CHAPTER 2 : E-BUSINESS AND OUTSOURCING

Chapter 2 first provides an overview of the e-business outlook, addressing the e-business trends in general, the driving factors, the benefits and advantages as well as the limitations. In the second part of this chapter, outsourcing is being defined and discussed. It looks at the types of outsourcing, giving comparison of all-or-nothing and selective outsourcing. After which there are the reasons, advantages, driving factors and the trend of outsourcing. The last section presents the characteristics of successful e-business infrastructures.

2.1 The E-business Outlook

Over the past two decades, business has changed dramatically in response to powerful social, economic, and political forces that brought about globalisation, increased competition, and technological advances. Old ways of working were replaced by new ones, new businesses appeared and prospered, and companies merged, outsourced, and formed strategic alliances to meet these challenges. In this new world of business, it is crucial for organisations to be able to adapt to constant changes in order to be successful.

One of the significant changes that began in the late 1990s promises to bring a further redefinition to the terms of competitive advantage. Originally an electronic tool for the rapid sharing of information between scientists in academia and the military, the Internet and private networks allowed organisations to share information inexpensively across organisations, further increasing productivity and enabling the creation of new relationships with customers, distributors, suppliers, and partners.

This latest development shows no signs of slowing down. In the past four years, the number of Internet users has grown from 3 to 50 million, and by the year 2000, it was expected to reach 100 million. The possibilities inherent in Electronic Business cannot be ignored (PricewaterhouseCoopers 1998).

Although relatively few companies have yet fully entered the E-Business arena, the most commonly cited figures indicate that, by the year 2000, revenues coming from the Internet to financial services companies will be US$23 billion, those companies engaged in business-to-business uses of the Internet will gain US$66 billion, and those selling to consumers will realise US$7 billion (PricewaterhouseCoopers 1998).

E-Business may still be new in today's world, it is clearly the future. It is redefining commerce, transforming industries, and eliminating the constraints of time and distance. The opportunities are infinite, the potential rewards vast. It is only a matter of time when that future will arrive.

Business evolution is a continuous process, and E-Business has clearly emerged as the next step in that evolution. It will accelerate the marketing, buying, and selling of all kinds of products and services. E-Business will grow by orders of magnitude as more and more people become connected and experience its advantages. More important for the future, however, is the dramatic impact E-Business can have on business performance by boosting revenues, cutting cycle times and cost, enhancing customer service, and broadening market share.

If organisations can capture and leverage the potential of E-Business, they will achieve competitive advantage in an era of globalisation, deregulation, and constant technological change that makes it ever more difficult to increase profitability and shareholder value.

While there are success stories, it is admittedly going to prove difficult for others to recognise and then leverage potential opportunities because the global electronic marketplace is very large, diverse, and changing rapidly. Moreover, there are risks that have to be addressed, including legal and regulatory issues such as conflicting jurisdictions, taxes, and intellectual property rights and security issues such as data confidentiality, privacy, fraud, and industrial espionage.

E-Business is a business opportunity to be seized carefully. Lessons learned from past experiences suggest that one must move ahead holistically. E-Business must be integrated into the organisation so that it meshes with the vision. One must develop an E-Business strategy that aligns technology with the corporate strategy. Vision, integration, holistic thinking are said to be the old verities fit the new world of E-Business.

Gartner group estimates that 25% of consumer commerce and 70% of business-to-business transactions will be "internet-involved" by the year 2005

There must be factors that encourage or motivate organisations to embark on e-business. A few of the business drivers for e-business initiatives (Qunara) are stated as follows:

- Businesses want and need faster deployment of new applications as well as timely upgrades to their current applications to stay competitive
- The ability to amortise the cost of the e-business solution by paying monthly or usage based fees
- Provide better service to existing customer, and access to new market channels and customers
- A single point of accountability, not having to deal with multiple vendors

On the other hand, the technology drivers for e-business initiatives (Qunara) are:

- Reliability – elevating the status of an enterprise website to "mission-critical" means that 100 percent network availability is essential
- Scalability – the solution needs to grow with demand and more complex applications
- Performance – a well designed network architecture and high bandwidth availability are critical to the success of an e-business venture

