HYLSAMEX AND THE E-COMMERCE

by

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SUBMITTED TO THE ALFRED P. SLOAN SCHOOL OF MANAGEMENT
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2000

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ABSTRACT

E-commerce is changing the way companies operate. Its growth is impressive and the future of this technology will play a key role in the business world.

The steel industry is no exception to this scenario. It will be highly impacted by the Internet; even now, several Websites have been developed that bring buyers and sellers together. Companies must be prepared to face the challenges that this technology will bring with it.

Hylsamex, like other leaders in the steel industry, should be aware of these changes and be ready to take advantage of them. This thesis analyzes the industry and Hylsamex through the use of different frameworks. The analysis shows that the competitive position of many companies will be impacted by e-commerce and most areas of any company should adapt their processes to make full use of this technology. Companies that do not move quickly into the Internet will have hard time surviving. The Internet waits for no one.

The big decisions for companies today are how and when they should go into e-commerce. These decisions will be driven by a company's objectives and its current strengths and weaknesses.

Thesis Supervisor: John D.C. Little
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ACKNOWLEDGEMENTS

To my wife, Paloma, who has been my constant support during all our years together, and without her love and help this year wouldn't have been as extraordinary as it has been.

To our children, Eugenio, Paloma, and Diego, who are the engine that makes us look into the future.

To my parents, Rafael and Olga, who have given me the tools to face every life situation.

To my thesis advisor, John D. C. Little, for his help and guidance.

CHAPTER ONE

Introduction

Steel has played a key role in the history of the mankind. Everywhere we can find items made of steel in many different forms, and usually we just take it for granted, not realizing how important it is in our lives.

For some countries, the steel industry has been used as a means of development; for others, where many other industries depend on it, the steel industry has helped the country to move toward a better economy. Mexico is a good example of this, and one of the companies that has played a key role in the Mexican steel industry is Hylsamex, located in Monterrey, Nuevo Leon.

Like many other industries, the steel industry has been affected by the dramatic development of information technology during the last few years. The advent of the Internet and e-commerce, which offer different methods of doing business, have acquired huge importance in the global business world.

These new technologies affect our lives and cause many companies to change their way of operating. In the steel industry these changes have affected companies for some time.

1.1 THESIS OBJECTIVE

The objective of this thesis is to understand, through model analysis, how e-commerce can affect the operation and competitive position of Hylsamex, as well as other companies within the steel industry.

1.2 METHODOLOGY

For this analysis, several specific frameworks will be applied that will help explain the changes that companies are undergoing or considering in the near future as a consequence of the existence and use of the Internet.

The first framework is the **Five Forces Model** proposed by Michael E. Porter. In this framework, which is used to assess industry in general, Porter outlines five forces that affect industry structure. These forces are:

- intensity of rivalry among competitors,
- threat of new entrants,
- threat of substitutes,
- bargaining power of buyers and
- bargaining power of suppliers

These forces are illustrated in Figure 1.1.

