

**ANALYSIS OF TECHNOLOGY INTERMEDIARIES AND
THEIR IMPACT ON STRATEGY**

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B.A. Management/CIS
Hofstra University, 1983

SUBMITTED TO THE ALFRED P. SLOAN SCHOOL OF MANAGEMENT IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION

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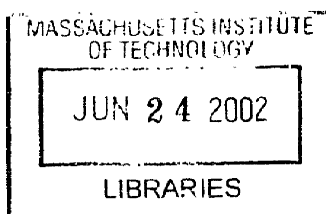
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ABSTRACT

This thesis is part of a structured thesis and one component of a broader three-year project. A Fortune 500 organization contracted MIT to study the dynamics and impact of disintermediation in the information technology services (ITS) industry.

The entire project analyzes the effects of disintermediation for all players in the information technology marketplace including customers, hardware and software developers and firms that provide services related to information technology. This thesis will evaluate some of the most important strategic factors that have played a significant role in defining the market players in the industry, examine key organizations in this industry today and focus on the dynamics that have served to promote disintermediation in the information technology industry.

In the first half of the thesis, the historical development of industry leading firms that have been played a central role in the evolution of intermediaries and intermediation will be discussed to better understand:

- The transition many of these firms have made over the last forty years
- How these changes have impacted the industry overall as well as hardware development-focused firms in particular
- The market dynamics that will have significant impact of the strategies of these firms in the future

Further some of the most significant current information technology service organizations will be discussed to provide a current evaluation of the firms that hold significant market power in this industry as intermediaries.

In the second half of this thesis, an important and disruptive new business model, the Managed Service Provider, or MSP, will be discussed in order to illustrate how the changing dynamics of the information technology service industry could significantly impact the strategy of all firms in the high-tech computing industry. Frameworks for understanding how and why these new firms emerge will be discussed and recommendations will be made to technology firms on how to think about defining their strategies in light of these realities and frameworks.

Thesis Supervisor: Gabriel Bitran

Title: Deputy Dean

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- Paul S. Brady

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Table of Contents

1.0 Executive Summary	7
2.0 The Evolving Relationships of Complementors and Intermediaries	10
2.1 Overview of IT Industry	10
2.2 Complementors / Intermediaries In High-Tech Computing	13
2.3 Historical Evolution Of Technology Complementors & Intermediaries	21
2.4 The Evolution of the Players and the Effects on Supply and Demand	28
3.0 Analysis Of Current IT Intermediary Marketplace	31
3.1 Overview of Market Players	31
3.2 xSP's: New Service Models That Leverage Technology – Not People.....	36
3.3 Successful Service-Oriented Organizations In The Technology Industry	37
3.3.1 IBM Global Services (IGS):.....	38
3.3.2 Electronic Data Systems (EDS):	41
3.3.3 Hewlett Packard & Compaq:.....	43
3.3.4 Accenture:	45
3.3.5 Computer Sciences Corporation:	47
3.4 The Evolution of the ITS Marketplace and Implications for Competitors	49
4.0 MSP's: Definition, History and Future as Intermediaries.....	57
4.1 MSP's Defined	57
4.2 Managed Services Providers – A Brief History	62
4.3 MSP Role in Technology Services; 2002 and Beyond	66
5.0 Framework for Future Strategies for Technology Firms	69
5.1 Overview	69
5.2 Market Context and Micro-economic Cycles	70
5.3 Market Segmentation and the Lever Effect of Intermediaries	74
5.4 Channel States - The Cycles Nature of Intermediaries	78
6.0 Frameworks Applied; Strategy Development in Technology Services	82
6.1 Overview	82
6.2 Market Context and Micro-economic Cycles	86
6.3 Market Segmentation and the Lever Effect of Intermediaries	90
6.4 Macro-business Cycles of Intermediaries	93
7.0 Conclusions	97
Appendix A – Summary of Interviews	101
Appendix B – References.....	102

Table of Figures

Figure 2.1 – Intermediary Relationship.....	18
Figure 3.1 – IGS Annual Booked and Backlogged Revenue.....	40
Figure 3.2 - 1 EDS Selected Financial Data.....	42
Figure 3.3 EDS/IBM New Contracted Signings in 2001	43
Figure 3.4 – Percentage of Revenue from Top 6 ITS Firms in 1999-2000.....	44
Figure 3.5 – Accenture Information.....	46
Figure 3.6 – CSC 2001 Revenues	48
Figure 3.7 Evolution of Enterprise Rationales for ITS Utilization	49
Figure 3.8 Client/Vendor Relationship Complexity, Value and Innovation.....	52
Figure 3.9 The Sourcing Matrix	53
Figure 3.10 Four Sourcing Services Matrix	54
Figure 4.1 – Shared Network Environment	65
Figure 5.2 – Micro Technology Cycles.....	71
Figure 5.3 – IT Services Market Segmentation/Supply Chain From the MSP Perspective.....	77
Figure 5.4 – Intermediary States and their Cyclical Nature	80
Figure 6.1 – Macro-business Cycles	84
Figure 6.2 – Historical Spending VS Growth	86
Figure 6.3 – 40 Years of Rebounds.....	87
Figure 6.4 – Framework for Technology Cycles	88
Figure 6.5 – Value Chain/Competency Component Model.....	91
Figure 6.6 – IBM’s Value Chain/ Foundation.....	92
Figure 6.7 – IBM’s Competency Model	93
Figure 6.8 – Intermediary States	96
Figure 7.1 Framework as a System	99

1.0 Executive Summary

The information technology industry has gone through more significant change since 1998 than at any other time in history. The stature, market position, capabilities and fundamental roles of most of the industry players continue to change in a dramatic way. These dramatic shifts have brought organizations that were once titans in the industry to an inflection point, facing strategic choices that will determine their organization's ultimate success or failure.

A key role that will have a profound impact on catalyzing the continued growth and evolution in the technology industry are technology intermediaries. Disintermediation, which became popular technology jargon in the late 90's, is defined, generally in the context of commerce as the elimination of intermediaries, for example, wholesalers or retailers, in business transactions between producers and consumers. Intermediaries are generally defined as a go-between or somebody who goes from one person or group to another, carrying messages or trying to bring about agreement. A slightly broader definition of intermediary, in the context of technology services, is a firm, or division of a firm, which inserts itself into the value chain with the purpose of enhancing or bundling the value of the prior components in the chain.

This thesis will focus on this important collection of firms we often refer to as intermediaries, complementors, or 'the channel'. These firms represent a virtual, and amorphous, collection of functions provided by a variety of stand alone firms, divisions of large multinational firms, and rapidly evolving new market entrants, fueled by ever increasing venture capital investments. Intermediaries now play the role of helping organizations understand how they need to change their business processes in order to maximize the efficiencies of technology solutions.

Given the increasing importance and fluid nature of information technology service intermediaries, this thesis:

- Will evaluate the historic evolution of intermediaries.
- Study and report on how several key industry players have leveraged and integrated intermediary and channel firms and functions. The underlying driver to many of these market changes is linked to the reality that organizations that have been historically focused on maintaining a product-oriented business model via product development have increasingly lost market power over time as the technology industry has moved towards hardware and software standards that have been developed by organizations such as Intel and Microsoft.
- Evaluate how the services matrix for intermediary firms has changed over time. Firms who have historically leveraged their technology development skills in order to increase their own organization's market power, most often via intermediaries, now need to consider how they can leverage these same types of firms in order to continue to play a significant role in the industry as these businesses add more service offerings.
- Analyze a new and rapidly emerging intermediary, MSP's in case study fashion. Managed Service Providers (MSP) have been selected for in-depth analysis since it is believed that they provide a very current and relevant example of how intermediaries are born, evolve and have the potential to provide disruptive change in the information technology sector.
- Create a framework for developing corporate, division or product strategies giving the appropriate consideration to intermediaries and the channel. Frameworks are provided

within this thesis in order to help these firms evaluate how they should best integrate existing intermediaries in the marketplace into their strategies.

- Provide methods and examples for applying this framework as a system.

In summary we have discovered that there are predictable macro and micro economic cycles endemic to the technology industry. Further, these cycles can be analyzed and correlated to distinct intermediary or channel states. As a result of understanding both the industry cycle location, and the associated state of the intermediary channel, firm's can map this information to define its market position. From this knowledge, a firm can build a component level, value chain segmented product map. With this product map, important and leverage able components within the map can also be easily identified. Finally, this map can be used to define end-to-end value chain conduits between a firm and its client with the aim of defining market leading customer centric strategies

In the past, product oriented firms were able to capture a significant percentage of the total industry's profits. Now consumers of "technology solutions" are now more interested in working with vendors that can provide expertise and experience regarding how to make a particular technology solution work and are significantly less concerned about the actual products used since standardization has reduced many technology products to commodities. Firms who will be successful in this new millennium will grasp this concept and build strategies, and organizations aimed at maximizing their customer's utilization of and benefits from technology.

2.0 The Evolving Relationships of Complementors and Intermediaries

2.1 Overview of IT Industry

The high-tech computing and development industry can certainly be described as one of the most important pioneering industries in the history of the U.S. and world economy. The high-tech industry is the largest manufacturing sector in the United States in terms of employment, sales, and exports. In 2000, high-tech exports also accounted for 29% of all U.S. merchandise exports. This sector has also accounted for 30% of real GDP growth in the U.S. from 1994-2000. This contribution represents a greater portion to the growth of annual GDP than any other sector of the economy, including retail trade, services and transportation.¹ Spending on technology by business, government and education in 2000 climbed to a record \$1 trillion, or 10% of the nation's \$10 trillion gross domestic product.²

No one would argue today that computing technology has fundamentally changed the way that large enterprises operate. It is interesting and important to note, however, that the inventors of many of these technologies did not predict the incredible growth in the use of computing. IBM in the 1950's, despite the fact that they had a near monopoly on the market for the first commercially available computers, never believed that computers would have broad utilization across all business operations. This was due to the fact that no one could comprehend the market dynamics and advances that would occur on an on-going basis for the next forty years that would

¹ Semiconductor Equipment and Materials International.
http://www.semi.org/web/wcontent.nsf/url/pol_TPA_Coalition_Messages

² USA Today, <http://www.usatoday.com/life/cyber/invest/2001-05-29-tech-industry-copes.htm>

cause such dramatic and fundamental shifts in the way that large business would benefit from computerization in the future.

Moore's Law³ stated in 1965, that transistor density and computing power would double every 18-24 months while the cost of the new technology, period to period, remains the same. This law has served as one of the key foundations and drivers in shaping the roles and responsibilities of the different market players that have formed over time in the computing industry. In recent years, however, Moore's Law has lost some of its fundamental impact on the players within the industry as advancing processor technology has provided reduced benefits to a large majority of computer users whose systems are already fast enough for their day-to-day use. It often is up to software developers, serving as key complementors to hardware development companies, to now define new applications that have the ability to leverage the new processing speeds of the latest processors.

Moore's Law recent diminished impact on the market has caused organizations that have historically focused on the development and manufacturing of new computing technologies to find themselves in a precarious position as they look into the future. Many of these companies have lost significant market power due to these market dynamics as the systems that comprise computing technology have become much more of a commodity. Because of this, hardware developers and manufacturers are, for the first time, finding themselves to be price-takers versus

³ Moore, Gordon E., "Cramming More Components onto Integrated Circuits." Electronics, April 19, 1965. Vol. 28, Number 8

receiving premium rents for developing advancements in computing technology that enable more productive, therefore, more valuable technologies.⁴

This fundamental shift, along with the new realities brought on by the Internet, has begun a process where the roles of the individual companies that make up the computing industry are rapidly changing. Organizations that were once titans of the industry that have historically focused on developing hardware now have uncertain futures. At the same time, firms that were once complementors or intermediaries of the largest computing development companies now have increasing market power and influence on the computing development industry than they have ever had before. This current ever-changing landscape gives credence to looking back into the past to see how organizations that have focused on hardware development as a core competency gained their market power over time and how they have been affected by this transition. Lessons can also be learned from firms that were once played “pure” complementary and/or intermediation roles in the computing industry. Many of these firms have more successfully weathered the fundamental market changes in recent times and are now leading the computing industry’s transition from being led by companies that have historically invented technology to organizations that are more end-user facing who focus on providing solutions that focus on the business process re-engineering, consulting and other services that enable the implementation of IT products in the operation of large enterprises.

⁴ “Business Forum: TV’s are Commodities – Are PC’s Too?”, www.startribune.com/stories/541/1021005.html, January 14, 2002

2.2 Complementors / Intermediaries In High-Tech Computing

The high-tech computing industry has significantly benefited from a long history of organizations that have provided complementing and intermediation market roles throughout the last forty years. Historically, complementing organizations have provided products and services that have supported or encouraged adoption of key technologies provided by hardware development organizations. They helped to create acceptance of new hardware products from customers by selling, or helping to sell, and supporting the technologies based on this hardware while assisting clients in their understanding of how these advances could benefit their business. These important enabling companies have played critical roles by helping a wide range of businesses, both hardware developers and end-users; accomplish their business objectives by leveraging their access, expertise and experience across a wide range of technologies and clients.

The role that complementors and intermediaries have played has also evolved over the years as the capabilities of hardware computing technology increased along broader applications and markets. At the same time that technologies have become more relevant to different types of companies, new business models related to intermediation, in particular, have advanced over time. The history and success of some of the most important organizations that have played complementing and intermediating roles in the computing industry over time are important to analyze. Understanding the evolving market dynamics of the computing industry and how these organizations have gained additional market power over time is critical for existing players to understand for them to determine where their organization's market opportunities exist today and possibly in the future.

One of the most relevant points of this analysis is to recognize how these intermediating and complementing organizations have developed a comparative advantage over many hardware development companies by operating much closer to the end-customer. This natural proximity to the end user and understanding their needs, versus many hardware development companies whose customers have historically been different players (distributors or resellers) than their ultimate end users, have provided these intermediating organizations with a much clearer understanding of the end-users evolving needs. Their proximity to the end client has also given them the ability to recognize these changing needs much earlier than organizations that sell their products through distribution networks.

Before analyzing the history of the roles that complementors and intermediaries have played in the history of the computing technology industry, it may be helpful to discuss definitions of these terms more broadly and provide some relevant examples.

Historically, complementors have been organizations that have provided a product or service that has supported another organization's offerings. Excellent examples of complementors in the computing industry can be found from organizations that have provided necessary components required in order to maximize the efficiencies of the market. Software companies have often played one of the most important complementary roles over the history of the industry. In the beginning of the high-tech computing industry many of the largest companies were focused on hardware development. In response, organizations such as CSC, Inc., in the 1950's and Microsoft in the 1980's filled the needs of providing operating system software and other critical software tools for the hardware developed by IBM.

Since the introduction of the personal computer, the explosion of software applications to address the needs of the market have played a tremendous role over time in making computing technology relevant to more and more potential and existing customers which has led to greater sales for hardware development companies. In recent times, hardware developers and manufacturers have found themselves depending on the software development companies to create market needs for new hardware platforms. This is because the benefits of some new computing hardware cannot be realized unless important software developers, like Microsoft, provide new operating systems and other software tools that are able to better utilize the new processing power in the latest computer systems. Over the history of the industry, software companies have played different complementary roles and over time have increased their market influence and power compared to hardware developers.

There have also been many component manufacturers of processors, hard drives, monitors, etc., that have played a complementing role as the developers of computers left behind vertical integration models and utilized third party companies for components. While being very important firms in the earlier days of computing development since many of these organizations helped to bring tremendous innovations, these firms slowly lost more and more of their market power as the importance of these innovations diminished over time. Most of these organizations are now viewed as commodity component providers.

Intel is one of the few companies that once played a complementing role for hardware developers who have gained significant power in the marketplace over the last twenty years. Intel has successfully positioned their processor products as the standard in the marketplace and

has been able to prevent any of the other processor providers, such as AMD, Motorola, from taking significant market share from Intel. While it is reasonable to see how Intel will maintain a complementary stance with the overall computing development industry, it is also possible that Intel could begin to take an even greater role in the future of computing as they leverage their standards, experience and market power to influence individual firms performance and growth potential.

The evolving standardization of the majority of computing technology that is developed today is a key reason why much of the computing industry has become commoditized. Enterprise organizations today require standard hardware and software components from players such as Intel and Microsoft and this reality significantly limits hardware developer's market power due to their lack of ability to innovate beyond the standard and to be able to receive premiums for these innovations. Complementors such as Intel and Microsoft also raise other important challenges to hardware development companies since they are also taking significant portions of the overall profit that is being generated in the computing industry and can therefore maintain significant advantages over other development companies having significantly more resources to invest into research and development. These resources enable these complementors to continue to strengthen their hold of the overall industry as compared to other development organizations.

IT-service companies have also played a significant complementing role as they have encouraged the use of computing technology to solve business challenges. These organizations brought the expertise and experience required know how to utilize technology to solve problems in particular vertical industries such as finance, manufacturing, medical, design, etc., that the

computing development companies either chose not to offer or did not have a comparative advantage versus other firms to provide.

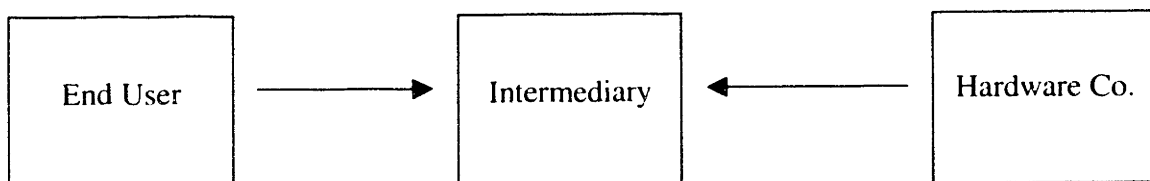
Complementors and intermediators have enabled technology development companies to focus on the most significant technical and most capital-intensive challenges related to computing. This process has proven to be very economically efficient for the market and is one of the key reasons why this industry has been incredibly successful in selling computing technology in such volumes. The irony of the industry today is that while these companies did a tremendous job of developing new technologies that served as the foundations to the industry, many of these firms lost touch with what types of products and services the market would require in the future as advances in technology became increasingly less relevant to purchasing decisions of large enterprise organizations.

The computing industry seems to be on the edge of a potentially dramatic shift. Some of the organizations that once served as complementors and intermediaries of the hardware development companies are now more often seen in the market as having an existing or potential strategies to disintermediate or stop promoting the sale of new hardware products. This is because many of these organization's clients believe that they have enough hardware already to perform their objectives. Therefore, these intermediators no longer have a vested financial interest in selling hardware products that clients are now reluctant to purchase. Because of this fact, many of these same organizations have changed their business models to provide their knowledge and experience as a service via new business models that enable them to maximize the opportunities provided by these new market demand and supply forces. Consulting

companies now leverage technology and their expertise to further enhance outsourcing models as well as new business models, coined with “x”SP acronyms, such as Application Service Providers (ASP’s) and Managed Service Providers (MSP’s). This shift in focus and these new business models promise to promote a further shift in market power toward the knowledge and solution provider and away from the hardware development company. This dilemma will be one of the most important that the industry will face in the next ten years.

There has also been another group of important intermediaries that have been critical to hardware companies over the years that are important to understand when considering the changing dynamics of the industry. These are third-party organizations that have historically sold much of the hardware products in the market and independent software developers. Together these organizations brought a unique set of expertise and relationships to computer hardware companies that became the real benefit to the end customers and was the reason why end-users purchased technology. Historically, these intermediaries have had significant control over being able to influence the end user’s buying decisions. Hardware developers have built programs over the years to promote their products to these intermediaries so that all parties could share in the revenues generated from hardware sales. This type of relationship can be represented in the following figure:

Figure 2.1 - Intermediary Relationship



This model has been very typical over the life of the personal computer industry where organizations like Hewlett Packard, Compaq, IBM and others have relied on their business partners or resellers to intermediate, or sell and support, their solutions to the majority of both their small and large clients.