- Security – a comprehensive Internet security infrastructure integrating security with e-business applications protects the integrity of the applications and data

The benefits of e-business to organisations are many fold (Turban, Lee, King & Chung 2000) and among those for an organisation are:

- E-business expands the marketplace to national and international markets. An organisation can easily and quickly locate more customers, the best suppliers and the most suitable business partners worldwide, with minimal capital outlay.
- E-business decreases the cost of creating, processing, distributing, storing and retrieving paper-based information. The cost of payment is also lower.
- Ability for creating highly specialised businesses. For example dog toys are now being sold in a specialised www.dogtoys.com.
- Inventories and overhead could be reduced as e-business facilitates pull-type supply chain management. In a pull-type system, the process starts from customer orders and uses just-in-time (JIT) manufacturing.
- The pull-type processing enables expensive customisation of products and services which provides competitive advantage to its implementers.
- The time between the outlay of capital and the receipt of products and services.
- Telecommunication cost is lowered as the Internet offers a much cheaper means of communication.
- Other benefits include improved image, improved customer service, new-found business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs and increased flexibility.

Furthermore, benefits for customers (Turban, Lee, King & Chung 2000) are :

- Transactions could be carried out at any time and from anywhere.
- Consumers have more choices of vendors, products or services.
- Cost of products becomes lower with the elimination of the middle-men.
- Product information could be obtained much more quicker from the Internet than from the conventional means.

On the other hand, there are limitations in e-business. The technical limitations (Turban, Lee, King & Chung 2000) are:

- There is lack of system security, reliability, standards and some communication protocols.
- There is insufficient telecommunication bandwidth.
- The software development tools are still evolving and changing rapidly.
- It is difficult to integrate the Internet and e-business software with some existing applications and databases.
- Vendors may need special Web servers and other infrastructures, in addition to the network servers
- Some e-business software might not fit with some hardware, or may be incompatible with some operating systems or other components.

Other than the technical limitations, there are also the non-technical ones (Turban, Lee, King & Chung 2000) which are stated below:

- Cost and justification – It is very costly to develop e-commerce in-house and mistakes due to lack of experience may result in delays.
- Security and privacy – These are especially important in the B2C area. It is a difficult task to convince the customers that on-line transactions and privacy are in fact very secure.
- Lack of trust and user resistance – Customers do not trust an unknown faceless seller, paperless transactions and electronic money.

- Many legal issues are as yet resolved, and government regulations and standards are not refined enough for many circumstances
- There are not enough support services like copyright clearance centres for e-business transactions.
- Accessibility to the Internet is still expensive and / or inconvenient for many potential customers.

Besides these limitations, organisations into e-business are also facing challenges. Undoubtedly the Internet has changed everything. It has effectively washed away the boundaries between the inside and outside of an enterprise. Customer's expectations and standards of what to expect from their suppliers have been raised to unprecedented levels, be it business-to-business (B2B) or business-to-consumer (B2C) (Tanning).

Today's e-business technical demands will likely exceed a single firm's IT capabilities. The complexity and rapid pace of change in e-business will require a level of scalability and reliability to cover unexpected surges in customer demand, all in a 24x7x365 environment. A level of ubiquity will need to be achieved to reach all segments of potential markets; multiple channels, processes, and systems will all need to function with an unprecedented level of integration. All of this will need to be delivered at Internet speed. The IT role in the shift to e-business is critical. An infrastructure that enables a consistent e-business presence and e-brand will be a major differentiator and success factor (Tanning).

IT services model today does not effectively leverage human capital and infrastructure because it is caught up in managing routine operational tasks such as the data centre management, software upgrades, and e-mail. IT professionals must re-deploy their human capital, re-focus their efforts on continuous value optimisation, and spend less time and resources on routine IT tasks (Tanning).

The advent of the Internet brought with it a huge requirement in terms of providing for underlying Internet infrastructure. Faced with the need to establish a presence on the Web rapidly, organisations found that they lacked not only the know-how but also physical space in which to install and managed their servers. They also realised that monitoring systems and providing technical personnel on a 24x7 basis were daunting challenges. More importantly, however, providing for the network scalability necessary to address peak periods of unpredictable and highly variable web demand became prohibitively expensive for many companies. Although some companies have opted to address these requirements in-house, to maintain complete control over their Internet infrastructure, the pressures of provisioning IT infrastructure have led others to consider outsourcing e-business infrastructure. Companies wanting to engage in e-business find it increasingly difficult and expensive to acquire today's advanced e-business capabilities and keep them updated (Intel 2000).