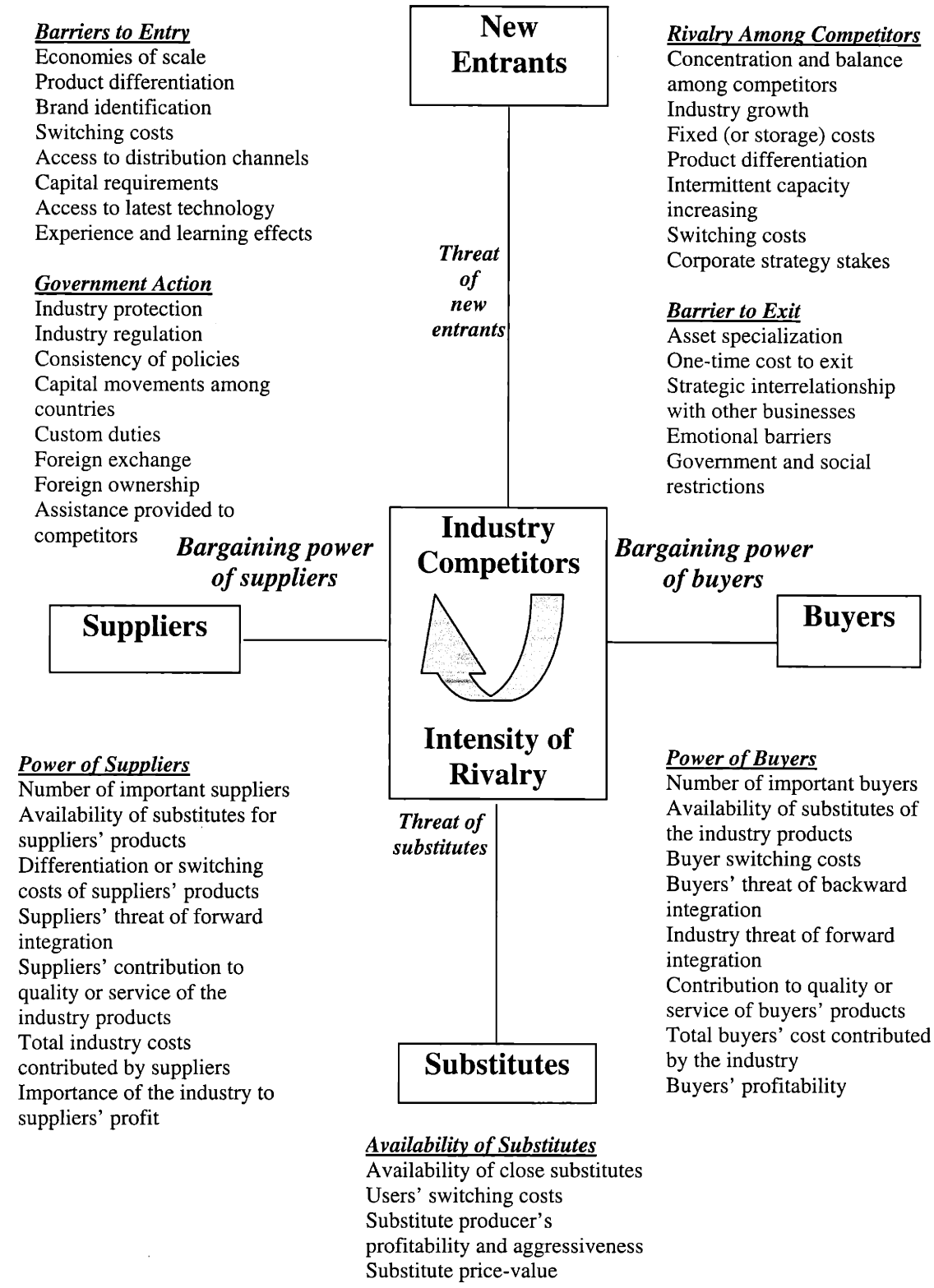
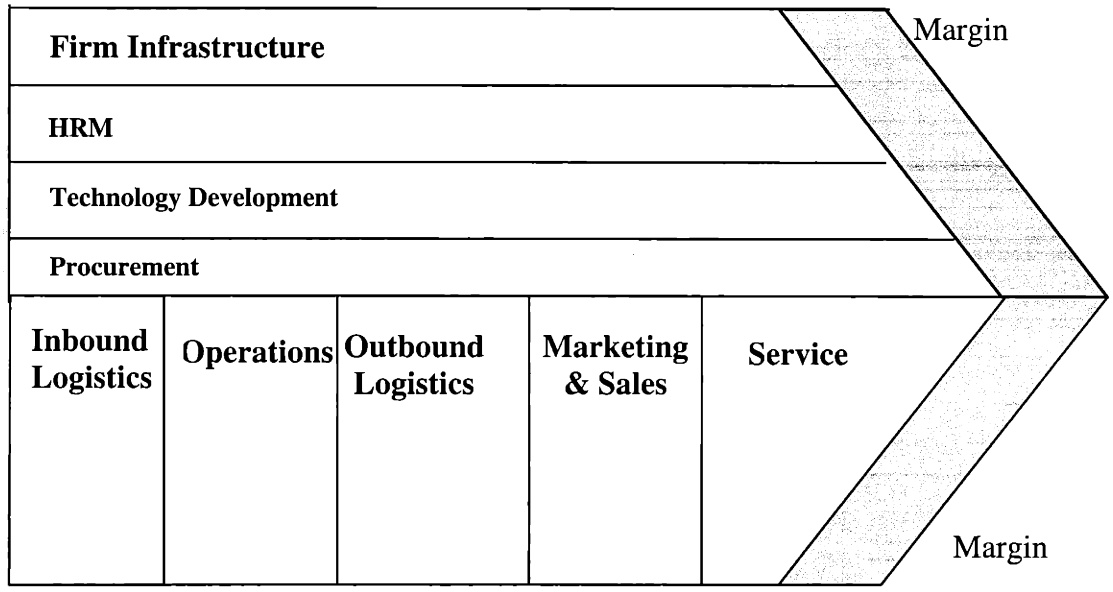