In these cases, the intermediary serves as a trusted advisor to both the end user and the hardware developer. The developer needs the intermediary because this is the only economically viable way to sell their technology to the overall market. The end user also has needed the intermediary because they have been able to provide the additional services required in order to maximize the benefits of the technology.

As the impact of the computer technology has proliferated throughout the world, it is easy to comprehend how these relationships make economic sense for all stakeholders in the industry. In the early days of mainframe computers, the total amount of customers that could utilize and afford a computer was very limited. Since the scale of the business was very small, IBM and other mainframe manufacturers could utilize a direct sales force to sell their products. As the technology became less expensive and more powerful, IBM and others needed to rely on intermediaries to sell their products in order to capture the greatest percentage of the market.

Organizations such as EDS, CSC, Unisys, Price Waterhouse, Accenture and others, built large businesses by focusing on how they could help organizations make more effective use of technology by providing business process reengineering, implementation of best practices, as well as outsourcing models that enabled organizations to outsource some or all of their complex

technology operations so that they can focus their human resources on more strategic business issues. At the same time, many of the companies also generated revenues by endorsing particular hardware that their customers would purchase from a particular computing development company.

It is easy to see how the broad set of computing technology development companies have been able to benefit from the roles of complementors and intermediaries. These organizations have provided them the ability for the hardware development companies to continue to focus on what they do best – developing new technology. With the last forty years as background, it is somewhat surprising how fast the roles of these same companies have shifted in recent years as a result of the diminishing impact of Moore's Law. Understanding the dynamics of these changes and how to respond to these new realities will be a critical skill for all market players to understand in order to optimize their business and market strategies in the face of these changes.

2.3 Historical Evolution Of Technology Complementors & Intermediaries

The evolution of the computing industry and the power of the particular players in the industry can be explained via a timeline beginning in 1950. It is essential to take special notice of the economic and business drivers that led to the value that the complementors and intermediaries played in each period of time. These issues speak to the relevance of these models in the future as well as in the past.

1950-1958: IBM built the first commercially available mainframe computers. These computers were built to solve complex problems that were in the domain of governments and very large businesses. Most prognosticators believed that the computer's future was limited. In 1958, fewer than 4,000 mainframe computers existed in the world. None of these machines actually came with the required software needed to make these computers productive. All of the organizations that purchased mainframes had to develop their own software to make these systems work.

IBM clearly understood how to take products developed in their labs to market. They did not, however, have a clear sense of the future of what this technology could do for the broader market. They were very focused on the needs of their initial customers who could afford mainframe-computing technology.

Since IBM was creating a new industry, they did not have any complementors other than their customers who were proving that this technology could bring tremendous benefits to organizations that owned it. The staff from some of their clients, however, turned out to be the

people who would make up the pioneering organizations that would support IBM's and other development companies' technologies.

1958: Software companies, such as Computer Sciences Corporation, Inc. (CSC) and others, were founded to provide complimentary software to IBM by creating software such as assemblers, compilers and operating systems to make their systems more practical technologies to utilize, justify and operate. These software tools provided greater productivity and ease of use for users of mainframe systems while lowering the resource requirements of a potential client. These companies served as the beginning foundation of the commercial software industry that has always played an equal role to hardware advancements in broadening the market for computing. Therefore, these software developers became one of the first complementors to the hardware companies, like IBM, by making their technologies relevant to more companies.

Without these software firms, companies like IBM would have had to build the required software tools themselves. This would have not been an efficient use of IBM's resources when compared to the competitive advantages that they had in developing hardware systems versus software. The trend of new types of organizations coming into the market to address complex issues surrounding the use of computing is fundamental to the role of that complementors have played throughout the history of the industry.

Many of these pioneering organizations, such as CSC, still provide advanced software development, or systems integration, services to large enterprise organizations.

1960-1970: Companies, such as Electronic Data Systems, Inc. (EDS) were founded and initially played more of a disintermediation role by providing computer timesharing services to very large businesses providing these organizations the ability to benefit from mainframe technology without having to purchase it from IBM. EDS provided all the hardware, software and application expertise required for large organizations to utilize mainframe technology as a monthly or yearly service to solve their computing challenges without having to purchase the technology or hire their own personnel.

IBM initially saw EDS as a threat since they were causing some companies to delay purchasing IBM's mainframe computers. But ultimately, EDS was actually serving as a complementor in many ways by providing new users an opportunity to benefit from this technology which most often led to these same organizations purchasing mainframes from IBM after they were convinced that this technology made sense for them to own. Once an organization had determined to purchase the technology, EDS served as an intermediary for IBM by representing their technology products that met their client's needs based upon their experience. EDS recognized that the change in many of their client's requirements made sense and did not discourage organizations from purchasing their own technology. Instead, they continued to secure consulting fees from customers while also continuing to provide computer timeshare services to other clients when appropriate.

EDS captured a simple idea in the early sixties that has kept them in the forefront of the computing industry ever since. Their goal was to help large companies leverage the power of the latest computing technology with a combination of technical and business process expertise. This model has enabled EDS to focus on the business process aspects of what computers can do to

improve an organization's performance. While serving as a complementor of the computing industry since its innovations led to more opportunities for EDS as computers became more viable for a wider range of businesses and applications, EDS continued to focus on the actual tangible functional benefits that technology brought to their customers. History has shown how this approach has served EDS well over the last forty years and will continue to ensure that EDS is a leading company in the future.

1970's: The birth of distributed computing occurred in the early 70's and resulted in computing technology becoming dramatically more relevant in the day-to-day tasks of more employees in business. This created a huge demand for expertise and experience from organizations that wanted to employ a distributed computing model.

This also gave birth to a large and powerful group of intermediaries in the industry whose role was to sell the latest products. As the technology became more and more relevant and popular to a broader client base, hardware companies joined with third party companies who would sell their products in industries where they had unique relationships or expertise.

This transition in technology also required expertise in how to build private networks, how to train a vast amount of employees new to computing, and how to develop best practices regarding how to best utilize these technologies in a wide range of organizations and industries. These needs also brought another group of complementing and intermediating firms into the industry.

Large complementors and intermediaries were able to leverage the new networking technologies, etc., to offer their solutions to both international clients and smaller organizations in North America. Again, it was these organization's experience, expertise, and ability to scale both their technical and business experiences across a larger set of customers that fueled the growth of their businesses as well as the growth of important hardware and software companies.

Organizations such as EDS continued to develop specific industry expertise and began to market hardware and software solutions for particular industries leveraging their many years of experience. Many of these new markets focused on smaller clients that could now justify technology investments based on the additional productivity gains that would be achieved.

1980's: This decade gave birth to further advances in distributed computing models that the industry came to call client/server computing. The PC was born and began to revolutionize business computing and the industry that supported the hardware innovations. Now more computing power could be found on the desktop of everyday employees than what was found in mainframe computers that had once served the total enterprise of a Fortune 100 company.

As the personal computer was embraced, key software programs such as database, word processing and spreadsheet applications which were able to help businesses to further alter their corporate computing models to even greater distributed computing. Many of the most important management consulting and accounting partnerships began to play a more significant intermediary role for large enterprises in regards to IT outsourcing services at this time as they began to help businesses in their traditional areas of expertise – finance, accounting,

manufacturing, etc. Firms such as Arthur Andersen and others in the management consulting field now began to play a much more significant role as complementors and intermediators for computing technology companies.

Complementors and intermediators also continued to aggressively offer IT outsourcing to enterprise clients. Many firms wanted to take advantage of expanding the benefits that they could gain from technology but were unable to handle the human resource aspects of this challenge. This led to a tremendous increase in the amount of IT outsourcing to handle this expansion.

1990's: This era will be looked back on as the one that proved to demonstrate the most significant and profound changes in the computing industry. Businesses began to more closely evaluate and address their global competitiveness and in what ways spending resources on technology was either helping or hurting their core business. For most organizations, this was the first period in time when leading Fortune 500 companies were beginning to state publicly that they believed that it was in their best interest to outsource all of their organization's IT needs. This was a fundamental shift that foreshadowed additional substantial changes in the dynamics of the marketplace that are realities today.

The first large-scale deployment of complete IT outsourcing was with Kodak in 1990. Kodak agreed to have the division that ultimately has become IBM Global Services (IGS) take over all aspects of their IT organization for the next ten years. Outsourcing the people and technology required to run a multi-national business then became a viable business model for many of the Fortune 500 companies. The outsourcing market continued to grow at 20% per year on average

throughout the rest of the decade. The reality of this change has had dramatic influences on the industry. Previous to agreements such as the one that Kodak signed, multiple hardware companies sold Kodak their technology either via their direct sales organization or intermediaries. After IBM had signed this agreement, most of the relationships that had been formed with the decision-makers at Kodak with hardware vendors other than IBM were now worthless. This trend would continue throughout the decade.

The integration of the Internet as a robust public network and platform also proved to have a tremendous influence on the IT industry as all users worldwide now had a common network from which to operate. This new reality brought an avalanche of new business models, funded by venture capitalists, to provide IT outsourcing services for advanced administrative and analytical services across a range of IT infrastructure including networks, servers, applications and security. These services could now leverage the “free” network of the Internet to provide high-quality services at a price that had not been considered practical before. Many of these services had, up until this point in time, had been provided either by employees or by outsourcing vendors that were using their own human manpower to administer these technical operations. The Internet promised to make the need to have individual employees monitoring individual technology resources obsolete.

Concerns regarding the Y2K millennium software bug also played a major role in the industry in 1998 and 1999 by generating tremendous sales of computers as new systems were put in place to prevent problems that could be caused by older hardware and software technology. The sale of

these powerful computers has delayed sales of replacement systems at the same ratio previously experienced due to the enhanced power of these systems.

By the end of the decade, the commoditization of the vast majority of the technology that was being developed and sold by the largest hardware players was complete. The Internet made it possible for anyone to purchase a complete server system from five different vendors at practically the same price. None of the large hardware companies, other than Dell and Gateway, were making enough money using these new sales models to support their business. The Internet also greatly reduced the power of the complementor and intermediators as the market became more and more standardized on core technologies developed by companies such as Intel and Microsoft. This has left many players in the marketplace that have focused on technology development as a key contributor to their profits in a difficult position looking into the future as they are limited opportunities to differentiate one's product from another company's.

2.4 The Evolution of the Players and the Effects on Supply and Demand

It is interesting to look back over the last forty years and evaluate how the roles of key players in the computing industry have evolved and what market dynamics have caused this to occur. In the next chapter, individual companies that have played a major role as complementors and intermediaries will be evaluated on an individual basis. From an overall view, however, the following market dynamics are important to consider as we look back into the past and forward into the future.

Basic economic theory observes that different organizations have comparative advantages over each other when it comes to producing goods and services. It is clear that organizations such as IBM, Digital Equipment Corporation, Microsoft and EDS all have had different comparative advantages from each other over time. These comparative advantages have served the computing industry very well creating innovation and reducing the costs of technology while also creating firms that have the expertise and experience to help organizations leverage these new technologies.

For a company that focuses on the development and manufacturing of computing hardware technology, these natural forces can be clearly observed in this industry. The fact that more companies have been spawned out of the computing industry over the last forty years than any other industry is a clear example of this fact. All of these companies at some point have served the hardware companies as a complementor and/or intermediary along the way.

The demand for personal computing technology in terms of total volume in the enterprise business sector may never again reach the levels that were observed in late nineties due to a combination of factors that we have already discussed; new versions of computing technology available does not offer compelling advantages when compared to the last model that was purchased, companies overbought computing technology in preparation for the Y2K and in response to the Internet revolution.

What is fascinating is that the general-purpose computing hardware companies seem to have not fully realized that they may now need to fundamentally change their business strategies moving forward.

The only way that computer hardware companies can operate profitably and grow serving enterprise customers is to make their business and manufacturing model look more like Dell's. Organizations that have tried to profitably compete and maintain or gain market share against Dell, along with their complementors and intermediators, need to reevaluate the mission of their business and decide how they should leverage their resources in order to maximize their long-term economic alternatives.

Some of the organizations that provide computing technology are also in the computer-related services businesses. This segment has experienced tremendous growth over the last decade and promises to be one key area where technology development organizations could possibly leverage their expertise as the need for these types of services continue to grow while the demand for hardware slows. In the next chapter, a number of the leading organizations that provide consulting, outsourcing, integration and support services will be discussed in order to get a better understanding of each of these businesses, their core competencies and the opportunities that exist today and may exist tomorrow in the technology services marketplace.

3.0 Analysis Of Current IT Intermediary Marketplace

3.1 Overview of Market Players

Taking a closer look at the complementors and intermediaries that have served the industry by providing a wide range of products and services to their mutual clients seems to serve a logical function in order to understand how these organizations have changed their business strategies over time. In order to get a better sense of how and why these organizations have gained additional power in the marketplace it is important to understand the roles that each of these types of organizations have played and will play in the future.

With the changing dynamics of the industry, the companies that serve as the most significant IT-service intermediaries may represent a significant threat to other market players. These firms are positioned to potentially capture a large portion of the revenue dollars that had formerly gone to hardware providers should the current market conditions remain. Some of the most important market conditions that influence these realities are:

- 1.) The hardware technologies that provide the foundation to the computing industry are now commodities. Companies that focus on developing and manufacturing these products are, more often than not, now price-takers. This fact leads to reduced loyalty to a particular brand, hence, price wars, etc., in order to maintain let alone grow market share.
- 2.) While hardware technology is a commodity, the ability to integrate hardware and software solutions is not. Organizations that have the ability to provide this service are continuing to become more and more important to client firms that require technology solutions in order to meet their business objectives.

- 3.) Organizations that purchase technology to solve business problems need to get this technology integrated very quickly. Timeframes of implementing a brand new technology in a firm used to be 6-12 months; now these timelines can be days or weeks. These rapidly reduced timelines require that organizations partner with vendors that have the experience and expertise to make commodity hardware but complex software and new business processes that go along with these solutions work very quickly.
- 4.) Organizations are interested in leveraging powerful technology standards, such as Intel, Microsoft, USB and others. This trend limits the value that hardware companies can receive for building new features and technologies into products since the market is somewhat unwilling to pay for these advancements.

The realities of this situation and the dynamics that it is causing in the industry are clear when analyzing the organizations that have succeeded in leading the evolution of services in the computing technology industry. Below are broad categories of companies in the industry and comments regarding the market power that each of these types of companies holds today in relationship to the new value that is placed on services by the large enterprise information technology clients:

Computing Hardware Developer: With the proliferation of standards regarding processors, disk size, memory and operating system components that comprise these systems, these organizations have been quickly reduced from technology-leaders to price takers. Firms in this position need to either take actions to clearly differentiate their products through increased investments in R&D, which are very difficult to justify in today's marketplace, or outsource or sell this aspect of their

business and focus resources on another aspect of the industry where they can provide significant value. Most of these firms have generated some portion of their revenues from hardware maintenance; however, for most firms this business has been attached to the hardware units sold since most organizations do not service other manufacturers products. These firms have a significant opportunity to move into a wide range of premium services that their clients require.

Computing Software Developer: Unlike hardware developers, software companies will continue to benefit from proliferation of computers. The most significant threat resulting from existing market trends to software developers are the very large software companies who have the resources and technology to capture ever-increasing portions of the software market with new applications that enter existing markets that these firms were not in previously. Microsoft, certainly, has tremendous market power now, however, with their “.Net” (dot-net) initiative they could gain even greater market power. All organizations in the computer industry need to take a very close look at this strategy that Microsoft has articulated and determine where their solutions will be able to compete with the existing and future offerings of companies like Microsoft.

In the simplest terms, Microsoft’s .Net program is a way for them to turn their software products into a service. By taking advantage of the Internet and its ability to provide a live connection to a large portion of their clients, Microsoft will not only be able to change their basic business model in terms of how they charge their clients (one-time license fees v. subscription charges) but will also be able to bring a much broader range of new products and services to their clients very easily and inexpensively.

Technology Service Providers: This is the field that has experienced the greatest change over the last ten years in the computer industry and will continue to evolve as these organizations gain more and more market power in providing solution to customers worldwide. These organizations have benefited significantly from a significant increase in their market power. One of the most important reasons for this is that these organizations have a culture that is built upon *listening to needs of the customer*. Unlike many hardware and software development organizations that have large sets of internal constituencies that have a significant impact on the actions (or products) that the company develops but have limited direct connection with the customer, technology service providers can only sell what the customer will buy. As simple as this sounds – this is a key reason why the firms in this sector have done so well over the past ten years.

Today there are many different types of technology service providers. Below is a segmentation of the market that details the roles that these organizations are currently playing. Please note that many organizations in this sector also play more than one of these roles.

Large Systems Integrators, Consultants and Outsource Providers: IGS, EDS, CSC, Fujitsu, Accenture, and others are playing a key role in large organizations by providing all of the human and technical resources required for large businesses to accomplish their overall computing application objectives. They have a tremendous range of hardware and software experience building products on every platform imaginable across most industries.

Each of these organizations also has the ability to handle all of the IT-service and maintenance needs for an organization by accepting the responsibility for managing all of their IT operations

with either their staff or by hiring the staff of their client. All of these organizations are also hardware and software agnostic; i.e., that they do not require certain technology hardware and software solutions – they have the experience and practice to analyze what solution fits their client's needs best and then proceeding to implement this solution regardless of who the developer of the product is.

Since these organizations are built upon human resources that have unique skills, expertise and experience, they mirror the exact requirements of the marketplace and, therefore, are gaining an ever-increasing amount of market power. They should also be able to increase their market power as long as they maintain the core competencies that have enabled them to grow over the last decade as more and more clients across the world consider utilizing these types of firm for their IT needs.

Medium-size Systems Integrators, Consultants, Outsourcing: These organizations include businesses that have approached the broader services market from some unique core competency that provide a platform for them to grow. Companies such as Cap Gemini Ernst & Young, Xerox, Hewlett Packard, Compaq and Xerox all have built their service businesses leveraging off their installation base and core competencies of the last five to seven years.

Some of these companies, excluding Cap Gemini, find themselves at a place where they have to make difficult decisions regarding how to spend their resources. Xerox, for example, has been a product company throughout its history and now it faces a choice to move its investment resources away from its core business in order to grow its service business.

This can be a difficult strategy for many of these companies to pursue since the history and culture of these businesses has been based on developing new technologies that can be leveraged for growth throughout the marketplace versus investing in being able to make other companies technologies work better. The decisions that these organizations make around this question could very well determine the fate of their company.

3.2 xSP's: New Service Models That Leverage Technology – Not People

These business models that have come out of venture capital investments in the late nineties have yet to play a significant role on the ITS industry, however, their promise has not been lost on organizations in the technology business.

These firms have been built to leverage the Internet as a public network where organizations that have a unique expertise for managing or monitoring a certain set of components or services on a network can provide very high levels of service remotely without needing to have “arms and legs” at their clients business locale.

Technology firms have been able to perform these types of tasks for years; however, the investments in private networks and proprietary tools have been much too costly for most organizations to consider. This model was revived with the rapid integration of Internet and web servers that needed to be put in place in large businesses in a very rapid fashion in the late nineties. These types of efforts were unique in that most businesses that needed this service did

not have the expertise in house to optimize these types of systems; therefore, they went to organizations, such as Loudcloud and Exodus to handle these needs.