Based on some of these limitations and challenges, predominantly those related to costs, skills and crucial e-business requirements, e-business organisations would have to search for a viable solution and/or a workaround, in order to remain competitive in this new landscape. The solution would be to outsource the IT infrastructure and services to a third party specialist who could provide the required infrastructure and services with a higher quality at a fraction of the cost.

2.2 Outsourcing

Definition

Outsourcing is defined (Whatis.com) as follows:

> *Outsourcing is an arrangement in which one company provides services for another company that could also be or usually have been provided in-house. Outsourcing is a trend that is becoming more common in information technology and other industries for services that have usually been regarded as intrinsic to managing a business. In some cases, the entire information management of a company is outsourced, including planning and business analysis as well as the installation, management, and servicing of the network and workstations. Outsourcing can range from the large contract in which a company like IBM manages IT services for a company like Xerox to the practice of hiring contractors and temporary office workers on an individual basis*

IT outsourcing can also be defined as the third-party management of IT assets, people and/or activities to required performance levels (Lacity, Willcocks and Feeny, 1997).

Types of Outsourcing

Outsourcing decisions can be categorised into 4 groups based on their scope (Lacity, Willcocks and Feeny, 1997) as follows:

1. *Total outsourcing* – The decision to transfer IT assets, leases, staff and management responsibility for delivery of IT services from internal IT functions to third-party vendors which represents at least 80 per cent of the IT budget.

2. *Total insourcing* – The decision to retain the *management* and *provision* of at least 80 per cent of the IT budget internally after evaluating the IT services market. An organisation retains responsibility

for the delivery of IT services, while vendor resources are brought in to supplement internally-managed teams.

3. *Selective sourcing* – The decision to source selected IT functions from external providers while still providing between 20 and 80 per cent of the IT budget. The vendor becomes responsible for delivering the result of the selectively outsourced IT activities, while the organisation remains responsible for delivering the result of the insourced IT activities.

4. *De facto insourcing* – The exclusive use of internal IT departments to provide IT products and services which arise from historical precedent, rather than a reasoned evaluation of the IT services market.

The Problems With All-or-nothing Outsourcing

During 1991-1996, 40 US and European organisations were included in an investigation to find out whether IT outsourcing delivered its promise. Out of the 62 IT sourcing decisions made in these organisations, 14 resulted in total outsourcing and 15 in total insourcing (Lacity and Willcocks, 1996).

In general, the study showed that organisations engaging in total outsourcing and total insourcing experienced significant difficulties a few years into the contract. Among the problems were increased IT costs and poor service levels due to ill-defined 'relational' contracts, and inflexibility in adapting to both business and technical changes (Lacity, Willcocks and Feeny, 1997).

The latter problem stated above stems from the distinctive nature of IT. Unlike other functions, IT cannot be easily handed over to a vendor, as IT is different in a number of ways as follows (Lacity, Willcocks and Feeny, 1997):

1. Information technology is *not* a homogeneous function, but comprises a wide variety of IT activities. The value of certain IT activities, such as accounting systems, lies in the cross-functional integration of business processes. This hinders outsourcing because IT cannot easily be

isolated. Outsourcing such activities can hinder business performance because the vendors lack an understanding of the implications IT has for other business processes.

2. IT capabilities continue to evolve at a dizzying pace; thus, predicting IT needs past a three-year horizon is wrought with uncertainty. Many mega-deals are usually contracted around current technologies with vague references to future technologies. Most companies find that by the third year into an outsourcing deal, the original contract actually hinders their adoption of new technologies.

3. There is no simple basis for gauging the economics of IT activity. The underlying economics (price/performance ratio) shift so quickly in the field of IT that senior executives find it difficult to evaluate the long-term costs of outsourcing.

