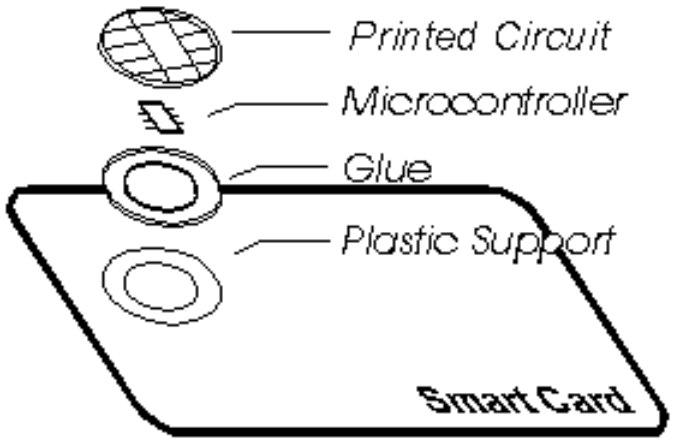
Introduction

The smart card, an intelligent token, is a credit card sized plastic card that is embedded with either a microprocessor and a memory chip or only a memory chip with non-programmable logic. The microprocessor card can add, delete, and otherwise manipulated information on the card, while a memory-chip card, e.g. pre-paid phone cards can only undertake a pre-defined operation.

The self-containment of smart card makes it resistant to attack as it does no need to depend upon potentially vulnerable external resources. Because of this characteristic, smart card are often used in different applications which require strong security protection and authentication.

Figure H-1 shows an overview of the physical structure of a smart card. The printed circuit conforms to ISO standard 7816/3 which provides five connection points for power and data.

Figure H-1: Physical structure of a smart card



It is hermetically fixed in the recess provided o the card and is burned onto the circuit chip, filled with a conductive material, and sealed with contacts protruding. The printed

circuit protects the circuit chip from mechanical stress and static electricity. Communication with the chip is accomplished through contacts that overlay the printed circuit.

Type of Smart Cards

Smart cards are defined according to the type of chip implanted in the card and its capabilities. These is a wide of options to choose from when designing the application system.

Straight Memory Cards

These cards just store data and have no data processing capabilities. These cards are the lowest cost per bit for user memory. They should be regarded as floppy disks of varying sizes without the lock mechanism. These cards cannot identify themselves to the reader, so the host system has to know what type of card is being inserted into a reader.

Protected/Segmented Memory Cards

These cards have built-in logic to control the access to the memory of the card. Sometimes referred to as Intelligent Memory cards these devices can be set to write protect some or all the entire memory array. Some of these cards can be configured to restrict access to both reading and writing. This is usually done through a password or system key. Segmented memory cards can be divided into logical sections for planned multi-functionally.

Stored Value Memory Cards

These cards are designed for the specific purpose of storing value of tokens. The cards are either disposable or rechargeable. Most cards of this type incorporate permanent security measures at the point of manufacture. These measures can include password keys and logic that are hard-coded into the chip by the manufacturer. The memory arrays on these devices are set up as decrements or counters. There is little or no memory left for any other function.

For simple applications such as a telephone card the chip has 6 or 12 memory cells, one for each telephone unit. A memory cell is cleared each time a telephone unit is used. Once all the memory units are used, the card becomes useless and it thrown away. This process can be reversed in the case of rechargeable cards.

Microprocessor Multifunction Cards

These cards have on-card dynamic data processing capabilities. Multifunction smart cards allocate card memory into independent sections assigned to a specific function or application. Within the card is a microprocessor or microcontroller chip that manages this memory allocation and file access. This type of chip is similar to those found inside all personal computers and when implanted in a smart card, manages data in organized files structures, via a card operating system (COS). Unlike other operating systems, this software controls access to the on-card user memory. This capability permits different and multiple functions and/or different applications to reside o the card, allowing businesses to issue and maintain a diversity of “products” through the card.

For example, a debit card that also enables by enabling access on a college campus. Multifunction cards benefits issuers by enabling them to market their products and services via state-of-the-art transaction technology.

Specifically, the technology permits information updates without replacement of the installed base of cards, greatly simplifying program changes and reducing costs. For the card user, multifunction means greater convenience and security, and ultimately, consolidation of multiple cards down to a select few that serve many purposse.

Advantages of Using A Smart Card

Smart Cards are:

- More reliable than a magnetic stripe card
- Can perform multiple functions in a wide range of industries
- More durable and much more secure than a magnetic stripe card
- Constantly evolving to accommodate technological advancements
- Can store a hundred times more information than a magnetic stripe card
- Compatible with portable electronic devices such as phones, personal digital assistance (PDAs), and personal computers (PCs)

Mifare Smart Card

The contactless Mifare smart card is the data carrier of Philips/Mikron's Mifare system, especially designed for electronic ticketing in public transport and related applications.

It is so called Remote Coupling Smart Card based on the Mifare standard chip MF1 S50, shaped like a standard credit card according to ISO dimensions, with a read/write

distance up to 10cm. With this fast and easy card handling, high user convenience is attained.

Applications:

- Public Transport
- Access Control
- Retail Parking
- Customer Loyalty
- Electronic Purse
- Gambling
- Ski Ticketing
- Electronic Keys
- Road Toll
- ID Card

It has become the de facto standard for the Municipal Transit industry

Specification

- Operating Frequency 13.56 MHz
- Standard ISO 10536-1
- Dimensions 85.6x54.0x0.76
- Operating Temperature –20^{o}C to 50^{o}C
- Storage Temperature –20^{o}C to 50^{o}C
- Humidity 90%
- Material PVC

- Surface finish white, matt, gloss
- Operating distance (typ.) up to 100mm
- Card IC Mifare 1CS50 SLE44R35

Appendix I

Budget 2002 –Incentive For ICT

Introduction

Budget 2002, which was presented on October 19, 2001, is a boon to the information and communication technology (ICT) industry with many cash and non-cash incentives directly and indirectly related to the industry.

Here is a summary of the incentives:

ICT Development Plan

In line with the national ICT agenda which aims to create a knowledgeable, informed and ICT-savvy society, the Government has allocated RM 112.7 million to implement the electronic government flagship project; RM 72.3 million for smart school initiatives; RM 20 million for telemedicine; RM 86.3 million for smart card; and RM 9.5 million for integrated applications.

Apart from this, RM 487.67 million will be allocated to increases the computerization program in ministries and departments and RM 205.5 million for computerization of schools.

Smartcard and its related equipment will be given sales tax exemption to enable financial institutions prove the appropriate infrastructure, including related equipment such as loading devices and card readers that are needed for multipurpose smartcard usage.

Borderless Marketing Strategy

Tax on incomes derived from offshore trading through Web sites in Malaysia will be reduced from 28 per cent to 10 per cent for a period of five years in order for ICT to be further used in trade and to establish Malaysia as an attractive business location for

international trade, Cost incurred in the development of Web sites for businesses will be granted an annual deduction of 20 per cent for a period of five years.

Venture Capital Development

RM 100 million out of the RM 500 million venture capital fund managed venture capital fund managed by Government-owned company Malaysia Venture Capital Management Bhd (MAVCAP) will be outsourced to for local venture capital companies while the balance of RM 400 million will be venture investments in venture capital companies.

Small and Medium-sized Enterprises (SMEs)

A grant of RM 5 million is provided for the development of RosettaNet, Which is an Internet-based common order code that enables SMEs to participtate in the Global Supply Chain Management Network for online and real-time procurement, production and logistics management.

In addition, expenditure incurred by multinational companies in pioneering the RosettaNet program for the SMEs will be given income tax deduction.