These service organizations are built upon the expertise of the individuals that integrate, monitor and run these services along with the software development efforts that enable these companies to effectively monitor technology that is sitting in an organization's infrastructure or in a remote data center.

The promise of their model is that they organizations can leverage their software tools; expertise and experience to provide a significantly more valuable service than one would get from their own IT staff but at a significant lower cost. This model may end up challenging the strategies of the traditional outsourcing companies that have built their businesses upon a "human model" with individuals working within the confines of one particular business versus having a team of people in a command center-type environment that serves more than one organization and has the ability to leverage the expertise gained more efficiently across multiple businesses.

3.3 Successful Service-Oriented Organizations In The Technology Industry

In 2001, IT-service companies generated over \$664 billion in revenues worldwide. This number equates over 2% of worldwide GDP and represents an annual average increase in revenues of 15% per year from 1990 to 2000.⁵

⁵ Worldwide IT Service Vendor Revenue, 1999 and 2000, Gartner Dataquest, 2001

From this data alone, it is clear that hardware-oriented organizations need to take a closer look at moving into different or more advanced service-oriented business models as they consider ways to increase their influence and power in the marketplace and to grow revenues and profits. In the following section, six of the most successful and interesting service-oriented organizations that provided technology-related services in 2001 will be briefly analyzed in order to get a better sense of each of these organization's core competencies. Key lessons can be learned from each of the organizations regarding how their role in the technology business has changed over time and how they are positioned for future leadership in IT-related services.

3.3.1 IBM Global Services (IGS):

Revenue Rank (amongst all IT services companies worldwide): 1

2001 Revenue: \$34.9 billion

Booked Business for future years: \$102 billion

Employees: 148,300

2001 Growth (in constant currency): 5.4%

2000 Total Market Share: 4.98%

The success of IGS is one of the most significant and interesting stories in the computing industry over the last twelve years. IBM's management saw an opportunity in the late eighties to meet a customer's need in providing outsourcing for all of Kodak's enterprise IT infrastructure. They then leveraged this experience, their technology expertise and their relationships that they had built with thousands of other large enterprise businesses over the years to build one of the largest *businesses* in the world - IBM Global Services.

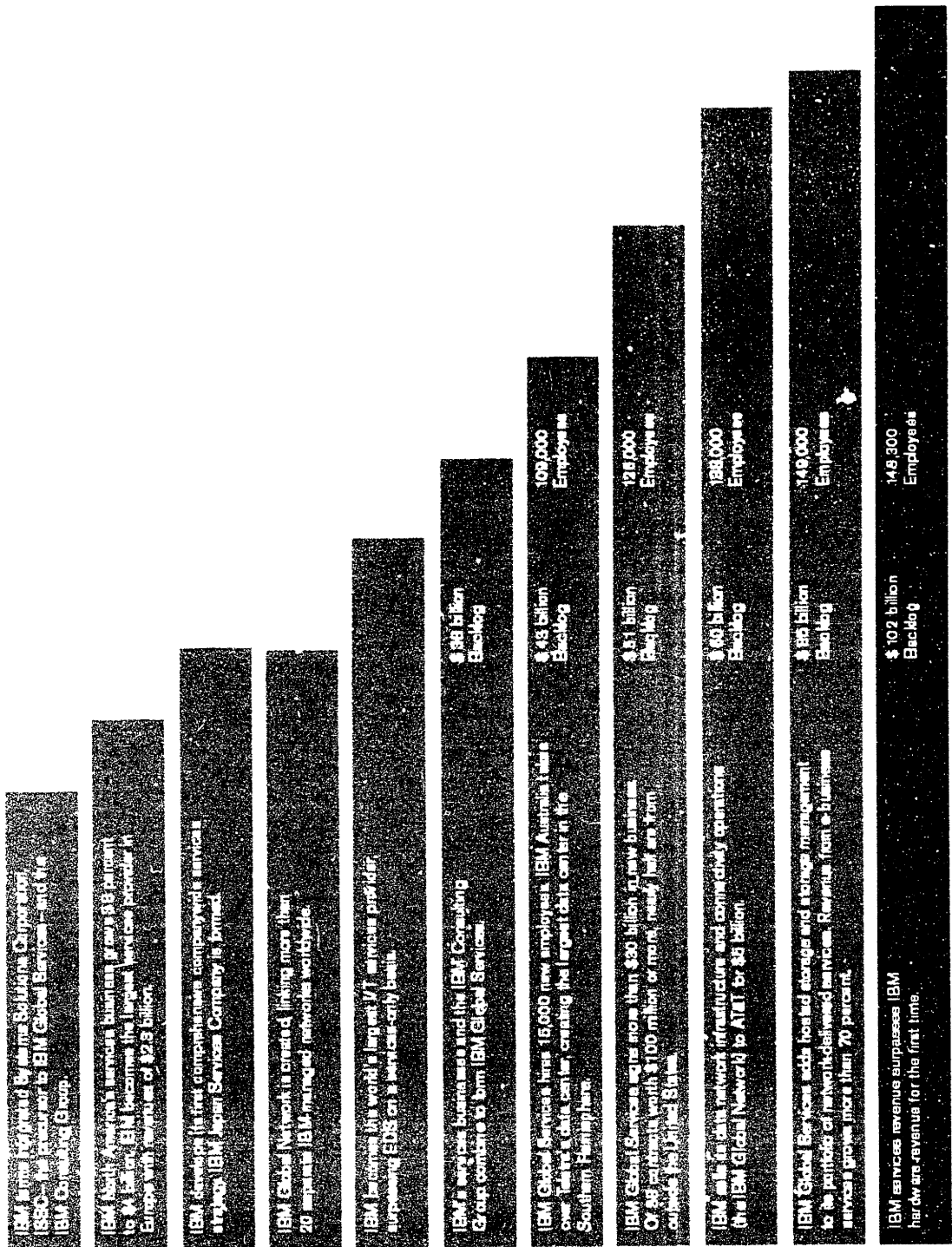
Today, IBM Global Services provides a wide range of enterprise services from strategic outsourcing, to business consulting, to specific technology consulting regarding e-business, to offering remote managed services and web hosting. IBM is currently providing the broadest range of IT-related services in the industry.

An interesting irony of IBM's current leadership in ITS is that it may have resulted from some of the fundamental weaknesses that IBM experienced in their business in the eighties and early nineties. These weaknesses were the result of not being able to take a leadership position with their own proprietary hardware and software products. IBM's overall failure to establish standards with products like the IBM PS/2 personal computer and the operating system, OS/2, led the management of IBM to look for a significant business that they could enter into and play a significant role. Many industry observers of IBM from 1950 to 1990 would have never believed they would see the day when IBM would generate more of their business from services than hardware but it happened for the first time in 2001.

Whether it was luck, skill or good timing, IBM clearly has been able to leverage all of their corporate resources in order to substantially grow their services business. The relationships that result from the services business also assure IBM an excellent position to offer their hardware and software product offerings to these same customers now and in the future. IBM's ability to "think out of the box" and dramatically change their business from being focused on proprietary hardware and software design to one where open standards and very challenging service offerings were now the focus appears to have put IBM back on top of the IT industry.

Figure 3.1 - IGS Annual Booked and Backlogged Revenue

Source: IBM Annual Report, 2001



Total IBM Services Revenue (in billions)

3.3.2 Electronic Data Systems (EDS):

Revenue Rank (amongst all IT services companies worldwide): 2

2001 Revenue: \$21.5 billion

Booked Business for future years: \$84 billion

Employees: 140,000

2001 Growth (in constant currency): 12%

2000 Total Market Share: 2.89%

Unlike IBM, EDS has always been in the business of working with organizations helping them to leverage technology via their experience and expertise without generating significant revenues from hardware sales. They were one of the first companies that pioneered the IT-services industry.

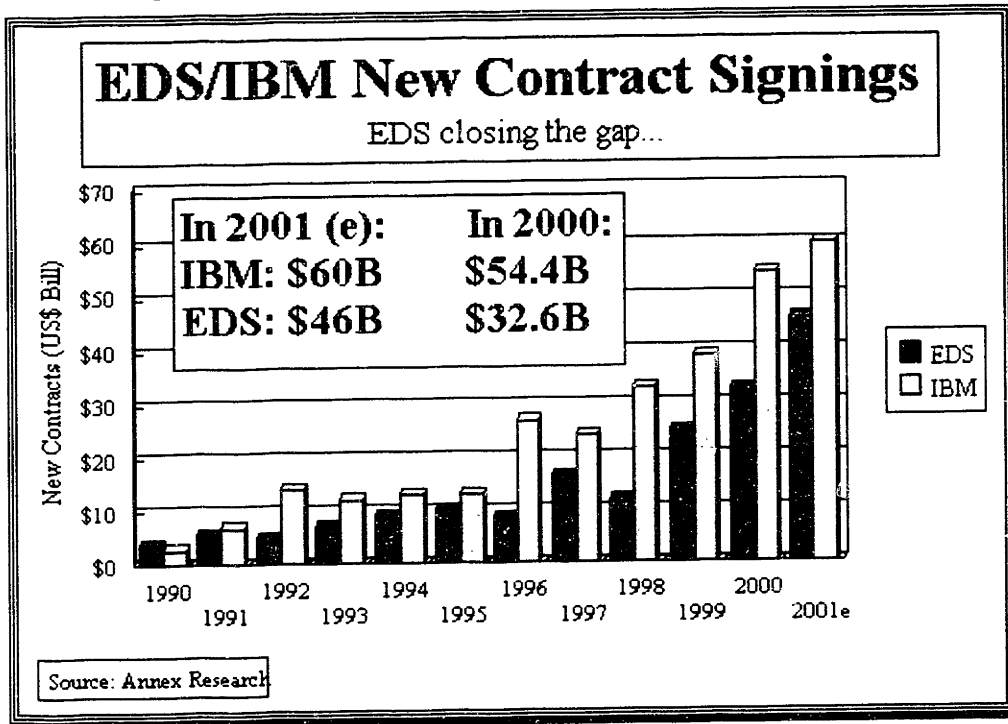
EDS has leveraged their years of experience to substantially grow their business over the last decade. They have also made a handful of strategic acquisitions that have enabled them to enter into new customer and service markets. The most unique of these acquisitions was the management-consulting firm, A.T. Kearney. EDS is the only large IT-services firm that also includes a traditional high-value management consulting organization. Having the capabilities of this firm within EDS will enable them to provide their clients with the same quality of business consulting as top organizations such as McKinsey. A. T. Kearney's specific expertise in operations and logistics consulting has provided a perfect fit for the most recent innovations in technology brought on by the Internet.

Figure 3.2 - 1 EDS Selected Financial Data

Source: EDS 2001 Annual Report

As of and for the Years Ended December 31,					
	2001	2000	1999	1998	1997
Operating results					
Revenues	\$21,543	\$19,227	\$18,732	\$17,243	\$15,370
Cost of revenues	17,438	15,631	15,368	14,290	12,298
Selling, general and administrative	1,880	1,776	1,853	1,838	1,528
Acquired in-process R&D and other acquisition-related costs	144	24	-	-	-
Restructuring and other charges	(15)	(22)	1,039	48	330
Other income (expense)	103	(18)	165	67	(72)
Provision for income taxes	812	657	237	391	411
Cumulative effect on prior years of a change in accounting for derivatives net of income taxes	(24)	-	-	-	-
Net income	\$ 1,363	\$ 1,143	\$ 421	\$ 743	\$ 731
Per share data					
Basic earnings per share of common stock	\$ 2.90	\$ 2.45	\$ 0.67	\$ 1.51	\$ 1.49
Diluted earnings per share of common stock	2.81	2.40	0.85	1.50	1.48
Cash dividends per share of common stock	0.60	0.60	0.60	0.60	0.60
Financial position					
Current assets	\$ 7,374	\$ 6,159	\$ 5,877	\$ 5,633	\$ 5,169
Property and equipment, net	3,082	2,474	2,460	2,708	2,869
Operating and other assets	5,897	4,059	4,185	3,185	3,136
Total assets	16,353	12,692	12,522	11,526	11,174
Current liabilities	4,367	4,310	4,996	3,657	3,258
Long term debt, less current portion	4,692	2,585	2,216	1,184	1,791
Redeemable preferred stock of subsidiaries, minority interests and other long term liabilities	644	529	508	406	341
Shareholders' equity	6,446	5,139	4,535	5,916	5,309

Figure 3.3 EDS/IBM New Contracted Signings in 2001



3.3.3 Hewlett Packard & Compaq:

Revenue Rank (projected amongst all IT services companies worldwide): 3

2001 Combined Services Revenue: \$12.9 billion

Booked Business for future years: Not available

Service Employees: Not available

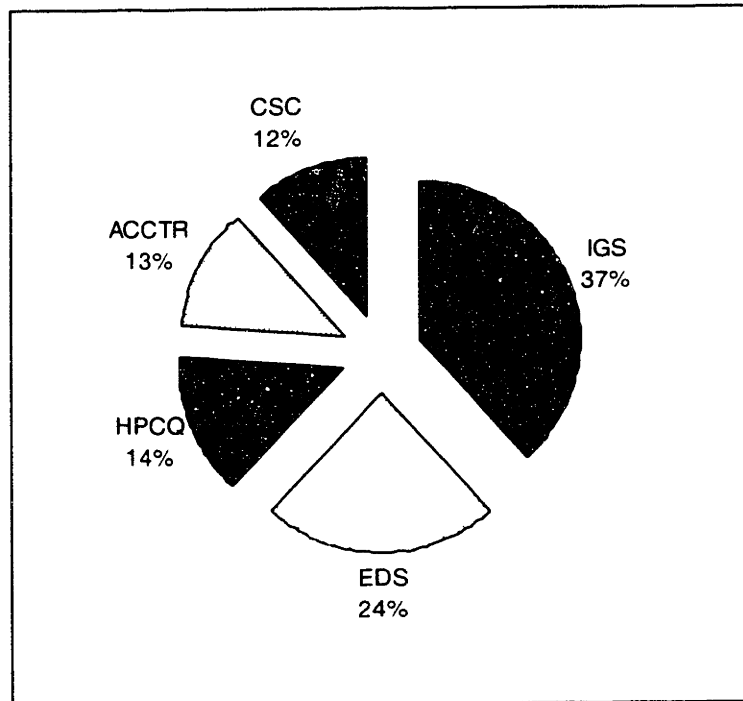
2001 Growth (not in constant currency): -7.8%

2000 Total Market Share: 2.10%

One of the key reasons why HP and Compaq's management supported the merger of these two organizations is that they felt that they could better leverage their client base and capabilities to grow their ITS business. (See Figure 3.4 for combined service revenues post merger)

While HP and Compaq have added many new service capabilities and staff over the last five years, a significant percentage of their service revenues are currently found in the lower margin and value segment of the industry – servicing and repairing the hardware that these organizations develop and manufacture. HP/Compaq do seem to recognize that these activities will serve as the foundation to their service revenue; however, they need to move into greater value-added services including a large portion of the range of services that EDS, IBM and others already provide.

Figure 3.4 - Percentage of Revenue from Top 6 ITS Firms in 1999-2000
Worldwide IT Service Vendor Revenue, 1999 and 2000, Gartner Dataquest, 2001



In 2002, HP solidified alliances with several other IT service providers, such as Accenture and the Management Consulting Services practice of PricewaterhouseCoopers, to provide a broader range of business consulting and IT outsourcing services. HP also partnered with systems

integrators, such as Deloitte Consulting, KPMG Consulting Inc., Cap Gemini Ernst & Young in order to help HP meet their customers needs.

HP and Compaq plan to have the necessary financial resources required in order to substantially grow their services business to the level where they can compete with IBM and EDS on a global scale. It will be very interesting to see if HP/Compaq continue to leverage the alliances that they have already formed long-term in order to help them grow their service business. Another likely option may also be for HP/Compaq to acquire some or all of these skill sets themselves either through internal development or business acquisitions.

3.3.4 Accenture:

Revenue Rank (amongst all IT services companies worldwide): 4

2001 Revenue: \$11.4 billion

Booked Business for future years: Not available

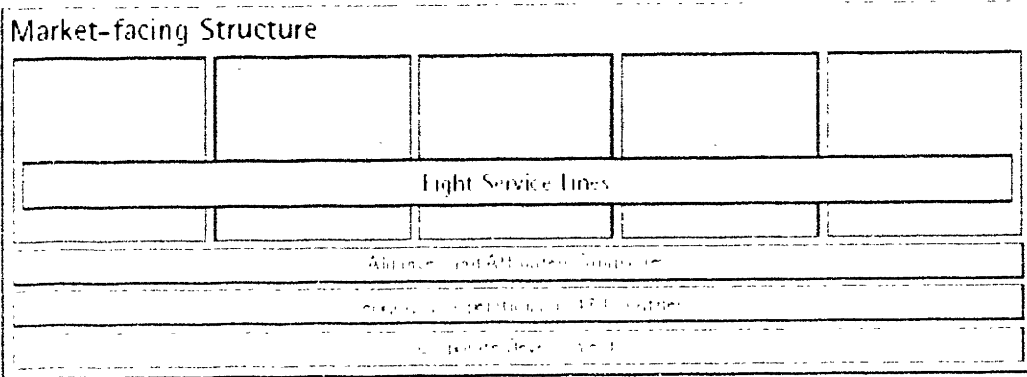
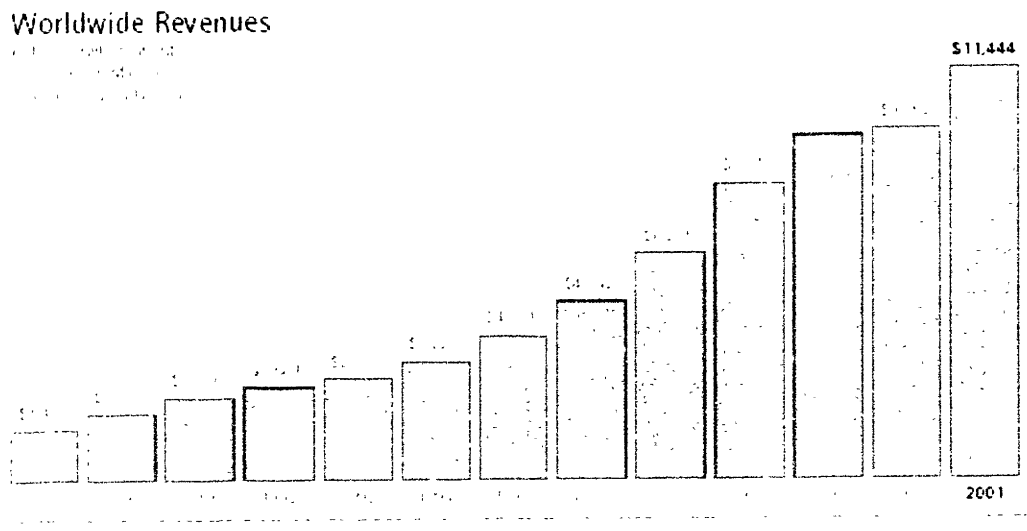
Employees: 75,000

2001 Growth (in constant currency): 23%

2000 Total Market Share: 2.00%

Accenture, formerly known as Andersen Consulting until 2000, is another interesting example of an organization that has taken their core competencies and expanded their range of services to serve the marketplace.