4. Economic efficiency has more to do with IT management practices than inherent economies of scale. Economies of scale in IT occur at a size achievable by many medium-sized and most large-sized companies. Vendors cut costs based more on management practices than inherent economies of scale. It was shown that IT manages could duplicate vendors' way of cost reduction through certain mechanisms if they are empowered by senior executives to overcome user resistance.

5. Large switching costs are associated with IT sourcing decisions. It is not always possible for management of IT companies to protect itself against poor sourcing decisions. Techniques used by other business operations are often inapplicable or ineffective for IT outsourcing, particularly when a total outsourcing approach is taken.

In short, those who approach outsourcing in all-or-nothing terms either incur the great risks involved in total outsourcing, or forego the potentially considerable benefits of selective sourcing by committing to a policy of total insourcing.

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Selective Sourcing

Of the 62 sourcing decisions mentioned in the previous section, 33 resulted in selective sourcing. Research shows that successful organisations carefully select which IT activities to outsource, rigorously evaluate vendors, tailor the terms of the contract, and carefully manage the vendor. A set of frameworks could be used for thinking through sourcing decisions (Lacity, Willcocks and Feeny, 1997):

(A) IT sourcing options

In general, outsourcing contracts can be categorised based on two dimensions: purchasing style and purchasing focus. Two purchasing styles are identified as 'transaction' and 'relationship' while 'resource' and 'result' are the two purchasing focus options. Combining purchasing style and focus as shown in Figure 5, four distinct ways of using the external IT market emerge. Right in the core is the in-house arrangement which plays a critical role in all forms of contract.

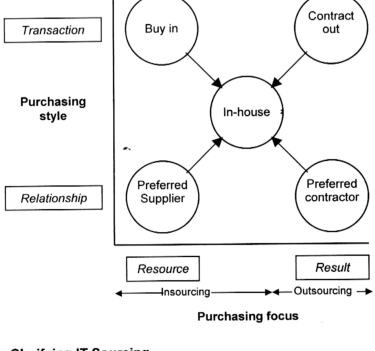

Figure 5 : Clarifying IT Sourcing

'Buy in', 'Preferred supplier' and 'In-house' options are collectively referred to as 'insourcing' options because in all of them in-house management retains full visibility, and control of the IT activity. 'Contract out' and 'Preferred contractor' options are referred to 'outsourcing' options because in each of them in-house management pass control of the IT activity to the external vendor.

(B) Business considerations

Selecting which IT activities to outsource and which to retain in-house requires treating IT as a portfolio. Successful sourcing requires a company to distinguish between the contribution that an IT activity makes to business operations, and its impact on competitive positioning, as depicted in Figure 6.

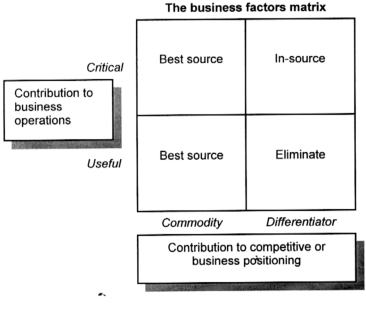

Figure 6 : Selecting IT Outsourcing Candidates

By mapping each IT activity's contribution to business positioning and business operations, four categories of potential outsourcing candidates, namely the Critical Differentiators, Critical Commodities, Useful Commodities and Useful Differentiators, emerge.

1. *Critical differentiators* – IT activities which are not only critical to business operations, but also help to distinguish the business from its competitors. These activities should be managed internally.

2. *Critical commodities* – IT activities which are critical to business operations but fail to distinguish the business from its competitors. There is no benefit from over-performance in these activities. Due to the risks involved for the business, the policy is 'best source', which requires the external vendors to meet stringent requirements for quality and responsiveness at a low price.

3. *Useful commodities* – the myriad IT activities that provide incremental benefits to the business, but fail to distinguish it from its competitors. Useful commodities are the prime candidates for outsourcing. External vendors are likely to have achieved low costs and prices through standardisation. More internal management time can also be freed up to focus on more critical activities.

4. *Useful differentiators* – IT activities that differentiate the business from its competitors, but in a way that is not critical to business success. These activities are the 'nice-to-haves' and should be eliminated, not outsourced.