Fig. 1.1 Porter's Five Forces Framework

SOURCE: Adapted from Michael E. Porter, 1985

The next framework (see Fig. 1.2) to be used is Porter's **Value Chain** which analyzes the factors that affect the competitive position of a company. The Value Chain model classifies tasks into nine categories. Five are called *primary activities* (inbound logistics, outbound logistics, operations, marketing and sales, and service) and the other four are *support activities* (firm infrastructure, human resources management, technology development, and procurement).



Source: This setup for the value chain was suggested by Michael E. Porter, 1985

Fig. 1-2 The Value Chain Framework

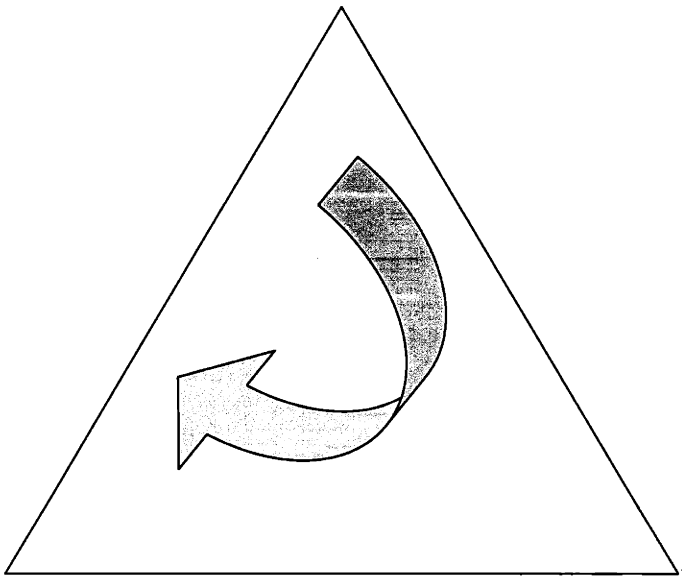
The **Delta Model** developed by Arnoldo Hax and Dean Wilde will be used to determine if e-commerce can affect the sources of profitability of a business. This model postulates that there are three possible sources of profitability for a business:

- Best Product, which means to be better than the competitors;

- Total Customer Solutions, which tries to increase profitability of customers through the improvement of their performance;
- System Lock-in, which attempts to attract other companies with products that improve and / or increase the uses of the company's products, and at the same time tries to lock in customers and lock out competitors (see Figure 1.3).

System Lock-in

Competition based upon System Economics:
Customer bonding, complementor lock-in,
competitor lock-out, achieving complementor share



Total Customer Solutions

Competition based upon Customers Economics:
Reducing customer costs or increasing their profits; achieving customer share

Best Product

Competition based upon Product Economics: Low Cost or a differentiated position; achieving market share

Source: Arnoldo C. Hax & Dean L. Wilde II, 1999

Fig. 1.3 The Delta Model

These three frameworks will be used to model each company at two different times during the analysis: before the start of e-commerce, and after e-commerce has begun and its ensuing effects on each company. Comparing both scenarios (before and after) will enable us to understand the impact of e-commerce on the companies and to know which areas in the value chain must make adjustment to respond to and take advantage of the e-commerce environment.

With this information and based on future e-commerce perspectives and expectations, some guidelines and recommendations are offered that may be useful for Hylsamex.

CHAPTER TWO

Hylsamex and the Steel Industry

2.1 COMPANY BACKGROUND

Hylsamex, founded in 1943, is the corporate entity representing the steel businesses within the parent company ALFA, one of the biggest industrial groups in Mexico. Hylsamex has two divisions: Hylsa Division (which includes the Flat Products Division, Bar and Rod Division, Acerex, HYL, and Mines and Transportation) and Galvak Division (Coated Flat Products and Tubular Products). Figure 2.1 shows the relationships of the various corporate entities.