Figure 3.5 - Accenture Information
 Taken from 2001 Annual Report



Global Service Lines

- Customer Relationship Management**
 Creating significant, higher levels of customer and shareholder value
- Finance & Performance Management**
 Helping clients to analyze, optimize, and improve their financial and financial capabilities
- Human Performance**
 Maximizing client's human performance and productivity through technology-enabled training solutions
- Solutions Engineering**
 Creating innovative, technology-enabled business solutions that improve client's performance

- Solutions Operations (Outsourcing)**
 Adopting lean, efficient business models and driving enterprise growth through the integration of data
- Strategy & Business Architecture**
 Developing strategies that create new business models
- Supply Chain Management**
 Improving supply chain performance by reducing costs, increasing demand and drive additional revenue opportunities, getting the right mix of resources at the right time
- Technology Research & Innovation**
 Leveraging new and emerging technologies to develop the next wave of business solutions through Accenture Technology Labs

The largest player in the field that developed from a more traditional business consulting practice, Accenture offers such services as business re-engineering, data system design and implementation, customer service system consulting, Internet sales systems research and design, and traditional strategic planning. In 2001, Accenture made significant inroads with their outsourcing business as well, growing this business to \$1.98 billion, an annual increase of 20%, which now accounts for more than 17% of the total revenues.

One of the key reasons for Accenture's success is that they have built their business along five market-facing units that provide specialized capabilities and solutions across 18 industry groups.

3.3.5 Computer Sciences Corporation:

Revenue Rank (amongst all IT services companies worldwide): 5

2001 Revenue: \$10.52 billion

Booked Business for future years: not available

Employees: 68,000

2001 Growth (in constant currency): 12%

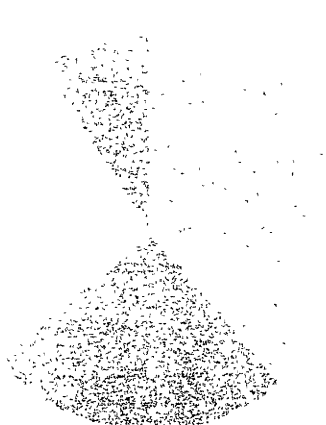
2000 Total Market Share: 1.7%

Computer Sciences Corporation (CSC) began in business in 1958 to provide software development services to hardware manufacturers such as IBM. Over the years, they have always played a significant role in the computer services sector as well. In 2001, 22% of their revenues came from systems integration services, 34% from management consulting and professional services and 44% came from outsourcing.

CSC has also always played a major role in assisting the U.S. government with their IT-related service needs. 25% of their 2001 revenue came from the federal government. Their employment ranks grew 10,000, or 17%, from 2000 as their outsourcing business grew substantially over this period of time. CSC also made two significant acquisitions to strengthen their BPO or business process outsourcing business; Lynd Corporation, which is a leader in technology-based insurance products and services, and InfoSer SpA which specializes in providing IT-related services to the Italian market.

Figure 3.6 - CSC 2001 Revenues

Source: 2001 Annual Report



Revenues by Market Sector (\$ in billions)

U.S. Commercial	\$ 4.1	39%
Europe	2.6	25
Other International	1.2	11
Global Commercial	7.9	75
Department of Defense	1.6	16
Civil Agencies	1.0	9
U.S. Federal Government	2.6	25
Total	\$10.5	100%

Revenues by Business Services* (\$ in billions)

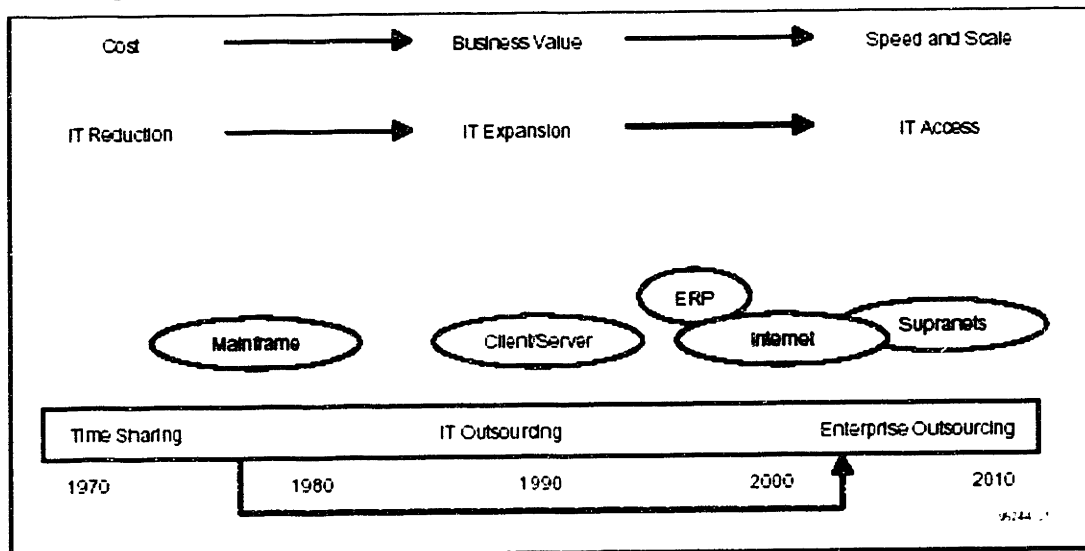
Management Consulting/ Professional Services	\$ 3.6	34%
Outsourcing	4.6	44
Systems Integration	2.3	22
Total	\$10.5	100%

* Based on CSC estimates

3.4 The Evolution of the ITS Marketplace and Implications for Competitors

Over the last forty years, the objectives and key rationales of firms choosing to work with ITS providers have shifted throughout history. This evolution is shown in Figure 3.7.

Figure 3.7 Evolution of Enterprise Rationales for ITS Utilization



Source: Gartner Dataquest (January 2001)

Organizations that engaged ITS vendors in the 1960's and 70's were mainly focused on reducing costs and leveraging the physical assets, like mainframe computers, of organizations such as EDS that provided timesharing.

During the 1980's and the early 90's the increasing relevance of computing technology shifted enterprise organization's focus from using ITS vendors for cost savings to using them to help their business add significant value or efficiencies to their operations via expanded IT utilization. In the mid to late nineties the focus of these enterprise organizations shifted again towards ITS vendors that could help their organizations with their experience and expertise in using the latest computing technologies that were beginning to revolutionize their business. It was also during

this period of time that some enterprises also began implementing complete IT outsourcing such as Kodak with IBM.

In the mid to late nineties, the shift in logic for seeking ITS vendor expertise had more to do with the speed and scale requirements that firms were trying to deal with in regards to a handful of critical business and technology challenges: the Y2K, “Millennium” problem, the globalization of enterprise organizations and the new realities and challenges of leveraging the public network of the Internet as a critical business tool.

These shifting market forces over the last forty years have also had a tremendous impact on the ITS vendors themselves, forcing vendors that desire to remain relevant to add a wide range of expertise to their portfolio over time. Each of these vendors was forced to transition or mature their business faster than the complexity curve in the actual market so that they could remain relevant to their customer base.

ITS organizations faced significant challenges when having to make the transition from a firm that provides solutions focused on cost saving advantages to one that provides more robust business value to these same customers as they attempt to leverage the advantages brought on by new innovative and business-altering technologies.

The reality of these types of market changes require that successful ITS organizations have a clear channel of communication with their existing and prospective clients. Good communication channels are necessary to fully comprehend and understand these kinds of changes in the

marketplace well enough in advance to ensure that they have the products and services available in order to meet their clients short and long-term needs. Organizations that lack this type of feedback from their clients find themselves at a distinct disadvantage.

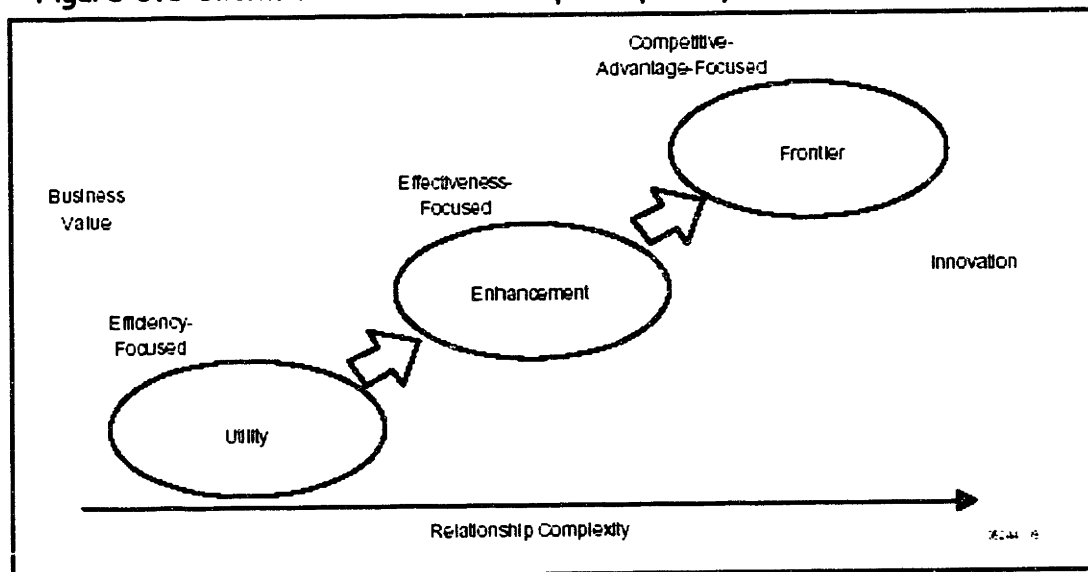
EDS probably is the best example of an organization that has gone through each of the steps that are detailed Figure 3.7. In each transition through these periods of time, EDS has been able to continue to meet their target client's needs. A key reason why EDS has been able to continue to meet their client's needs is because they have a clear and consistent business model. Unlike IBM, HP and Compaq, the core of EDS's business has also been to meet their client's needs to leverage technology and help organizations to maximize the value of technology, without being involved in the actual development of hardware.

Of course, a key part of an ITS vendor's ability to make these types of transitions has to do with the fundamental relationship complexity that they have with their clients. Organizations that have been successful in providing utility efficiency-focused services for their clients were also the vendors that also had the first opportunity to help their clients with challenges that required more complex client/vendor interaction and problem solving abilities. Firms that were successful in this arena, like Accenture for example, are then given the opportunity to move even farther to the right and up the business value and innovation chain.

A key point to Figure 3.8 is that the largest and most successful ITS vendors must have the type of relationships with their clients that enable them to move up the value chain. In order to build this type of relationship, ITS vendors must not only execute properly on the former challenges,

but they must also staff their organizations with individuals that have the ability to help the vendor move up the business value curve along with their clients as their needs change over time. Each of the six service vendors described earlier in this chapter have shown the ability to do this to differing degrees of success. Many of these businesses came from different origin industries, IGS and HP/Compaq from computer development, EDS and Accenture from consulting and CSC from systems integration. The future success of each of the companies will be determined by how well they can handle the increasing complexities of their client relationships in the future as technology solutions continue to evolve the market.

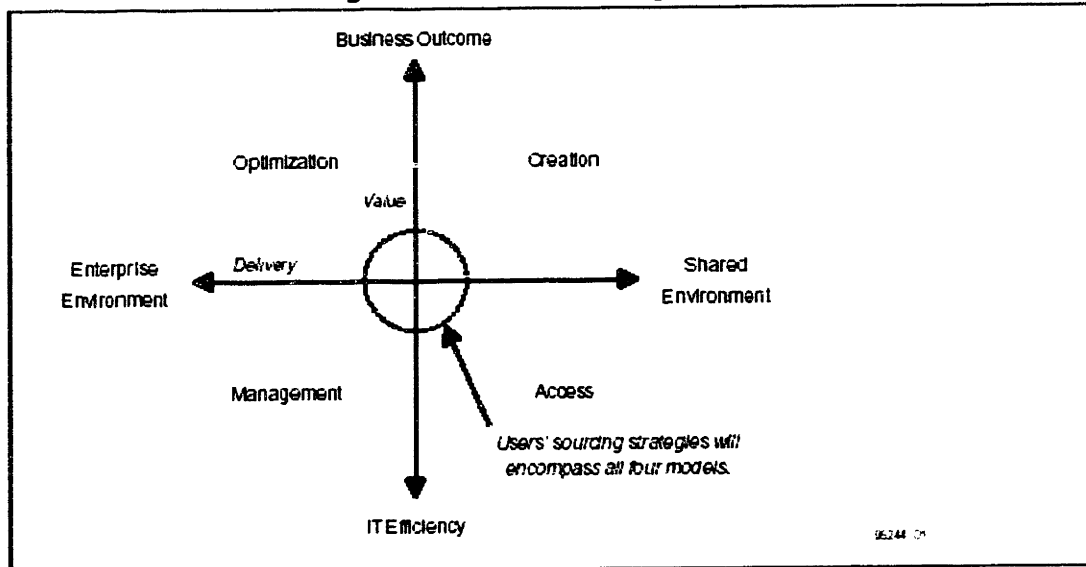
Figure 3.8 Client/Vendor Relationship Complexity, Value and Innovation



Source: Gartner Dataquest (January 2001)

As the ITS industry has matured over time, many vendors have found themselves to have the ability to offer services that focus on one of four unique outsourcing options. These options are shown in Figure 3.9 and comprise a Sourcing Matrix. The Sourcing Matrix encompasses four options: Management, Access, Optimization and Creation. Each of these has a specific approach for effectiveness (delivery) and a unique desired outcome (value).

Figure 3.9 The Sourcing Matrix

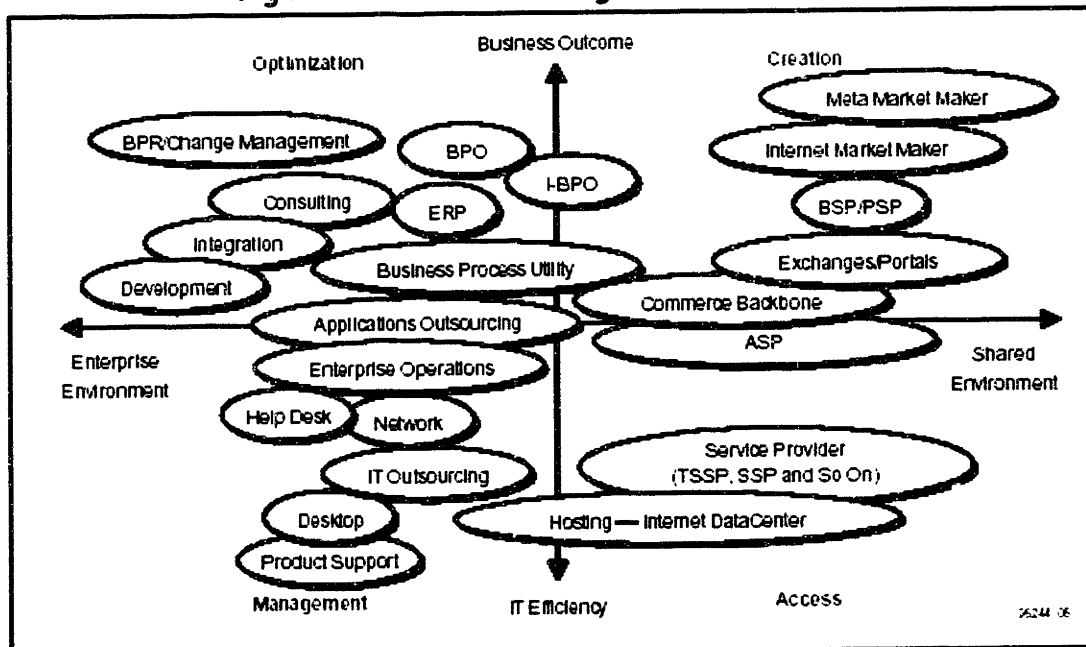


Source: Gartner Dataquest (January 2001)

The Management quadrant focuses on the most familiar and mature area of ITS – resource outsourcing. This is where an outside firm provides the human resources to effectively operate or manage the operations of their client. A firm’s objective for using management services is typically to maximize their return on assets. The Access quadrant represents the world of technology solutions at “Internet speeds”. In this quadrant, the key value-adds are speed and expertise to know what decisions to make quickly. A firm’s objectives when focusing on Optimization is to focus on key technology challenges that the firm does not have internal expertise and then leverage outside consultants in order to leverage some significant competitive advantage that will result in a core point of differentiation from their competitors. A firm’s objective when using optimization services is to exploit their knowledge and human capital to maximize market share. Finally, Creation is the final quadrant of this model. It represents an area where ITS vendors can help firms create value by helping them to leverage virtual public networks, like the Internet, and the internal knowledge of a particular firm and its virtual network

peers. These efforts enable firms to maximize the efficiencies and collective knowledge of supply chain as an example. A firm's objectives in using creative strategies focus around the objective of maximizing return on equity.

Figure 3.10 Four Sourcing Services Matrix



As an observer of the ITS industry considers the different services that each of the market players provides, it is very interesting to see how each of these businesses map across this matrix. These categories of services can be found in Figure 3.10. Due to the nature of the ITS industry, most large players originated their services business in the lower left quadrant of the matrix focusing on Management resources. Over the last fifteen years, a greater percentage of the top firm's revenues have shifted higher along the left side of the matrix as opportunities have provided themselves on the optimization side of the matrix. Now many of these ITS vendors also have large units within their business that focus on tasks that directly relate to the strategic or functional operations of their client, groups that focus on business process operations or business

change management. These services provide the ITS vendor the ability leverage their knowledge of their clients business across the whole services matrix and have been one of the most important drivers to increase revenues for these companies in recent times.

One of the most interesting aspects of this matrix, however, is how few large players are actually focused on the lower right quadrant of this matrix – the Shared Environment Access quadrant. While this quadrant was filled with small venture backed service providers throughout the dot-com days, this area is now relatively open and may provide a significant opportunity for ITS firms that know how to leverage this quadrant to its full potential. This quadrant is difficult for some of the largest ITS players to focus their business on because it requires a firm to leverage and market their “purely” digital solutions versus leveraging off their human resources. Again, in order to be successful in this quadrant, functions that have been performed historically by individuals are now automated with technology that is sold in a utility model. These solutions involved software systems that include artificial intelligence in order to handle some sort of application requirement from ERP to network management. The most notable organizations that focus on these types of solutions are the xSP firms that we discussed earlier, called MSP’s or ASP’s. These firms and their unique business proposition to firms will be discussed in the next chapter.

The challenge for ITS firms moving forward is going to be how they can meet their client’s needs as technology and firms continue to evolve over time. Firms that have a keen sense of their clients existing and future needs will have the opportunity to continue to evolve their businesses to meet these needs. Firms that do not continue to change their service mix and their approach to

their clients will continue to find themselves at different areas in the quadrant that provide less value to their clients.

One of the most interesting challenges for most of the larger ITS firms will be how they deal with the conflicting dilemma they may face in the near future as more and more of the management aspects of the services matrix have the ability to be addressed with technology instead of people. Many of these firms have added tens of thousands of employees to their payrolls, many of whom focus on these same management-focused services. It will be critical to these firms that they continue to develop technology that will end up taking the current positions of many of these people and then transition these resources to increasing challenging and more value-add services in the future. This is the next wave of business-changing reality that will have the most significant impact on this marketplace and on the individual ITS firms themselves in the next five to ten years.

4.0 MSP's: Definition, History and Future as Intermediaries

4.1 MSP's Defined

Managed Service Providers (MSP) have been selected for in-depth analysis since it is believed that they provide a very current and relevant example of how intermediaries are born, evolve and have the potential to provide disruptive change in the information technology sector. As a new industry alternative for Information Technology Services (ITS), MSPs have emerged and evolved very quickly and have established a significant role. They also serve as a great example to demonstrate the fundamental clock speed of the technology services industry and how different market forces including access to capital can influence the development of these types of market intermediaries.