(C) Economic issues: comparing vendor offerings with in-house capabilities

It is not always true that a vendor can reduce the IT costs of organisations because the vendor possess inherent economies of scale that eluded internal IT departments. Restating one of the distinctive features of IT presented earlier, (i) economies of scale occur at a size achievable by many medium to large organisations, and (ii) vendors cut costs based on efficient management practices.

Senior executives of IT companies can therefore make better decisions using the Economic Factors Matrix as shown in Figure 7below:

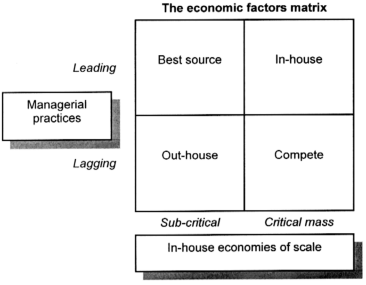

Figure 7 : Comparing vendor offerings and in-house capabilities

In-house implementation is the way to go provided the internal IT department has reached critical mass and had adopted leading management practices. It is unlikely a vendor, who looks for a 15 to 20 per cent profit, will be able to reduce costs further. Internal IT departments merely need to cover costs.

If the in-house IT department possesses theoretical economies of scale but has failed to implement efficient managerial practices, internal IT managers should be allowed to compete against vendor bids. This competition serves to empower IT managers to overcome user resistance to the idea of reducing costs.

With sub-critical mass but efficient practices, it is quite possible a vendor's size advantage may be negated by their need to generate a profit. Best source is recommended in this case where the market is tested to determine the economic validity of outsourcing.

If the internal IT department is of sub-critical mass and has failed to adopt efficient practices, there is a strong economic justification for outsourcing.

(D) Technical considerations: selecting an appropriate contract

In practice, appropriate contracting depends on several important technical considerations. Senior executives with a sound understanding of the specific service requirements associated with the outsourced technology can avoid signing flimsy contracts which strongly favour vendors. The technical considerations are:

1. *Technical maturity* – The degree of technical maturity determines a company's ability to precisely define their requirements to vendors.
2. *Degree of integration* – The degree of integration with other business processes has influence over the risks of outsourcing, both increasing in the same direction.

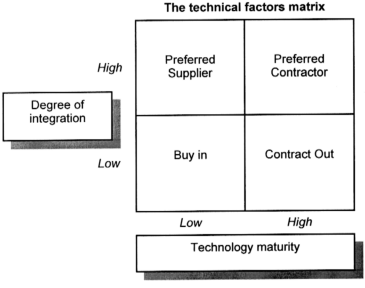

Figure 8 : Selecting an appropriate contract

Senior executives can select the appropriate contract by referring to the Technical Factors Matrix depicted in Figure 8 above, after considering both the degree of integration as well as technology maturity.

Reasons for Outsourcing

IT is outsourced for many reasons, ranging from a bandwagon effect from the subject's high profile to cost pressures due to competition and economic recession (Lacity, Hirschheim and Willcocks, 1994). However, industry watchers attribute the growth of the IT outsourcing market to two main phenomena. First, interest in IT outsourcing is largely a consequence of a shift in business strategy. As a result, many companies have recently abandoned their diversification strategies, once pursued to mediate risk, to focus on core competencies. Senior executives have come to believe that the most important sustainable competitive advantage is concentrating on what an organisation does better than anyone else and outsourcing the rest (Pralahad and Hamel, 1991). As a result of the focus strategy, IT came under scrutiny, where the question of whether IT is a competitive weapon or merely a utility was asked. Senior executives frequently view the entire IT function as a non-core activity, and reason that IT service vendors possess economies of scale and technical expertise to provide IT services more efficiently than internal IT departments (Lacity and Hirschheim, 1993; 1995).

The second reason for the growth in outsourcing is uncertainty about the value delivered by IT. In many companies, senior executives perceive that IT failed to deliver the promise of competitive advantage propagated in the 1980s (Kettinger, Grover, Guha and Segars, 1994). Consequently, many senior executives view IT as a necessary cost to be minimised.