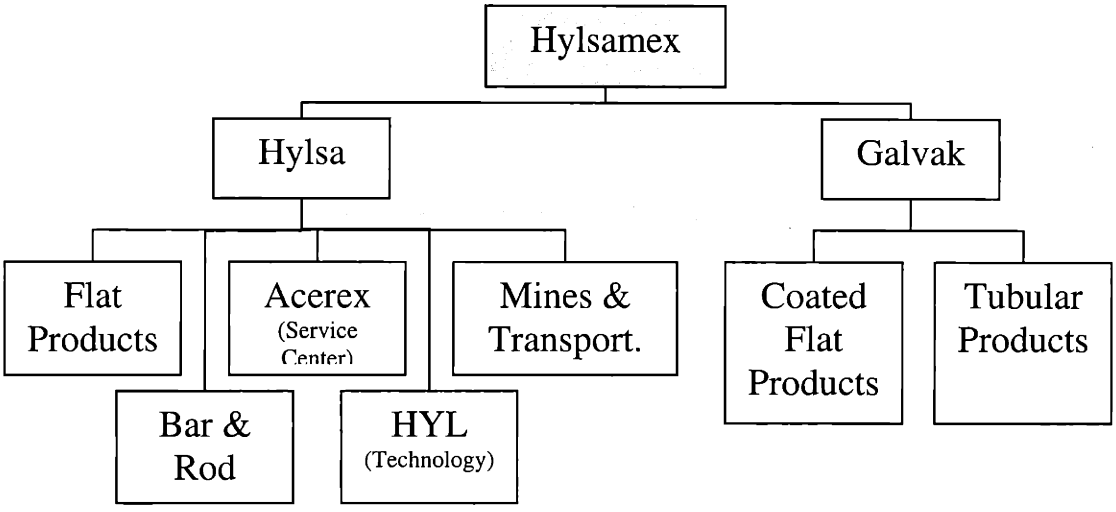


Fig. 2.1 Hylsamex Organization Chart

The company divisions have the following responsibility:

- **HYL:** Provides the technology and processes to produce direct reduced iron, a staple for steel production. Also gives technical support and training in the operation of the Continuous Strip Process (CSP) used in the Flat Products division.
- **Flat Products Division**: Sheet metal in coil or cut-to-length products
- **Bar and Rod Division**: Bar and rod products.
- **Galvak:** Makes coated flat products (galvanized and pre-painted), insulated panel, pipe and mechanical tubing, and pre-fabricated construction systems.
- **Acerex** (steel service center)**:** Sheet metal coils are cut to customer specification.

In addition, Hylsamex actively generates its own supplies, such as iron ore, electric power, and direct reduction technology, thus furthering the efficient melting and rolling of flat and non-flat steel products.

Some of the Hylsamex's financial highlights[1] for 1999 are:

Sales (millions of tons)	2.9
Revenues per Ton	$481.0
Cost[2] per Ton	$377.0
Sales in (million)	$1,373.0
Assets (million)	$2,964.0
Exports	14%

[1] For the US$ amounts, the exchange rate is 9.89 pesos / dollar
[2] Costs of good sold before depreciation and amortization plus operating expenses

Source: Hylsamex Annual Report, 1999

Hylsamex was the original developer of one of the world's most prevalent commercial Direct-Reduced Iron (DRI) technologies using natural gas. In 1957, the company built the first plant for its own production. Later, Hylsamex began to sell its technology to other companies. A second plant was sold to another Mexican company (TAMSA) ten years later and in 1974, Krakatau Steel of Indonesia installed a third HYL-DRI plant. Today this technology is used around the world in countries such as Russia, Venezuela, Brazil, Iraq, Iran, India, Malaysia, and Saudi Arabia.

Hylsamex was the second steelmaker in the world to operate the Continuos Strip Process (CSP) technology for flat products (the first was Nucor). This process enables Hylsamex to obtain high-quality steel at a lower cost because the hot rolled coil is produced directly from melted steel. Also, Hylsamex operates electric arc furnaces (EAF) to melt iron ore and/or scrap. A steel company that uses EAF and CSP is known as a "minimill" because the investment per ton is lower than a traditional "integrated" steel facility (see Figure 2.2).