While MSPs are a subset of the larger and broader sector of ITS, they are both unique and independent as a consequence of their service delivery model and their business arrangements with their customers.

“The Management Service Provider (MSP) label is being adopted by a variety of vendors that provide services ranging from basic infrastructure monitoring to the provision of a complete, outsourced infrastructure for customer applications. An unprecedented influx of capital investment in the MSP space has fostered the creation of more than 80 new companies, and is encouraging many Network and System Management (NSM) and outsourcing vendors to develop business plans to address the threats and opportunities of the MSP's model. Web hoster (sic), co-location facilities, Internet service providers and telecommunication carriers have all realized they must move up the “food chain” of technology services and many are beginning to

deliver management as services. Traditional outsourcers may also decide to enter the MSP market in a more general way, as many already provide management services to a subset of their current customer".⁶

The previous excerpt from Gartner, one of the technology industries leading analysts, illustrates the disruptive forces that emerging MSPs have stimulated. While their fate as a independent industry sector remains in question, it is clear that they have realigned the competitive playing field and supply chain in revolutionizing the way ITS and software are sold and delivered to customers.

In order to fully explore the MSP phenomenon and appreciate their influence as a disruptive intermediary a more thorough definition is in order. Since many of the new ITS players in the industry are ever changing, new labels, definitions and acronyms of these new players are often used loosely and inconsistently. The section will attempt to clearly define what Managed Services Provider are, what they are not, and to illustrate their ability to disintermediate other, larger and more established, players in the technology space.

xSPs are a new and generic name and acronym used to describe a wide assortment of new model ITS providers. An xSP is any form of ITS provider who delivers a combination of software and services on a recurring basis via a common network, most often the Internet. The drive towards network based computing over the last few years, fueled by the Internet, has spawned a wide variety of these new ITS xSP players, including:

⁶ Gartner Management Service Provider Vendor Segmentation Model, 9 January 2001

- **ISPs: Internet Service Providers**
- **NSPs: Network Service Providers**
- **ASPs: Application Service Providers**
- **HSPs: Hosting Service Providers**
- **SSPs: Storage Service Providers**
- **MSPs: Managed Service Providers**
- **AIPs: Application Infrastructure Providers**
- **MSSPs: Managed Security Service Providers**

All of these ITS providers, or xSP's, congregate around the concept of centralizing and aggregating computing resources and offering these resources on a usage basis to their clients through some form of network service. An xSP is, therefore, a generic term for any business that falls within this group.

Within the broad category of xSP's now defined, we now shift our focus to a more specific service provider group to study, Managed Services Providers (MSPs). The MSP Association defines these players as:

- "... companies deliver information technology (IT) infrastructure management services to multiple customers over a network on a subscription basis. Like Application Service Providers (ASPs), they deliver services via networks that are billed to their clients on a recurring fee basis. Unlike ASPs, which deliver business applications to end users, MSPs deliver system and network

management services to IT departments and other customers who manage their own technology assets. The appeal of the MSP model is that it eliminates the need for companies and individuals to buy, maintain or upgrade IT infrastructure management systems, which typically require a major capital expense, highly technical expertise, and a considerable investment of time. This model appeals in particular to enterprises managing e-commerce applications, such as ASPs and Internet Service Providers (ISPs), whose expertise lies in the applications they provide to customers, and to small and mid-size companies who prefer not to invest in a large IT staff. As with the ASP model, using specialists to deploy and maintain complex technology allows companies to focus on their core competencies and to tap right away into high-quality expertise as needed. There are variations in the model -- some MSPs provide tools and services, others services only, some target corporations and some are designed for consumers.”

These previous definitions should clarify what MSPs are and what functions they perform. As such, MSPs play a key role in contemporary disintermediation between hardware development organizations and their clients. They play a key role since, “MSP’s that provide active administration are firmly entrenched in the day-to-day administration of a customers environment, providing services such as systems database and application administration and problem/change management.”⁷

It should be clear from the rapid emergence and evolution of MSP’s that they are and will continue to change the status quo of conventional service delivery models. They have disrupted

⁷ Gartner Management Service Provider Vendor Segmentation Model, 9 January 2001

the method of delivering software and services via a utility-like model. The visibility that a MSP has into a firm's fundamental technology operations (i.e., their network, storage, security, etc., infrastructures) and resources could often represent a significant competitive threat to large systems integrators, hardware and software manufacturers, and telecommunications firms alike since these MSP's would have access to information that would provide them a competitive advantage and insight into the needs of these organizations. The very fact they are monitoring a firm's infrastructure, which is akin to their central nervous system, on a daily basis provides MSPs with important information, a unique customer relationship and, therefore, influence.

With technology becoming more ubiquitous and more complex, MSPs can be compared to a General Practitioner using medical nomenclature. As a General Practitioner they both diagnose and recommend preventative and remedial medicine. The outcome of this role and position of power and influence, for MSPs is the ability to:

1. Insert themselves as intermediaries between existing vendor and customer relationships perhaps redefining the value chain.
2. Assist the selection of hardware and software purchasing decisions; perhaps influencing future standards and trends.
3. Collect advanced knowledge on the performance of many vendors' technology products; perhaps providing a better window on future opportunities.

It is important to recognize that other organizations in the ITS industry defined as consulting and systems integration organizations offer some of the same "managed services" as a MSP. These

organizations, however, do not have the same cost structures and product mix; therefore, they are typically not as competitive as what are considered “pure-play” MSP organizations. Many of the organizations that provide these types of services, along with their more advanced outsourcing type models like IGS and EDS, also have a potential fundamental conflict of interest with the “pure-play” MSP model since these firms raise a significant majority of their revenues with business models that leverage human resources via large outsourcing projects based around the utilization of teams of people versus automating technology to perform similar functions as a “pure-play” MSP.

In summary, it is clear that organizations defined as MSPs have asserted a powerful and influential position in the ITS industry. It would be wise for surrounding player to have a full comprehension of their presence, function and activities. It should also be clear that the MSP role is just one example of how the field of competition in IT services can shift very quickly in times of rapid disruptive technology invention and innovation.

4.2 Managed Services Providers – A Brief History

In the late 90’s, as Internet infrastructure grew more complex and e-commerce became more competitive, demand for comprehensive infrastructure management emerged quickly. “Wall Street and the venture firms may have come down hard on dot-coms, but nobody can deny that the Internet is here to stay. According to IDC (International Data Corporation), more than half a billion people will be online by 2002. At the same time, business dependency on the Internet is evolving from informational and non-revenue generating content to complex transaction-based

revenue generating applications. Rick Juarez, senior analyst at Robertson Stephens calls this phase the “third stage of Internet and e-commerce infrastructure.”⁸

Leading this third wave of the Internet was the first wave of MSPs led by firms such as Exodus Communication, Loudcloud and InteQ. According to Juarez, as reported in 1999, these firms represented “the first disruptive wave of infrastructure-based solutions” as they began to emerge in the 1999/2000 timeframe. Santhana Krishnan, co-founder of InteQ, called the Managed Services Provider the “air traffic controllers,” or “Reuters of information technology.” “You need air traffic control to maintain order and avoid chaos. And you need Reuters to collect and make available all the information, which you can later use to your purpose. Similarly, we provide subscription-based services to monitor, track and report on IT environments at all times.” Krishnan further points out that while the dot-coms are a natural target for the MSPs because those companies traditionally have big plans and limited management resources, any company that has an IT infrastructure will need an MSP’s services.

META Group predicts that within the next couple of years, more than 35 percent of the Global 2000 IT organizations will engage a MSP indirectly, via business partners or service providers.

Throughout 2001/2002, MSPs continued to fill a widening gap in the ITS landscape. Their role was elevated and amplified as the Internet began to become ubiquitous and networks and network access became one of the most critical assets of many businesses. A recent Gartner

⁸ Rise Of The Management Service Provider. By Kamalika Banerjee, www.siliconindia.com/magazine, October 2000

reports states “the design and build market for corporate WANS has all but disappeared in favor of outsourcing or managed services that offer a business solution”⁹

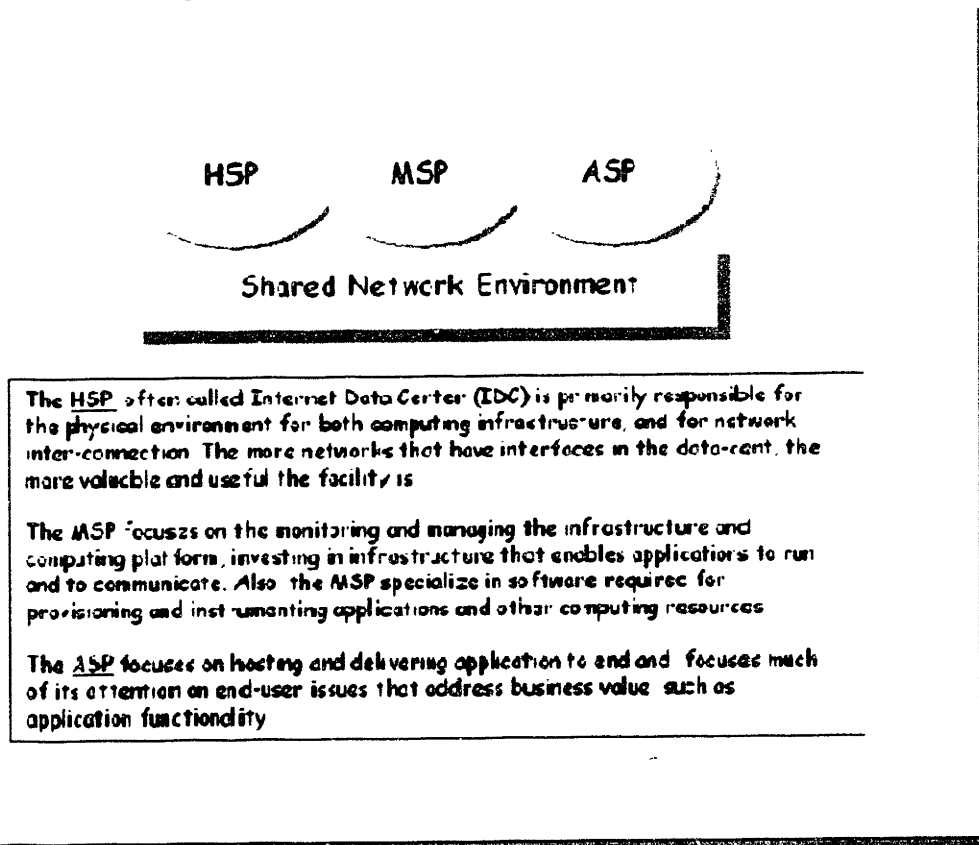
Since the market gap that MSPs were filling was comprised of software and traditional IT services, this put small and emerging MSP's in a particularly powerful and leverage-able position amongst the giants in the industry including HP, EDS, IBM and Accenture. Another interesting dynamic is that software such as Hewlett Packard's HP OpenView, BMC Patrol, and IBM Tivoli provide much of the technology to monitor and manage the most large firm's infrastructures and these solutions have been typically integrated by third party systems integrators such as Accenture, CSC, and EDS and turned over to a firms network operations staff to manage. Today, MSP's are integrating the software tools and the management skills required to provide these solutions and bringing these products and services together to the market as a service that is purchased from enterprise clients on a recurring basis. The MSP model has shifted the role of both the software developers and their intermediators and complementors in a dramatic way. Formerly, end users would purchase site licenses of the management software from the software company and consulting companies would then integrate this software to make it work for the end client. Now, MSP's purchase large quantities of agent licenses for the management software, they have the ability to integrate and enhance these tools for a very large cross section of clients and then they maintain these software licenses and the technology management services for the end user.

To put the MSP marketplace in further context both historically and practically, the following *Figure 4.1* illustrates the MSP position and role in the overall technology platform. With the

⁹ Gartner Managed Service Providers: Opportunity or Threat, 2001

relative positioning and context shown above in mind, consider that today there are over 80 MSPs offering similar but slightly unique value propositions. No single MSP enjoys market leadership status or has significant market share. This market space is ripe for consolidation that will shrink the total number of firms but will also increase the market power and influence of the remaining MSP firms as an intermediary. MSP's have created disruptive change in spite of their fragmentation and small size demonstrating the power and leverage an intermediary can have if properly placed in the value chain at the right moment in time.

Figure 4.1 - Shared Network Environment



Source: <http://www.xspstrategy.com/revgrow.htm>

The evolution of MSP's is not unlike what the Automated Data Processing, Inc. (ADP) did with payroll in the early 70's. ADP provided all of the tools and management skills to manage the payroll process for a wide range of organizations. This example is uniquely dramatic in that few organizations would now consider performing internally that ADP provides. Many observers of the ITS market believe that MSP's could play the same sort of role for this industry over time.

With firms beginning to accept the outsourcing of their networks as a practical and economically attractive alternative, organizations on both the vendor and client side of the information technology industry, are beginning to look across the supply chain for further opportunities to leverage the same types of business models leveraging the benefits of the Internet.

4.3 MSP Role in Technology Services; 2002 and Beyond

“Market analysts expect the demand for MSPs to grow exponentially as an attractive alternative to internally run IT management applications. Analyst projections estimate \$10 billion in annual revenue for Managed Services Provider by the year 2004. The need for impeccably functioning systems and networks, fueled by the burgeoning Internet economy, continues to raise expectations and requirements for robust performance. At the same time, the gap between demand and supply of skilled IT personnel, coupled with the complexity and expense of specialized system management applications, creates a formidable challenge for the administrative staff who are held responsible for efficient system operations.”¹⁰

¹⁰ <http://www.mspassociation.com/aboutus.htm>

While there is no doubt the Internet has brought about significant technology advancements, the counterbalance lays in the challenge corporate IT departments face in trying to keep pace, not only with new and rapidly evolving technologies but also with the new and rapidly evolving business models emerging to deliver those technologies. MSPs fit this market need well and are not likely to be the last significant business model that is a departure from the traditional organizations in the technology services sector.

The realm of e-business computing often reveals a tangled, distributed maze of infrastructure and software components that somehow must work together without fail. Thus, the importance of system and application management continues to intensify as businesses increasingly recognize the direct correlation between system performance and bottom line revenues. Relief from these mounting technology pressures has come about via the creation and emergence of the MSP model. The MSP is leveraged as an extension of an IT organization's current internal technology management resources and is focused on infrastructure management. Key to differentiating the MSP business model is the pool of high-level expertise and data interpretation that is delivered along with the tools.

In a Newport Group study on performance management, Chief Information Officers (CIOs), were asked how often performance data reports were reviewed. One third of the respondents said never or rarely and a full 47% reported that there were instances where performance data did not allow for complete problem resolution. This underscores the importance and value of delivered expertise via a MSP because accurate and efficient data interpretation is at the heart of the value proposition. To survive in today's economy "(MSPs) must demonstrate that proactive

infrastructure and application management by a third-party offers clear cost and operational benefits over the client-operate model”¹¹

Based on this analysis, the newly defined role of MSP is here to stay, the only question remains what form these firms will take and whom will provide this service. In evaluating and segmenting markets in the technology space it will be wise to understand this segment of players and to stand watch for other new agents of change and we go into a phase of technology exploitation.

As one senior MSP executive states, “In the future pure technology plays will be unsustainable business models”. If this observation is accurate, MSP’s and similar players will move very quickly toward the business, process and technology strategy components in the supply chain creating a further threat to the entrenched existing players.

Other trends to look for in the MSP space as it matures are consolidation, vertical integration, and the evolution of scale players. This promises to make these players more important, powerful, sustainable, and potentially threatening to incumbent technology manufactures, systems integrators and software firms alike.

¹¹ Gartner MSPs and IT Services Providers: Feeding From the Same Trough, 2001

5.0 Framework for Future Strategies for Technology Firms

5.1 Overview

In the chapter four, a new and rapidly emerging player in the ITS space, MSPs, were analyzed and explored to demonstrate the speed at which intermediaries can develop and the importance intermediaries can play, in addition to illustrating the potential lifecycle of this one set of players. The MSP market was singled out due to both the velocity at which they emerged and disrupted the market status quo, and their potential to further influence the shape and competitive landscape of the technology services industry.

In this section, new frameworks for analyzing and developing future market strategies will be discussed for relevant information technology firms. This framework consists of three key components of analysis, which are as follows:

1. Defining and understanding the market context and micro-economic cycles in a rapidly changing technology industry;
2. Defining the market segmentation and the lever effect of complementors and intermediaries; the threat intermediaries play with their ability to backwardly integrate once they establish a solid position in the supply chain.
3. Defining the channel states and the cyclical nature of these states.

With this framework, future strategies and outcomes can then be mapped out in the technology sector so that firms can tap into intermediaries and use their levered effect to their benefit by

mapping the landscape in the context of both their products and services and the context unique to the many competitive situations they will face.

In building this map, firms can assess whether intermediaries are friend or foe. It should also be clear that friends and foes can no longer be defined on an institutional basis, but must be defined on a situational basis based on the market context, micro-economic cycle state, and macro-business technology cycle state.

5.2 Market Context and Micro-economic Cycles

Technology today is a case of survival of the fittest. As the economy slows and technology budgets continue to be ratcheted down, IT consumers are placing a premium on demonstrable Return On Investment (ROI) value and immediate needs. Companies that have the ability to be innovative and continuously demonstrate value will be rewarded with market share and survival. To borrow a metaphor coined by Geoffrey Moore, managing through the various technology cycles is akin to “Crossing the Chasm”¹². The chasm(s) to be crossed in this case include the threat of being boxed out or rendered irrelevant by quickly emerging intermediary and managing the cyclical nature of technology expansion and contraction.

Since its inception, the technology sector has expanded and has been a dominant and high growth industry in the macro view. However, there have been numerous micro-economic cycles of significant contraction, as is currently being experienced. Similar to the current technology

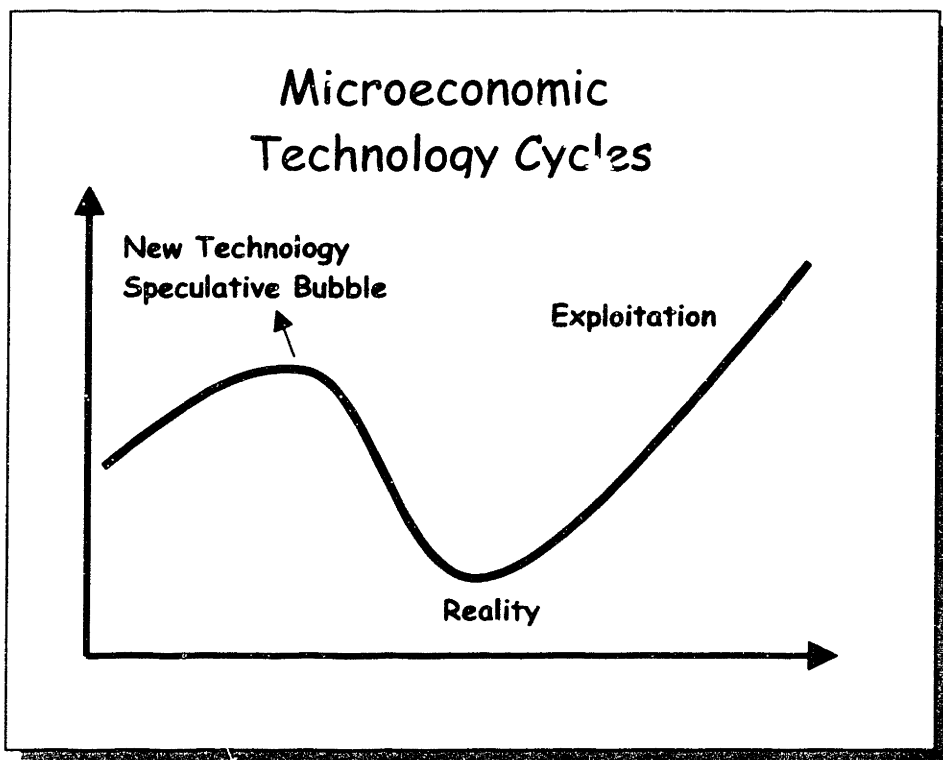
¹² Geoffrey A. Moore, *Crossing the Chasm*. 1999

recession there have been significant periods of retrenchment in the 1967-1971 and 1982-1986 timeframes.