A Dataquest survey of IT executives (Sterling Commerce 2001) revealed that the top three reasons to outsource today are:

- To improve service levels
- To focus on core competencies
- Enhance IT effectiveness

According to analysts, the cooling economy may prompt firms to outsource more IT for cost cutting reasons (Dash 2001). Though an outsourcing deal does not automatically guarantee cost savings, users will examine their IT budgets more closely and shirt their priorities to put cost cutting among the top drivers for any technology decisions they make, according to Lew Hollerbach, an analyst at Aberdeen Group in Boston.

According to Peter Bendor-Samuel, CEO of The Outsourcing Center, a Dallas-based consultancy, in boom times, outsourcing tends to be focused on time-to-market issues, and in down times focused on cost savings and restructuring.

Advantages of Outsourcing

There are many advantages of IT outsourcing (Hurwitz Report, 2001). Many organisations are turning more to outsourcing their IT infrastructure for the following reasons:

- Gaining access to external expertise. Enterprise customers have experienced significant difficulty with attracting and retaining necessary technical expertise amidst an ever-evolving technological landscape. As a matter of course, leading outsourcers need to maintain their competitive edge by recruiting and retaining top technical talent. By turning to outsourcers capable of retaining leading-edge talents, customers can gain the benefits of access to such talents, including higher performance, availability, and security, without having to attract, retain and train those talents themselves.

- Achieving cost savings or avoiding high up-front expenditures. Outsourcing e-business infrastructure can result in cost savings or deferment of costs depending on whether or not an organisation already possesses sufficient staff and infrastructure scalability on its own. If not, the prospect for avoiding significant up-front expenditures for such items as server infrastructure, network bandwidth and

required personnel can be significant. Outsourcing can also result in reduced total cost of ownership, but customers' experiences in this regard can vary a lot. Whereas some companies have found they can provide their own hosting capabilities at a cost lower than that of a service provider, others have found significant savings in the outsourcing approach (in some cases due to the elimination of large bucket of start-up expenses). Outsourcing also provides companies with the ability to perform a "proof-of-concept" for proposed web solutions prior to incurring all of the necessary up-front expenditures for floor space, infrastructure and personnel.

- Enjoying increased reliability and scalability. Many companies engage hosting providers as a way to gain access to reliability and scalability that they cannot provide on their own. Most hosting providers can provide quite well for this scale, freeing the customer from concerns about data centre floor space and network bandwidth. Hosting providers can provide a higher degree of reliability than an enterprise could on its own, depending on the level of sophistication of the customer and its service provider.

- Allowing the enterprise to concentrate on core competencies. Few companies actually use their ability to operate their Internet infrastructure effectively to compete. Failure to do so, however, can have significant consequences, not only in terms of immediate loss of revenue, but also in terms of long-lasting, negative impressions of the part of potential customers. Outsourcing can allow the management team at companies that cannot claim managing infrastructure as a core competence, to concentrate on value-adding activities that provide for competitive differentiation.

- Freeing up technical resources. Many existing IT organisations are primarily concerned with operational technology, often at the expense of new initiatives that could contribute to achieving business results.

Outsourcing can allow organisations to redeploy scarce resources on new solutions that contribute to the enterprise's business mission. Such benefits could be characterised as Return On Opportunity (ROO), in the sense that they allow the enterprise to exploit new business opportunities rather than concentrating on cost savings alone. Some investments in technology or services provide the enterprise with the potential to exchange the value of customer relationships – these benefits can easily be obscured using traditional methods.

- Contributing to greater business agility and flexibility. Since the advent of the "virtual organisation" operating model and the celebration of Nike's emergence as a world leader while eschewing the traditional vertical integration approach, the ability of outsourcing to enable a highly flexible and responsive operating style has been well-chronicled. Many organisations have found that internal IT infrastructures and skill sets can be difficult to develop, which can create obstacles for dealing with business change. Outsourcing can help organisations achieve flexibility in their e-business strategies if that can manage outsourced relationships adroitly.

- Achieving more rapid time-to-market. Establishing a robust Internet infrastructure can be a time-consuming proposition. This starts with securing the necessary floor space and server infrastructure, but also includes the technical talent necessary to operate the infrastructure once installed. All of these steps can incur significant time lags that can compromise time-to-market. Another category of potential delay lies in provisioning new infrastructure capacity when needed. Many e-business outsourcing suppliers have emphasised rapid response to such requests, although their ability to do so still varies significantly across suppliers. In any case, achieving more rapid time-to-market has been a primary driver behind e-business outsourcing and a consistent selling point for e-business outsourcing suppliers.