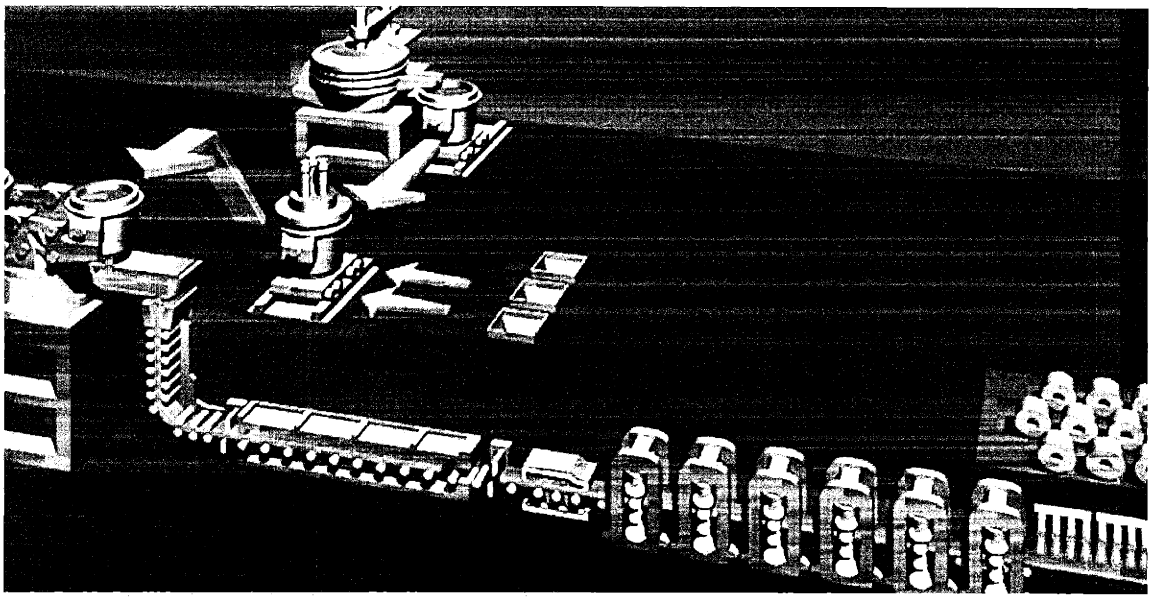


Fig. 2.2 CSP Technology

Over the last eight years, Hylsamex has implemented a modernization and expansion program in which it has invested US$1.5 billion, concluding successfully in 1998. The program included construction of a minimill, a new direct reduction plant, and new facilities for the other processes. The first stage was finished in 1995, was working at full capacity in early 1996, and the second stage was finished in 1998.

In 1998, Hylsamex participated in a consortium with other companies to buy Siderurgica del Orinoco (SIDOR), located in Venezuela. SIDOR has not performed as expected, but the forecasts are good.

The goal clearly outlined by the CEO of Hylsamex in its 1998 annual report is to become North America's highest margin steel company. The strategic guidelines for achieving this goal are: reducing costs, increasing high value-added product output, and technologically upgrading and expanding its facilities.

2.2 STEEL INDUSTRY OVERVIEW

During the past few years, the steel industry in Mexico has declined somewhat. Demand has increased but world economic growth, in combination with tariff reductions, has attracted an increased level of steel imports, particularly from the Community of Independent States (former USSR), causing domestic prices to decline. Mexico's steel production in tons has increased through the years but with a lower growth rate in the last few years (see Figure 2.3).

Figure 2.3

*Estimated

Source: Alfa, Strategic Planning, 1999

Although steel is a global industry, Mexico's steel demand is primarily supplied by national producers because the size of orders is small by international standards. Only a few large distributors or manufacturers import steel, but even they maintain steady consumption from Mexican steelmakers to avoid procurement and inventory problems.

Hylsamex's main competitors in Mexico are AHMSA (Altos Hornos de Mexico, SA), SICARTSA, and Grupo IMSA.

AHMSA: Located in Monclova, Coahuila, this company manufactures primarily flat products. Ahmsa is currently having financial problems and is involved in a restructuring process that has affected its market share somewhat.

SICARTSA: Located in Lázaro Cardenas, Michoacán, the company produces construction bars and also operates as a flat products distributor (for Ahmsa and imports).

GRUPO IMSA: Located in Monterrey, this company is a diversified group where the most important businesses are flat and coated steel related companies.

There are other companies but they have less market share.

CHAPTER THREE

E-Commerce

3.1 DEFINITIONS

E-commerce has evolved out of the rapid expansion of the Internet. So, the first question to be answered is: "What is the Internet?"