It is important to understand the history of these former economic cycles so that we can better interpret where technology markets are heading in the future. According to IDC, in the first 40 years of the IT industry, technology companies sold \$6 trillion worth of products and services. In the next nine years this same industry is forecasted to sell \$15 trillion worth of products and services.

Consider the following Figure, which was articulated by John Gantz, Chief Research Officer at IDC's Directions 2002 industry conferences:

Figure 5.2 - Micro Technology Cycles



As illustrated, the technology industry has gone through many micro technology cycles over the last forty years. These cycles are characterized by periods of rapid innovation and discovery that result in a “technology bubble.” Invariably, these bubbles are created by over-investment in products and or services relating to the promise of these new offerings. Often times, these “bubbles” are followed by short periods of time of inflated and unmet expectations. The inflated expectations of the market often then create an over supply in inventories or over investment in the most innovative technologies. Following these periods of time in the cycle, the top firms take advantage of fruitful periods of technology harvesting or exploitation where sustaining progress is made in areas, such as productivity, customer intimacy, communication and knowledge management, based upon the new advances that resulted from these original investments.

This micro trend is supported by industry analysts claims that between 2003-2012 nine trillion (US dollars) will be spent on technology goods and services. Yet, at this point in time in the cycle, we are in a state of micro decline that aligns to the “reality” point in *figure 5.2* (based upon all economic data available). The following technology milestones which have occurred and which will fuel the coming ‘technology harvest’ further support this expectation of a robust exploitation cycle:

- Number of U.S Internet users exceeds 150 million
- Number of Mobile Internet users worldwide exceeds 100 million
- More than 500 million PC’s installed world wide
- Worldwide Telecom spending exceeds 1.1 trillion

- Number of instant messages reaches 500 billion per year
- More than 600 million Internet user worldwide

Rapid technology advances in conjunction with changing and highly networked and global business environments, which characterize the current overall technology market, are creating a series of disruptions in the technology supply chain. New entrants whom are able to aggregate and bundle products and services will be well positioned to thrive and dominate this supply chain, as periods of harvest tend to be ROI based and solution focused. Several additional key mega trends driving value chain disruption are as follows:

- Data-centricity - The Internet and the rapid adoption of e-Business and data analysis applications are producing a tremendous amount of information. In addition, new forms of data (images, audio, and video) are accelerating the demands for storage. According to IDC Storage Systems will be a 44 billion dollar market by 2005.
- Componentization and Complexity - New and more powerful storage hardware, software and networking technology are being continuously introduced catalyzed by fierce competition.
- Limited ability to manage – The traditional approach of deploying application servers with direct-attached storage is no longer efficient to manage, particularly in a high-growth environment.

- Globalization, Connectivity and Always on Computing - The Internet and e-business models change the world of IT from a 15 x 5 on line environment to a 24 x 7 on line environment leaving no down time for the traditional 'batch windows' where most storage and data housekeeping took place. The need for business continuity services was sadly illustrated in the events of September 11th.
- Mobility – Mobility is causing the rapid emergence of new devices and the role of clients and servers are being redefined, and the ubiquity and reach of the network is extending.

It is difficult to imagine, considering the above technology milestones and trends that the technology industry is not heading into a period of sustained harvest resulting from some of the discoveries and breakthroughs surrounding the Internet boom. However painful the current state of technology companies, the discoveries that occurred in the bubble of 1998 –2000 combined with the current business trends will fuel an intense and sustained technology harvest.

5.3 Market Segmentation and the Lever Effect of Intermediaries

The theory and principles of leverage are powerful and the uses broad. However, for a lever to gain its multiplier effect, placement and alignment are two critical components. In discussing the relative importance of alignment in business strategy Arnaldo Hax, in his book the Delta Project, states the following:

“Here is the paradox. People are working harder and more productively than ever before, but executives are worrying more and more about execution. CEO’s believe that their organization cannot effectively carry our new programs. Various pundits have responded

to these concerns with a flurry of so-called panaceas. Managers have been bombarded by fad upon fad addressing the perceived need for improved execution. These include total quality management, time-based management, business reengineering, and the seven habits of highly effective managers. We will argue that managers are misguided in focusing solely on project execution; instead, they must carefully address the alignment of execution to strategy. Execution is not the problem: Aligning execution with strategy is!”¹³

Therefore, in order to gain alignment and maximize the leverage effect of the intermediary channel, the following two key concepts must be defined, understood and rationalized:

1. Identifying one’s precise location in the supply chain
2. Identifying the high leverage components in the supply chain relative to one position.

In order to knowledgeably develop future strategies, a firm must first understand the relevant intermediaries that exist in its market segment and the leverage that each of these intermediaries may have. The MSP marketplace is a relevant and contemporary example of this phenomenon. Firms that are influenced by a MSP’s presence and position need to understand the value that this type of organization can bring to their customers so that they can build a strategy that will complement their products and services and at the same time prevent them from being abstracted from their customers

Focusing on discovering the vector of key products, services and players in each of a firms relevant markets is crucial to alignment; both from the perspective of the intermediaries

¹³ The Delta Project

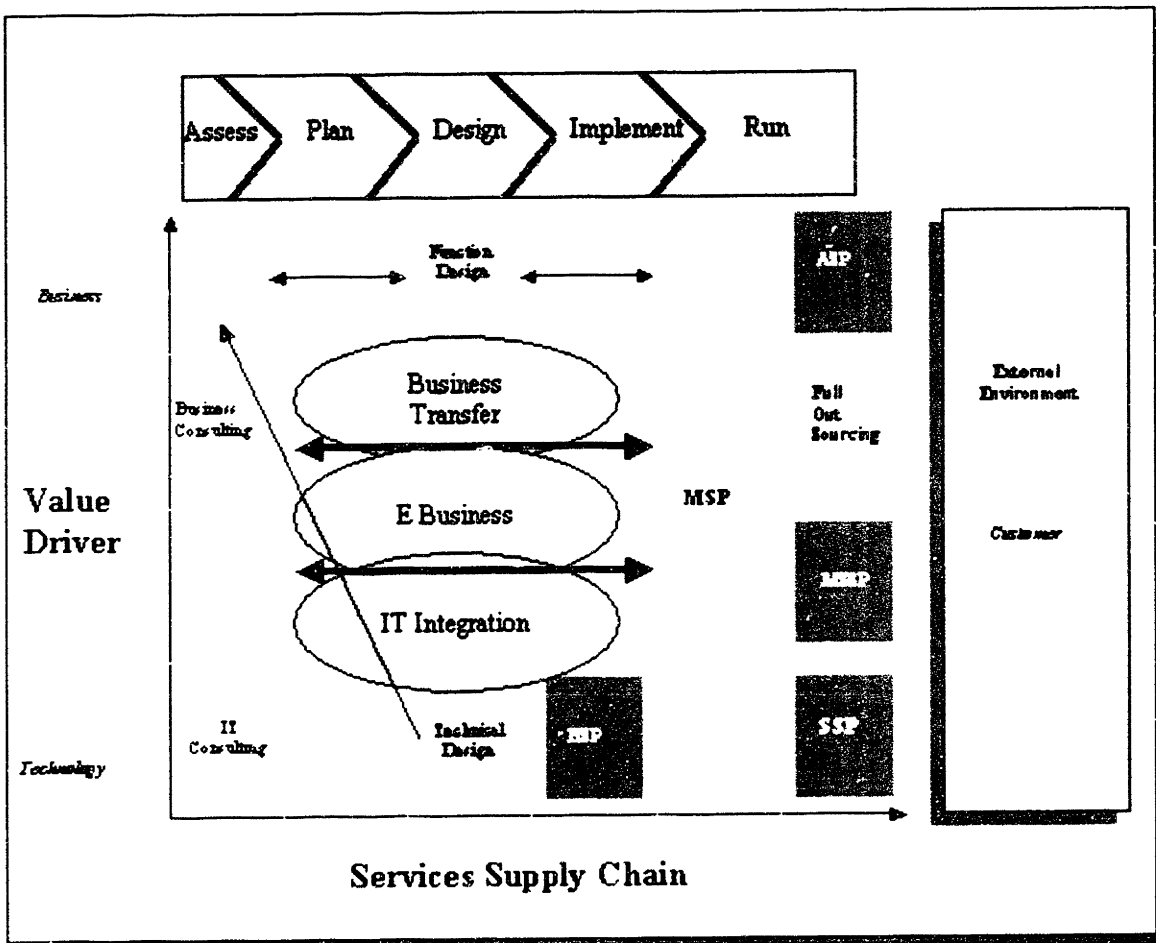
themselves and from the perspective of the surrounding players. *Figure 5.3* illustrates the position the MSP occupies on the technology supply chain, and their potential to be a dominant intermediary via backward supply chain integration. In this figure, value drivers ranging from technology to business are on the Y-axis, and the key components of the supply chain are on the X-axis. The figure is then broken down to components, like squares on a chessboard, to allow scrutiny of each component under different conditions. Components high on the Y-axis represent high value added products or services, while components low on the Y-axis tend to be commodity. Similarly, components to the right on the Y axis are closer and more visible to the customer, while components to the left on the X axis tend to be more distant and abstract to the customer. By using the orientation defined in the framework, it is possible to look at one's firm from the customer's perspective and to discern between foundational, commodity, products and services and high value add and differentiated products and services.

Several important features to recognize in this figure are the vertical orientation of the MSP, the MSP's proximity to the customer, the wedge effect they have between many players, and their potential ability to control squares on board through backward integration, both vertically and horizontally.

The simple fact that new entrants into the ITS industry, like MSPs, may have the capability to become a serious intermediary between existing vendors and customers represents a dramatic shock to a supply chain. The fact that some MSP's have the capability for backward integration on the supply chain to address more of their client's needs as they develop or acquire new skills demonstrates their potential leverage and the impact that MSP's could have. The consequence of

these powerful forces is a supply chain that could be fundamentally realigned. This ability to realign the supply chain for ITS firms is critical for all players in the IT market to understand.

**Figure 5.3 - IT Services Market Segmentation/Supply Chain
From the MSP Perspective**



Source: Paul Brady and Raymond Leach

It should be understood by all players in the ITS market that competition is no longer institutional; it is situational and non-institutional. The player who understands what is best for a customer and can deliver both through internal capabilities and co-opted capabilities will win the client's business. It should be further understood that the previous figure represents a snapshot

in time and is very dynamic. Shifts at the client level are very likely for most firms. Understanding how this figure looks for one's firm, based on the players involved within a given account, is central to understanding the current position and stature at a client level.

An excellent example of a firm who understood and applied this principal is IBM. IBM used the concepts illustrated in this section to help fuel their re-ascension to prosperity and dominance beginning in the early 90's. In this time period they faced an inflection point that threatened their 20-year reign of market dominance and possibly their survival. In interviews with several IBM executives, there were recurring themes used to describe their approach: pragmatic, service-orientated, and customer-focused.

Critical to IBM's success over the last decade was their ability to quickly evolve their strategies to reflect the environment around them. IBM has an extensive range of capabilities in software, hardware and services and is able to blend these capabilities into winning solutions to meet specific customer's needs in many different situations. This approach is very different from their monolithic 'we do it all' approach of the 70's and 80's and is useful as a model for all firms who are interested in becoming more channel, market and customer aware.

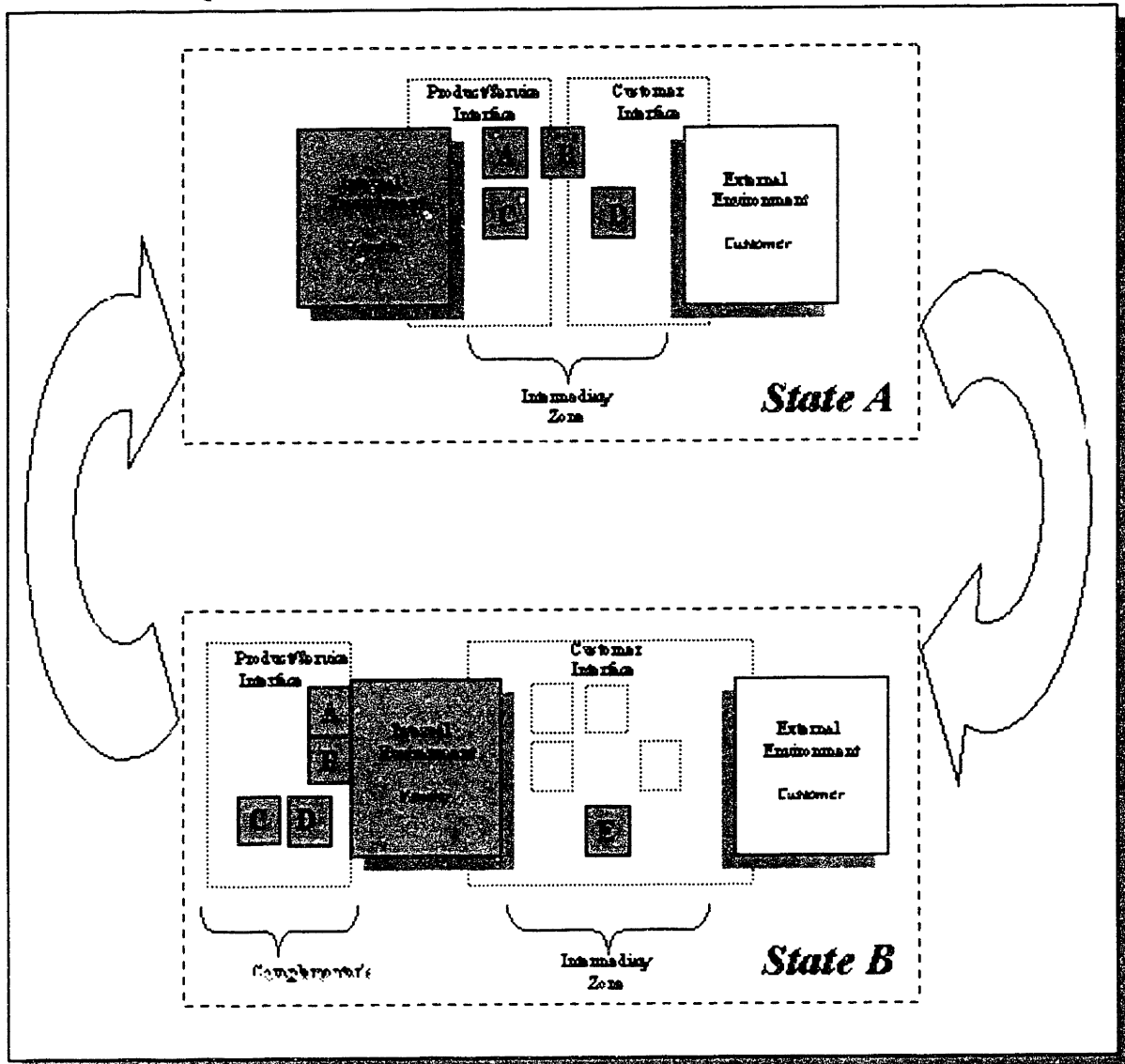
5.4 Channel States - The Cycles Nature of Intermediaries

Figure 5.4 illustrates intermediary, or channel, states and the cyclical nature that typically characterizes these states. The two larger rectangles identified by the words Internal and External represents the two primary players in any given supply chain. The smaller rectangles

represent discrete intermediaries who offer focused or specialized products or services in the supply chain, and as illustrated, they can be complex and many.

State A is intended to illustrate and characterize a period of high innovation which tends to be the norm in periods of rapid development of new technology, business and/or process change. This state is much more likely to occur in the speculative bubble period described in section 5.2. In this state, change is likely to occur very quickly as a result of intense investment and innovation surrounding some key important discoveries or breakthroughs. This leads to crowded channels with few clear standards and multiple configuration and paths between customers and vendors.

Figure 5.4 - Intermediary States and their Cyclical Nature



State B tends to be the norm when the velocity of technology discovery and innovation slows either towards the downward sloping period towards the end of a bubble cycle or towards the top of the curve in technology exploitation cycle. As change slows, large firms tend to use their scale and broad range of capabilities as a competitive advantage and then use their resources via acquisitions and partnerships to move significant intermediaries behind them in the value chain to gain closer proximity with their customers and eliminate the former barriers.

Through having a clear understanding of these intermediary states and their cyclical nature, technology firms can determine their state and position in order to get a clearer picture of why intermediation is taking place, and by whom. For the ITS industry, an example of a cycle A would be the development and acceptance of the Internet as new critical tool for organizations to leverage. This new reality brought a tremendous amount of venture capital investment in order to create firms that would offer services to organizations that were interested in benefiting from the Internet. These firms, examples being Razorfish, Scient, MarchFirst, stepped in between technology development firms as well as traditional ITS firms to disintermediate these market players. In cycle B in this Figure, most of these same new firms ultimately became victims to the Internet bubble and have now either been acquired by larger market players, have gone out of business, or have lost much of their comparative advantage regarding Internet services as longer-standing ITS firms have caught up with these new players and are now offering competitive offerings in these same product areas.

These cycles represent the fundamental underpinnings of the ITS industry and provide one of the key frameworks for firms in this industry to understand their short and intermediate term strategies. Since cycles A and B seem to range from four to seven years, long-term strategies are not able to be determined from one set of these cycles. However, it certainly seems that understanding the fundamental realities of leveraging and/or consolidating the products and services of a firm's intermediaries will be an important lesson that successful firms need to have. A deep understanding of both the states and intermediary components is essential in order to maximize the benefits of a realigned supply chain.

6.0 Frameworks Applied; Strategy Development in Technology Services

6.1 Overview

Chapter five presented three important theories to provide the basis for a framework, which will facilitate the strategy development with careful consideration given to intermediary channels. This chapter provides an overview on how to apply these theories and frameworks. The central objective in applying these frameworks is bold and simple: **to create game changing plays, or moves, for an organization that has historically focused hardware development and now wants to begin to better leverage the capabilities of a firm with significant ITS resources.**

As illustrated using our MSP examples, the intermediary channel can be fluid, complex and powerful. To use the game of chess as a metaphor, it is clear that different players in different squares wield drastically different power over time as chess game evolves. It is also clear that the power wielded is dynamic, can shift rapidly and is cyclical and time sensitive. Therefore, understanding which players should be on which squares at which time is crucial to success in a chess match. Similarly, understanding which services firms should provide to the marketplace and the timing of when to attack, defend or hold ground on each type of service is crucial to assure growth and success in the technology services industry.

The technology industry has experienced a fundamental shift; it has moved from a paradigm of 'invent and control', to 'innovate and service'. Carly Fiorina, CEO of HP, stated in a recent CNBC interview; "Business process transformation and IT implementation are now inextricably linked". If this is true, the only logical conclusion that can be drawn is that technology is moving toward a utility model. As the IT ecosystem will continue to evolve and mature there will be

more complex solutions with more common components. Commoditization in hardware technology is a reality. A key method of differentiation and sustainable advantage for firms today is through service innovation, which is generated first by customer intimacy and knowledge then by the execution of a plan that maximizes the potential of this information and access.