In other unrelated researches, benefits of outsourcing for companies are found to be refocusing resources on core activities, reducing IT costs by 10 to 50 per cent and increasing IT service levels (Krass, 1990, Rochester and Douglas, 1990).

In an article entitled "The Build/Buy Battle" published in the CIO Magazine (1st December 2000), it explained that, in general, companies outsource when they expect to receive one or more of the following benefits:

- Lower cost, because the outsourcing vendor can produce software or operate systems more cheaply than the company can.
- Increased flexibility, allowing the company to add capacity or reassign personnel as demand moves up or down.
- Faster speed in development, leading to reduced time to get a product or service to market.
- Some form of accounting advantage — by shifting resources off the balance sheet, the company can sometimes report a better Return on Assets (ROA).

In a survey of 150 American and European companies released in March 2001 by the Conference Board in New York, cost cutting was the top benefit of outsourcing cited by 39% of respondents. 38% indicated having access to experts, which came in as the second benefit.

Drivers of Outsourcing

On the supply side, major drivers of market growth (IDC) include the following:

- Large service providers' capacity and improved data centre infrastructure. Service providers have been rapidly increasing the available bandwidth in their data centres and to the Internet. They have also enhanced the scalability, reliability, and availability of their systems and services, as reflected in more demanding service level

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agreements (SLAs). Major HSPs are tripling data centre capacity. Most new data centres will be "next-gen," featuring built-in utilities for storage and content distribution networks and improved network management to support end-to-end SLAs.

- Product/service development. Service providers have made significant headway in defining and pricing flexible and well-designed offerings that expand and clarify customer options. Particularly in the shared-server segment, packaged offerings bundle elements into a complete solution, making adoption and use much easier.

- Managed and professional services. Complex Web hosting providers that serve the Fortune 500 e-commerce market have been forced to evolve their managed and professional service offerings to meet customer needs. Testing labs, performance optimisation tools, customized facilities, and application integration are just some of the solutions being offered by leading providers.

- Pricing. Web hosting service offerings cover a wide range of price points, making it easier for customers to select appropriate solutions and understand the value proposition. In some segments, competition has led to lower entry-level prices. In general, however, more articulated pricing has fuelled demand, which has been relatively elastic, and facilitated upgrades and up-selling.

The Outsourcing Trend

Having defined what outsourcing is and examined the benefits as well as the drivers of outsourcing, it is worthwhile looking at its trend in general. Research figures from IDC indicate the global trend is heading towards outsourcing, with Asia-Pacific leading the fastest growing regions in this area, increasing by 20% annually between 2000 and 2005. The USA remains the biggest market

for IT outsourcing, accounting for some 44% of global spending by 2005, as forecasted by IDC (Then 2001).

The Outsourcing Trend in Malaysia

The trend in Malaysia however is different. It is found that companies in Malaysia mainly engage in partial outsourcing (Then 2001). And it appears that Malaysian companies grudgingly turn to outsourcing partners not for cost savings but more as a stop-gap measure in the face of a limited skilled resources and know-how. A typical example is that companies outsource only their websites.

In spite of that, Atma Singh, IS director of STE-CCR Solution Malaysia, believes that outsourcing is becoming a big trend in Malaysia due to highly volatile labour market. Staff leave when lured by better offers and companies may be caught off guard in the midst of a big project. He opines that companies should outsource the critical aspects of its IT services because existing in-house resources should be directed or focused on the core business, while leaving technology operations and management to the experts

The lack of IT outsourcing in Malaysia is also believed to be the result of some market inhibitors (Then 2001). In-house IT staff are found to be worried of being absorbed by outsourcing partner into its operations, thus losing their identities and seniority, worse still made redundant. Outsourcing has a human element entwined in it. For all the efficiency, productivity and cost savings that may be gained by an organisation, sitting on the other end of the scale is the morale of existing staffers that may be affected by a decision to outsource IT functions

Due to the need to maintain control over IT operations, some companies do not wish to outsource "from A to Z" but continue to maintain the systems, for fear they would be at the mercy of the outsourcing vendors

One of the fears that lurks in the decision makers' minds is that the outsourcing vendors may not be competent and not serious in doing business well. Not only the money is not well-spent, the end product is of little or no use for the company.