The Internet, a 25 year-old network of networks which connects computers worldwide, was originally a communication tool for the government and research community. Today it is a digital communications network that uses a standardized protocol to transfer data. The Internet uses a scheme in which a "client" program on a user's workstation requests information directly from another computer or "server" which provides the data requested.

The number of Internet users has grown rapidly because, among other benefits, the Internet has the ability to transform businesses, helping them to perform their core business functions more efficiently.

No one owns the Internet. Through international efforts, the Internet Society promulgates standards governing the Internet through its many taskforces.

Early business uses of the Internet were largely focused on e-mail and file sharing. However, with the introduction of the World Wide Web (Web), an interactive service that provides user-friendly ways to organize and deliver information, people and companies can now conduct business activities through the Internet. This way of working is known as e-business and it includes not only buying and selling but also servicing customers and collaborating with business partners.

A subdivision of e-business is e-commerce, which means the buying and selling of goods and services on the Internet where a financial transaction is included. Earlier forms of e-commerce were mostly custom-made, complex, expensive, and used only by large firms. Today anybody can connect his/her personal computer to the Internet and attract millions of potential consumers around the world.

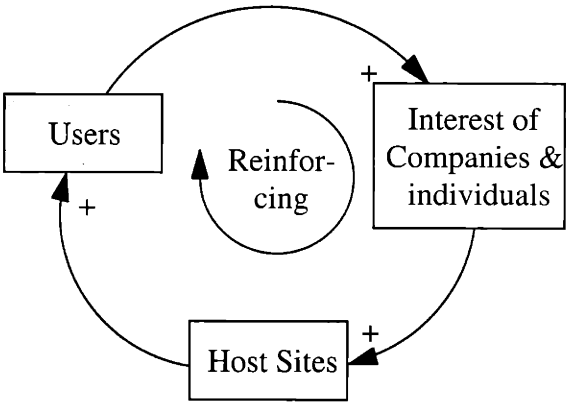
3.2 GROWTH AND CURRENT SITUATION

No one can deny the explosive growth of the Internet and the huge importance that it has acquired in the business world.

At present, most companies have some type of Internet connection. This has happened because companies realize that the Internet can increase their competitiveness and productivity through better management and manipulation of information as well as improved communications among their employees.

The growing number of Internet users can be explained as a system with reinforcing feedback. This means that a high number of users will cause companies and individuals to become more interested in creating new sites on the Web which offer their information. These new sites will provide information that will bring even more users (new and repeaters) who will access the Internet. This process goes on indefinitely (see Figure 3.1 for a simple representation).

Figure 3.1



E-commerce occurs in two principal variations, depending on the customers in the transaction: business-to-consumer (B2C) e-commerce and business-to-business (B2B) e-commerce.

The Web has been the main facilitator of growth for B2C e-commerce. Many companies now offer their products via the Web, and consumers can complete an entire transaction in a few minutes without leaving their homes. Good examples of companies that operate successfully using this method are Amazon.com (mostly books) and Dell (computers).

B2B e-commerce takes many forms, some of which have been around for years. One of them, the Electronic Data Interchange (EDI), is a way to exchange business information through private networks. It has been used between companies doing business together to automate and speed the exchange of information. With this system, no money is moved electronically, just information. Using e-commerce on the Web has great potential for expanding the ability of companies to use EDI.

There are plenty of numbers that attempt to quantify the total amount of inter-company trade of hard goods over the Internet. One source is Boston Consulting Group

(BCG), which calculated worldwide B2B e-commerce to be $1.03 trillion for 1998 (see Figure 3.2).

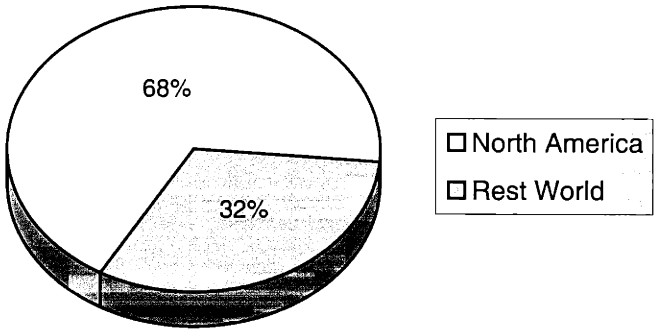


Figure 3.2 Percentage of B2B e-commerce

According to BCG, combined North America B2B e-commerce was $700 billion, and U.S. B2B e-commerce in 1998 was the highest, at $671 billion. Of this amount, $92 billion was Internet-based transactions, and $579 billion used EDI over private networks.