Unlike conventional hardware developers, intermediaries, or complementors, by their intrinsic nature, innovate and service. They are born by adapting inventions and intellectual property that they, most often, do not control. By acquiring better knowledge of customers' needs and packaging product or services offerings to address these needs, new intermediaries insert themselves in the value chain between the customer and the existing historic players. Therefore, understanding intermediaries as a strategic weapon or as a competitive threat is crucial. In an effort to effectively develop "go to market" technology strategies, firms must give proper consideration to the intermediary channel. In thinking about this channel, firms should analyze the following models to gain appropriate perspectives in order to build future strategies. Firms need to consider the following:

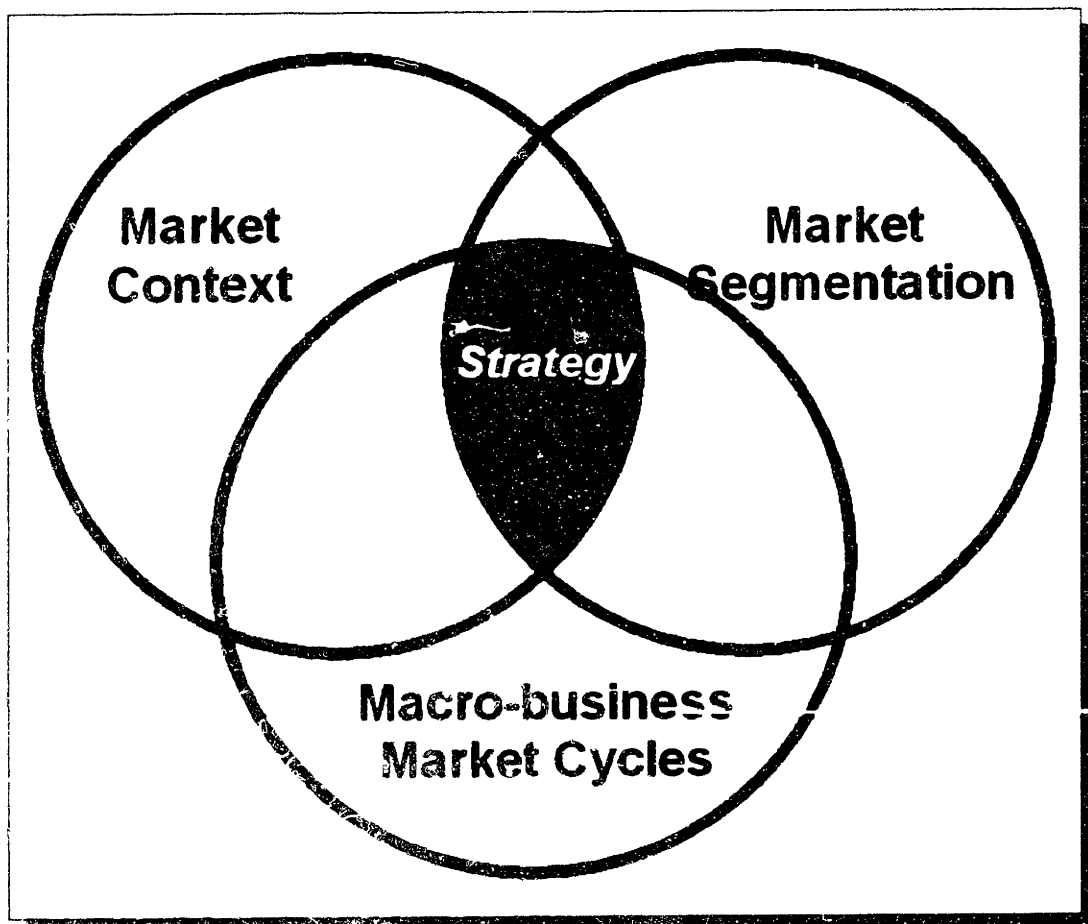
1. Understand present state macro-business market cycles; are new entrants crowding the intermediary zone due to rapidly changing technology, or is limited consolidation and supply chain integration occurring around the large player?
2. Develop strategies around your desired position in the supply chain being mindful of the important 'squares' in both broad and specific competitive situations.

Are you building, aligning or partnering your products and services with elements in the supply chain that enhance your offerings?

3. Understand what channel state you are in, and align your offerings and partners accordingly. Are you in a cycle of fragmentation or consolidation?

Figure 6.1 illustrates how these three components overlap and the interrelation of the aligned components of this framework:

Figure 6.1 - Macro-business Cycles

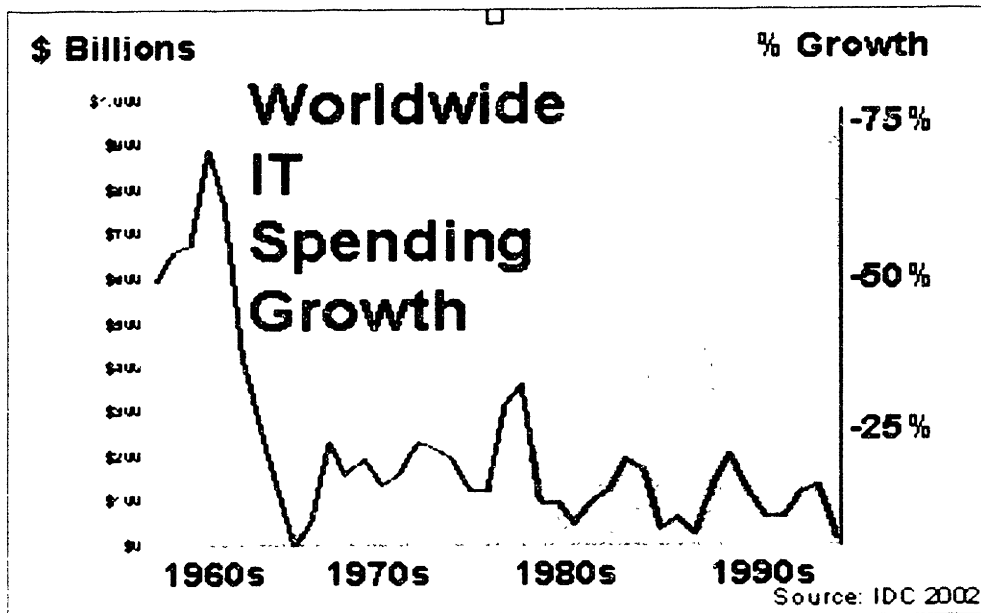


The remainder of this chapter will provide the models and frameworks beneficial to answering these questions using the tools introduced in chapter five. These models will create a process to discover comprehensive answers to technology firm's strategic questions. It should be noted that the three frameworks defined here are of use when studied independently; however, they are more powerful when viewed holistically. They represent a system with components that may overlap and interact with each other. The most effective use of these models will be to align all three components to define an optimal strategy.

6.2 Market Context and Micro-economic Cycles

Figure 6.2 illustrates worldwide IT spending since 1960, contrasted with a line chart, illustrating change in year over year % growth. This demonstrates a pattern that represents 40 years of growth, which contains episodic crashes and rebounds.

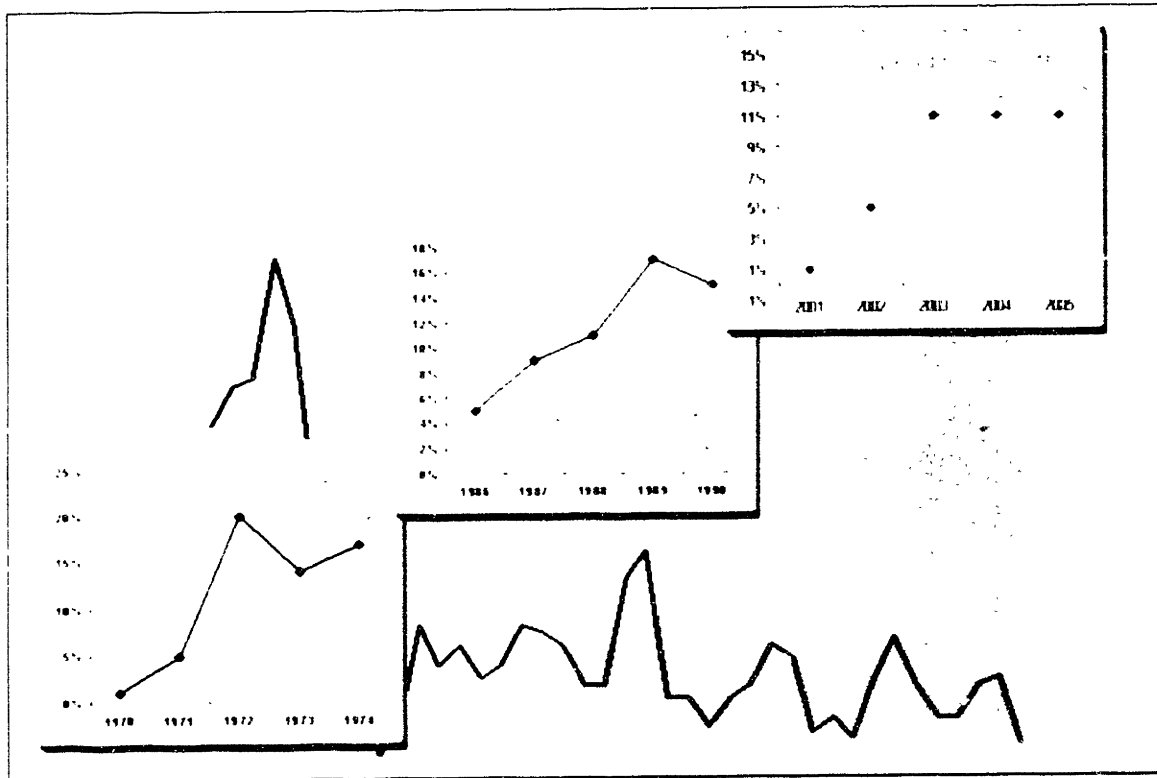
Figure 6.2 - Historical Spending VS Growth



“The rebound is coming. It always does. And while it’s easy to focus on the “when” of the rebound, the real question should be “what then?” History shows us that after each major downturn in the IT industry, major transitions ensue. After the mainframe crash in 1969 and 1970, a new slate of vendors appeared to service a new category of buyers. After the PC stock crash of 1983, most first-generation suppliers disappeared and were replaced by newcomers better equipped to deal with corporate buyers. Soon after the recession of 1991, we entered the Internet era and had to redefine what it meant to be an IT supplier.

What can we expect after this recession? The answer is new user buying behavior, new channel requirements, new vendor success factors, and a sharpening of technology and architectural."¹⁴

Figure 6.3 - 40 Years of Rebounds

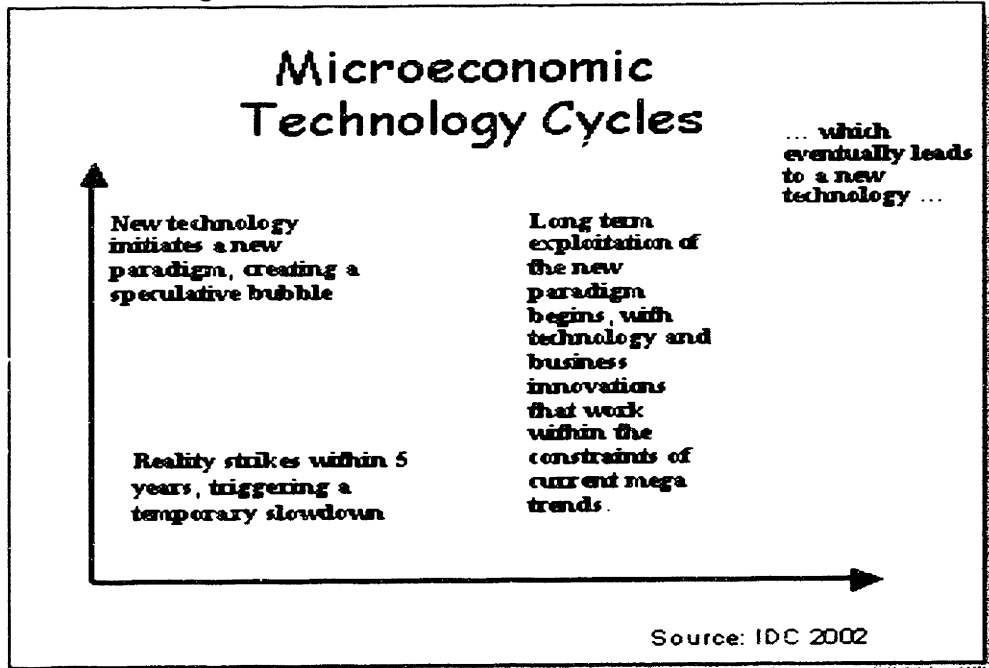


Source IDC

Figure 6.4 was initially introduced in Chapter Five to demonstrate that although the technology industry has been characterized by steadily straight-line positive growth since 1960, there are many shorter-term macro cycles that do not represent straight-line positive growth and are in fact volatile.

¹⁴ John Gantz, Chief Research Officer, IDC Directions 2002 Conference

Figure 6.4 - Framework for Technology Cycles



The key to applying the above framework for establishing a strategy is to understanding your firm's present position on the S curve illustrated. Successful strategies should vary greatly depending upon where you believe your firm and sector are located on the curve. 'Firm and Sector' are deliberately mentioned because it is believed timing can vary across firms and sectors within the technology industry. In some respects, these cycles represent the current tone and mindset of the marketplace.

To assess your firm's or sectors' location on the S curve, you should assess if your firm or sector is expanding or contracting, and if your target customers are driving for new technological breakthroughs, or to harvest existing technology investments. Using this framework allows firms to create 'go to market models' that.

1. Leverage customer preferences and needs
2. Flow more naturally with existing trends and characteristics
3. Provide the highest value at the lowest cost to the suppliers and partners

In today's technology markets, success is predicated on understanding the market, the role of your product as a solution or a standalone product, and alliances with intermediaries. For example, Microsoft's rise to market dominance began in the early 1990's, which was a period on the heels of a bubble leading into a period of exploitation. Microsoft leveraged this period of technology exploitation through a web of partnerships and innovation, not through breakthrough technology discovery. Similarly, in this same timeframe, IBM began its legendary turn around, again through customer knowledge that allowed them to form an optimal value chain for their customers, which in turn enabled IBM, and their customers to maximize the benefits of technology. Consider the outcomes of Microsoft or IBM strategies, which were formed in the early 1990's, if they had attempted to focus on technology discovery versus technology exploitation. If they had chosen these different strategies, it is very likely the technology landscape would look very different today. A good example of a firm that linked their success to technology discovery in this time period was Apple Computer. Many industry observers hailed Apple as a company that had built great, innovative technologies in the early nineties; however, they continued to lose market share in the PC business because these technology development went against the needs and trends of a large portion of users in the industry.

In summary, the critical elements to utilize this framework are to establish the S curve each firm is facing and to align your strategy to the market posture of the key inflection points in the S curve.

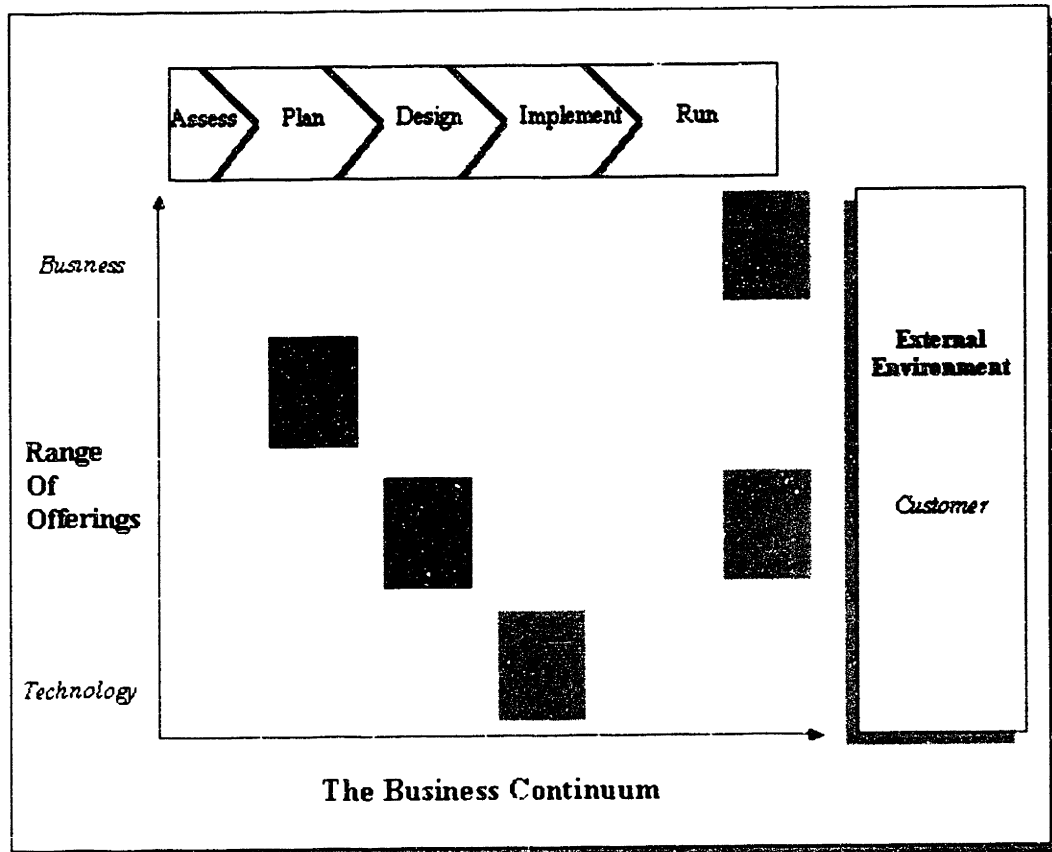
6.3 Market Segmentation and the Lever Effect of Intermediaries

Today, the technology industry is heading into a period of “technology exploitation” as the industry begins its recovery from the Internet Bubble of 2001. With this backdrop, efficient and effective “go to market” and business models will be equal to or more important than product strategies in the coming years. There will be a greater power shift amongst players in the market caused by the increased demand for solutions versus products. Success in terms of increased revenues and profits in these periods of time are realized through solution sales. Defining cogent solutions requires a well-grounded understanding of the value chain, relative to your product or service, and understanding of the ecosystem, or chessboard, that constitutes your market. As the ITS ecosystem continues to evolve and mature there will be more complex solutions with more common components. Solution providers will be required to translate business needs into technology-based solutions.

Figure 6.4 provides a model for defining a value chain and solution components into an integrated view. Along the top of Figure 6.4, is a typical services value chain for the ITS industry. Inside each of the components within the checkerboard are the services or product components relevant to a firm’s offering that should be included whether they are proprietary to your firms, components delivered by competitors, or components delivered by partners. Once this graph is completed, the value chain can be optimized and aligned with each of the service components in it, and firms can make strategic choices as to which components it will address

based on their existing and desired core competencies. The process of completing this model clarifies to a firm which components have leverage, present opportunity or present risk to a particular firm's strategy.