Outsourcing is also regularly dismissed as costly and risky by certain companies. For instance, a multinational electronics manufacturing facility in Penang performed a study on the cost-effectiveness of outsourcing its IT operations a year ago. It found outsourcing costs two to three times more than maintaining the operations in-house. Furthermore, IT outsourcing was found inappropriate since most of its IT applications are proprietary and highly specific to its business.

Nonetheless, there are also "promoting" factors for IT outsourcing in Malaysia (Then 2001). With the rapid advent of the web as a medium for doing business, IT operations are suddenly met head-on with unprecedented requirement in the form of websites and various associated applications, all entailing relatively new technology and skills

Coupled with the pressure of faster time-to-market and an avalanche of user requests, organisations which have hitherto written off outsourcing is gradually warming to the very idea of accepting help from outsiders, as was the case with a major insurance company in Malaysia, which outsourced quite a number of their IT applications, mostly for their backend operations (Then 2001).

As explained earlier, lack of in-house expertise or resources / skills, as well as the inability to keep up with the latest trends are also the motivating factors for outsourcing in this country.

Some companies choose to outsource as they see the opportunity to learn new developments and best practices, which they would otherwise have no financial or technical capabilities to do so.

2.3 Infrastructure Characteristics for a Successful E-business

An e-business infrastructure capable of meeting the most stringent business requirements requires the following major factors that can most severely affect access to Internet services and the flow of information (EMC 2000):

- Availability – defined as uptime of database, storage, and network systems as perceived by end-user application availability. Uptime is measured in terms of the tangible and intangible costs associated with planned or unplanned downtime, including direct revenue loss, market capitalization, employee downtime, time-to-market, and more. Lack of service availability is a most damaging and highly visible barrier to business success and customer satisfaction.
- Disaster Protection – defined as the prevention of data loss, including the amount of data loss as well as the overall probability of data loss. Disasters can occur which can lead to loss of data, which can be as damaging as lack of availability to overall quality of service.
- Scalability – defined as the ability to grow the business without any one component of infrastructure being a limiting factor. Scalability is measured in terms of how quickly and adequately infrastructure can grow while maintaining acceptable end-user performance and availability. It can have a great impact on the secure, responsive access to mission-critical services.
- Security – ensuring confidentiality and integrity of data for e-business applications by defining and deploying security policies that protect against threats including data destruction, service interference, data modification or replacement, false representation, repudiation, unauthorized transactions, or misuse. It can also have a great impact on the secure, responsive access to mission-critical services.

This means that iDCs should ensure their infrastructure and services fulfil most, if not all, of the factors mentioned above, in order to provide a peace of mind to their customers who depend on their outsourcers to carry out e-business successfully. Translating the above factors into the characteristics

an iDC should have, Exodus iDC emphasises on three characteristics, namely reliability, availability and performance, while Hewlett-Packard names, among others, consistent and extensible environment, physical and logical security and bandwidth on demand as the typical ones (HP.com).

In order to construct an Internet Data Centre that can meet the challenges of the new market, there are three basic areas of data centre definition and development (Intel 2000):

- Facilities: including building, security, power, air-conditioning and room for growth
- Internet connectivity: performance, availability and scalability
- Value-added services and the resources to support their delivery: service levels, technical skills and business processes.

For the purpose of this study, the following factors are used:

- Availability – here it is taken to also include the aspect of performance, recovery and reliability, other than uptime.
- Security – includes physical, system, network, commerce and data security.

As customer satisfaction is one of the crucial aspects in the service industry, this study has incorporated the following two factors:

- Service Support – this includes the various levels of after-sale support like first-level call centre support and performance reporting to the customers.
- Responsiveness – one of the dimensions of service quality, defined as 'willingness to help customers promptly' (Fitzsimmons 2001) – this addresses how quickly the iDCs respond to the customer complaints and to resolve the customers' problems.