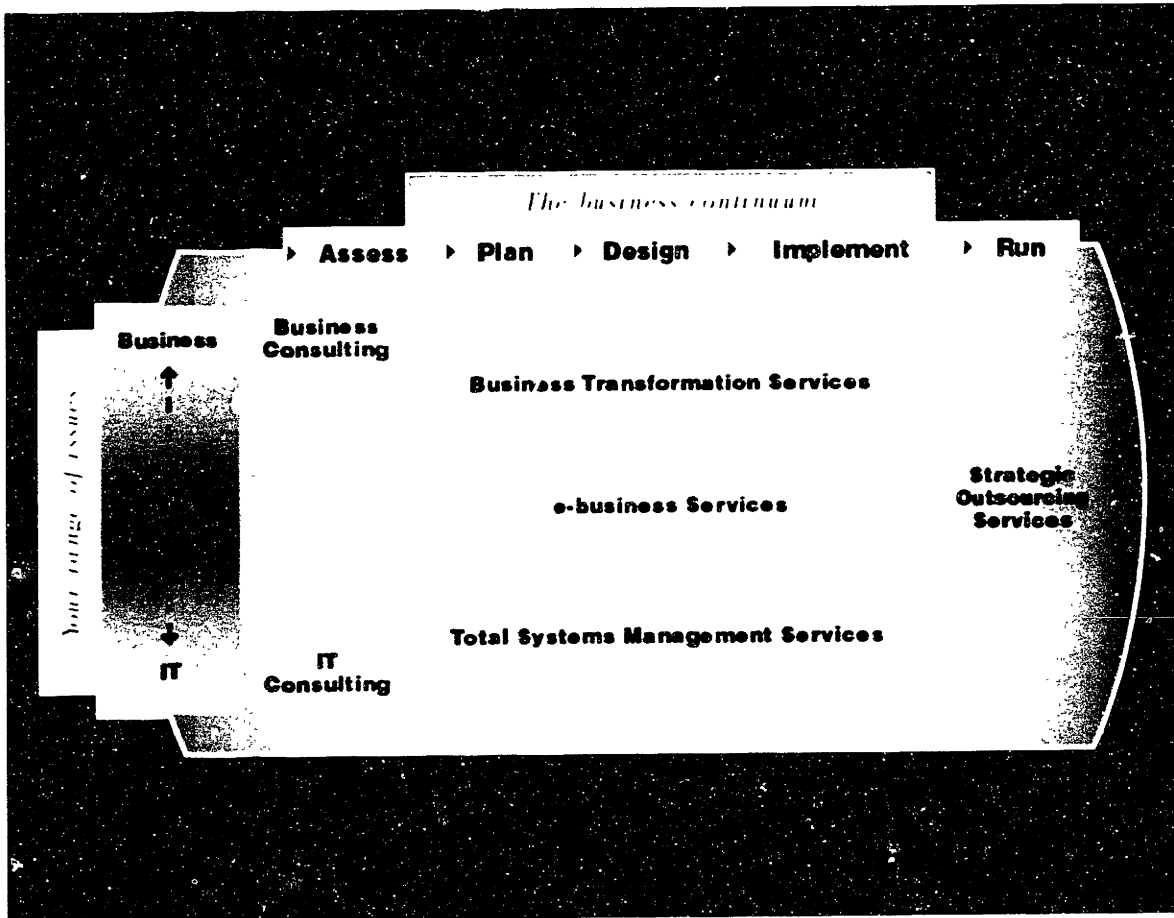
Figure 6.5 - Value Chain/Competency Component Model



This model can also be used for evaluation and strategic planning at both the market and individual customer model. In interviews with IBM executives, it was learned that they used a similar methodology to identify points of entry into targeted clients as well as defining account penetration strategies, both vertical and horizontal, as their relationship and knowledge of a customer developed.

Figures 6.5 and 6.6 illustrate IBM's version and approach to populating this model, which was used very effectively as they transformed themselves into the leading ITS firm in the world.

Figure 6.6 - IBM's Value Chain/ Foundation

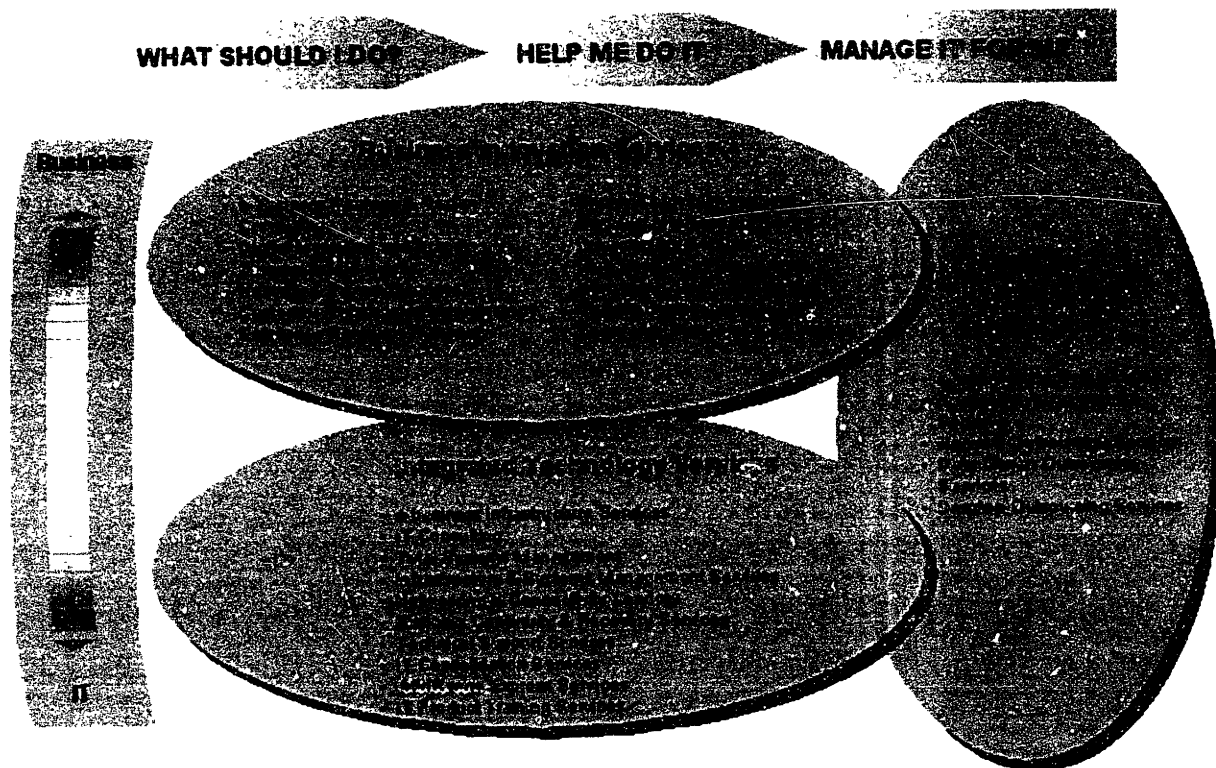


Source: Information Technology Management Services Association, June 2000 Conference

While Figure 6.5 focuses on the Value Chain and the foundational level services to be provided within this value chain, Figure 6.6 provides specific competencies within this model where they choose to focus. By getting to the level of specific competencies, it is very easy to identify specific services components that are affected by intermediaries, or channel players.

Understanding at this level of detail is a tremendous asset since it provides a tool to easily identify competitive threats, partnership opportunities, and acquisition opportunities.

Figure 6.7 - IBM's Competency Model



Source: Information Technology Management Services Association, June 2000 Conference

6.4 Macro-business Cycles of Intermediaries

According to IDC, by 2005, 59% of all servers and storage worldwide will be delivered via indirect channels. The channel can also be described as a complete and dynamic web of intermediaries. More specifically, the channel can be characterized as follows:

- Any third-party sales vehicle used by manufacturers to sell products or solutions to a customer
- One of the emulated business strategies
- Not a differentiator
- Not “patent-able”
- Not owned by any supplier, available to all
- Capable of either pushing towards higher volume, horizontal focus or vertical specialization
- Vendors that work with partners in strategy achieve the greatest results

Further, according to Janet Waxman, Program Director of Systems and Storage Channels and Alliances for IDC, “Channel Energy is never created or destroyed, it is only transferred from one company to another.”¹⁵ Therefore, understanding the cycle of the intermediary and channel topography is critical to establishing the strategy and timing for leveraging these intermediaries to your firm’s maximum benefit.

While disintermediation sounded like a great concept with the advent of the Internet and ubiquitous and inexpensive and easily accessible networks, this concept left several important questions unanswered:

1. Who is going to integrate the product
2. Who is going to support the product

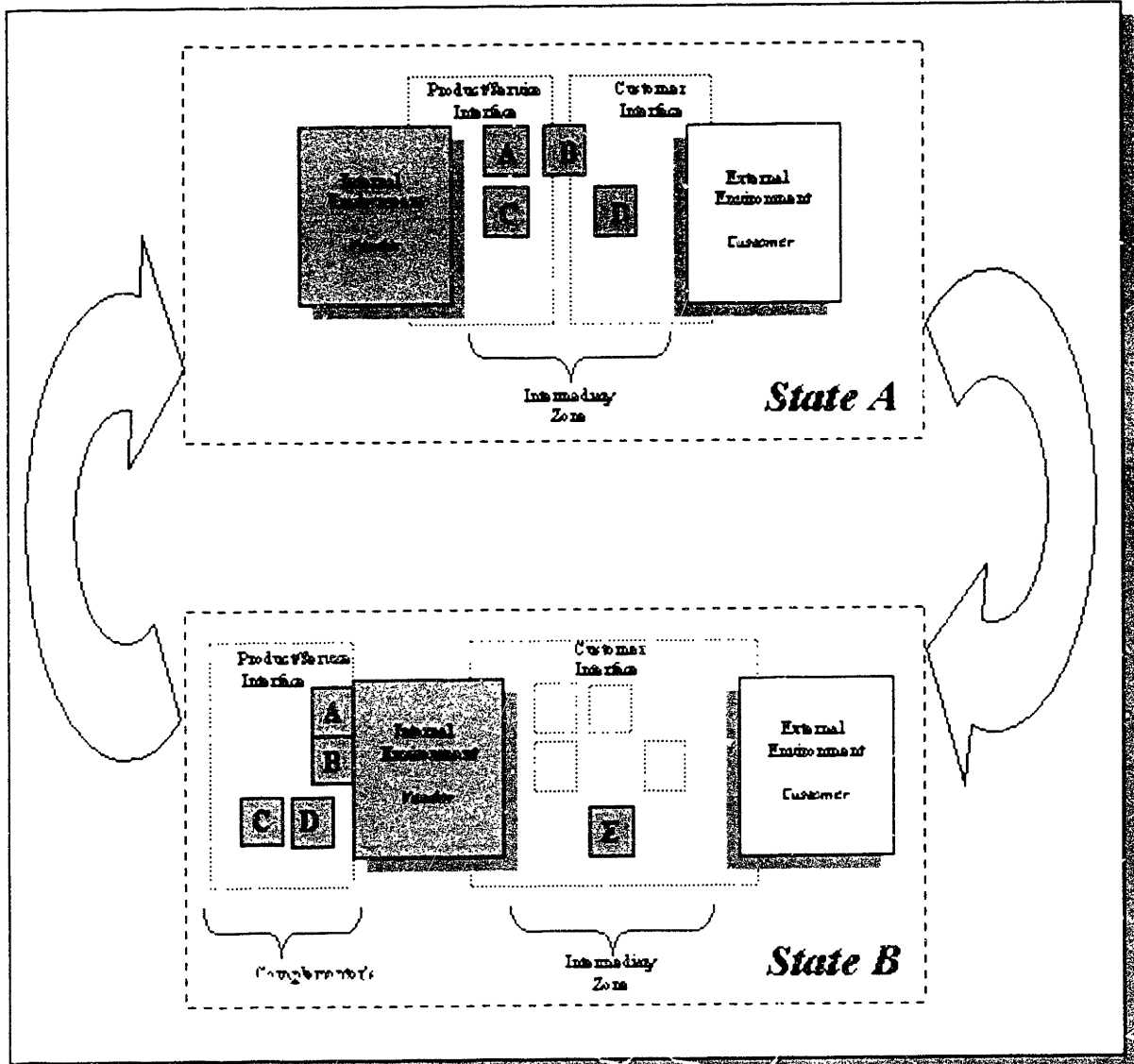
¹⁵ Janet Waxman, IDC Directions 2002 Conference

By understanding the two states represented in *Figure 6.7*, these questions can be answered by a firm or industry with consideration given to the current condition of the market place, which is believed to be cyclical in nature, and rotates between these two extremes based on the current micro-economic technology cycle. To illustrate the use of this framework, assume a firm is in the position of “Vendor” in the figure. By taking this perspective, existing and/or potential competitors in your channel can be identified.

By identifying these players you can evaluate the best path to the customer and determine how many degrees of separation exist between you and these customers. While it may be tempting to believe that State B is inherently superior since it provides better proximity to the client, that may not be the case based on micro cycles. For example, if we are in a period of technology invention which is capital intensive, your firm may want to rely on other players to take the risk of invention and bear the R&D costs and maximize the breakthroughs of these player via partnerships and shown in State A.

Alternatively, in periods of harvest where customer intimacy and innovation are critical, firms may begin to reposition themselves into State B via acquisitions and more restrictive partnerships putting the firm into the lead position in the intermediary zone when interfacing with the customer.

Figure 6.8 - Intermediary States



Establishing the target state based on the variable cycles or states allows a firm to partner effectively, spend conservatively on both R&D and acquisitions, and to focus a firm's resources on optimizing your development of relevant solution sets and your leverage of the channel and maximize the potential with a firm's customers.

7.0 Conclusions

While many firms “talk the talk” with regard to being intermediary-aware, solution-focused and services-led companies, few truly “walk the walk.” The firms that have instinctively done this since their inceptions, like Microsoft, have risen to dominance very quickly and the firms that have had a mid-life awakening, like IBM, have dramatically changed their direction and fortunes.

According to Charles Fine in his book Clockspeed: Winning Industry Control in the Age of Temporary Advantage, “a company’s real core capability – the inner core, if you will – lies in the ability to design and manage the supply chain to gain maximum advantage, albeit temporary, in a market where competitive forces may change at lightening speed.”¹⁶ Intermediaries will continue to play an important role for the technology industry due to their flexibility and market power that they possess with end-users.

The following five conclusions summarize our key findings and conclusions with respect to intermediaries’ historic and ongoing role in the technology sector:

- I.) Intermediaries market leverage and power is increasing. Intermediaries have gained increasing power in the market as a result of standardization, rapid change and proximity to the customer. This power has grown to the extent that certain well-positioned intermediaries have marginalized the role and power of once significant market leaders.

¹⁶ Charles H. Fine, Clockspeed: Winning Industry Control in the Age of Temporary Advantage

II.) The center of gravity has shifted from supplier to consumer for technology firms.

Successful ITS firms of the future will need clear understanding of the needs of their customers and the ability to provide these customers with value-enhancing solutions. NOT simply technology. To succeed at this, firms will need to have clear value-enhancing channels connecting them to their customers.

III.) New and emerging business models, such as xSP's, will require competitive firms to dynamically and quickly adjust their value chains and intermediary channels. Most of the largest ITS firms today began their business's with rigid product or technology focuses. Rapidly changing business models, such as xSP's, will require firms to quickly recalibrate their offerings to address rapidly shifting markets.

IV.) The key to successfully leveraging intermediaries is to understand key market relationships to rationally connect the dot between you and your customer. Firms will need to maintain a context-sensitive market map based on business and economic cycles.

V.) Because of its brief history, technology trends and business cycles can be identified and studied to assist in contemporary strategy assessment and development.

Being an intermediary-aware company requires not only a significant cultural change for product companies, but also major changes in strategy, process, management, and measurement throughout the entire company. Leveraging the models and frameworks presented in this thesis

will help facilitate this transformation. These frameworks will assist a firm in examining when and how to pursue a channel and intermediary aware strategy to best complement their own core capabilities.

Figure 7.1 Framework as a System

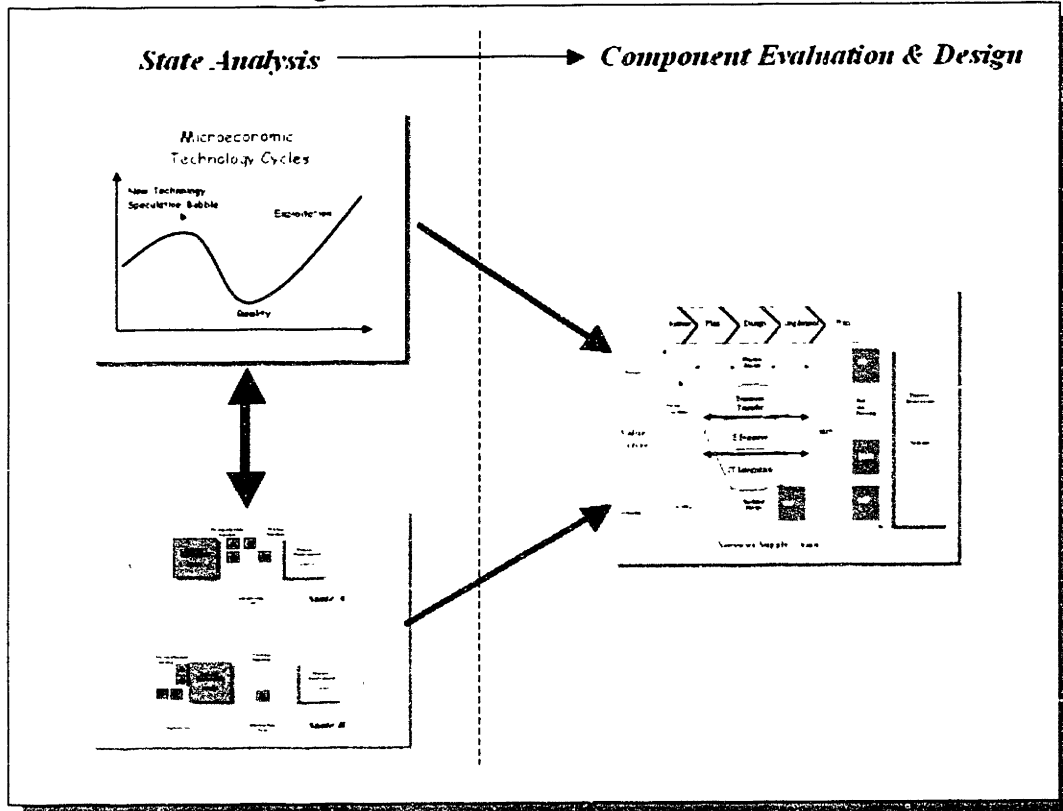


Figure 7.1, illustrates the framework presented in chapters five and six as a system with its three key components, which:

1. Provide a method to assess the “Micro-Economic” state
2. Provide a method to assess the “Intermediary”, or “Channel” State
3. Provide the necessary data and context to develop a component segmented Value Chain/Market Segmentation Model

It is through these frameworks that firms in the ITS industry can come to understand and appreciate strategic options when considering opportunities to enhance their market power.

Appendix A – Summary of Interviews

1. Kumar Yamani President & CEO, Co-founder, SiteLite
2. Reddy Marri COO, SiteLite
3. Santhana Krishnan, Chairman and Co-founder, InteQ
4. Box Lux, Mayfield Group, MSP Investor
5. Ellen Hancock, Former CEO Exodus Communications, Former Senior IBM Executive
6. Steve Aleshire, CEO Aleshire & Associate, Leading MSP Strategic Consulting Firm
7. Bob Antia, Chief Technology Architect, Exodus Communication
8. Victor Tang, PhD Candidate, MIT Sloan School of Management
9. John Sheputis, Chief Operating Officer and Vice President Sales, Totality
10. Sharmila Shahani, Vice President, Marketing and Business Development, Totality

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