The BCG research shows that Western Europe lags approximately 18 months behind North America in B2B e-commerce adoption, and Asia and Latin America are even further behind. However, BCG believes that this situation may change as global supply chains go on-line (Markets Professional, Dec. 1999).

The primary concern of many companies that are doing or are considering business on-line is security. The Internet is totally public, and many people hesitate to send information or make financial transactions on-line, believing that the information could be intercepted by third parties. Many people are currently engaged in finding viable solutions to this problem.

3.3 E-COMMERCE AND THE STEEL INDUSTRY

Lou Pahountis, associate partner at Andersen Consulting's global practice, considers that e-commerce in the general metals sector is in the infancy stage (representing less than 3% of business), but has high growth potential for the next ten years (Trickett, Dec. 1999).

The steel industry is in the same situation. According to Morgan Stanley Dean Witter, a U.S. brokerage firm, B2B e-commerce in the steel industry for 1999 was $150 million, with great potential for growth and a clear understanding that e-commerce will have an enormous impact on the way steel is traded (Trickett, Dec. 1999).

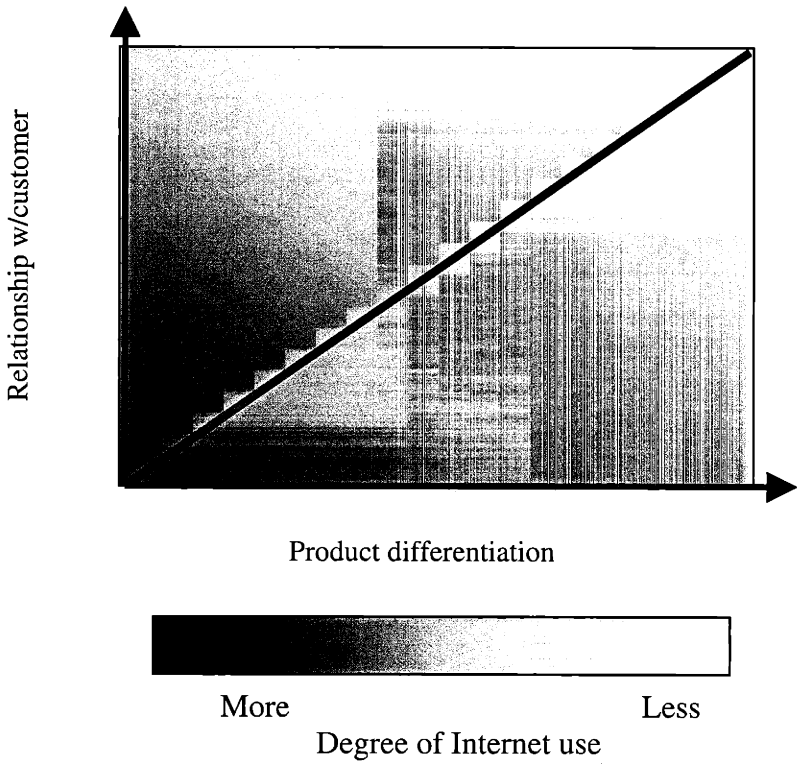
. Historically, the steel industry has been slow to adapt to change, maybe because it is a "heavy" industry (high fixed costs, long equipment life, capital restrictions, etc.). However, given the fact that Internet changes have the potential for improving the results of companies, the steel industry will undoubtedly accelerate its adoption of Internet use. BCG reports that companies that have moved into B2B e-commerce have reported cost savings on materials of up to 15% (Markets Professional, Dec. 1999).

As in any industry, the steel industry has unique issues that could affect how the Internet is used by steel companies. For example, according to a report by the Gartner Group, 5-10% of the $700 billion steel market is sold on the spot market (Andren, Jan. 2000). This percentage comes out of excess inventories of secondary material and small lots of prime material that result from normal plant operations. The remaining 90-95% of the steel market is sold through long-term relationships between buyers and sellers who look for lower costs and production planning, respectively. So Internet use for each of these types of production will be quite different.

Possibly, there is a strong link between the degree of differentiation of the product and the type of relationship that the company has with its customer. That is, the more unique

the product is compared to other products, the closer will be the customer relationship to the company producing that unique product (see Figure 3.3).

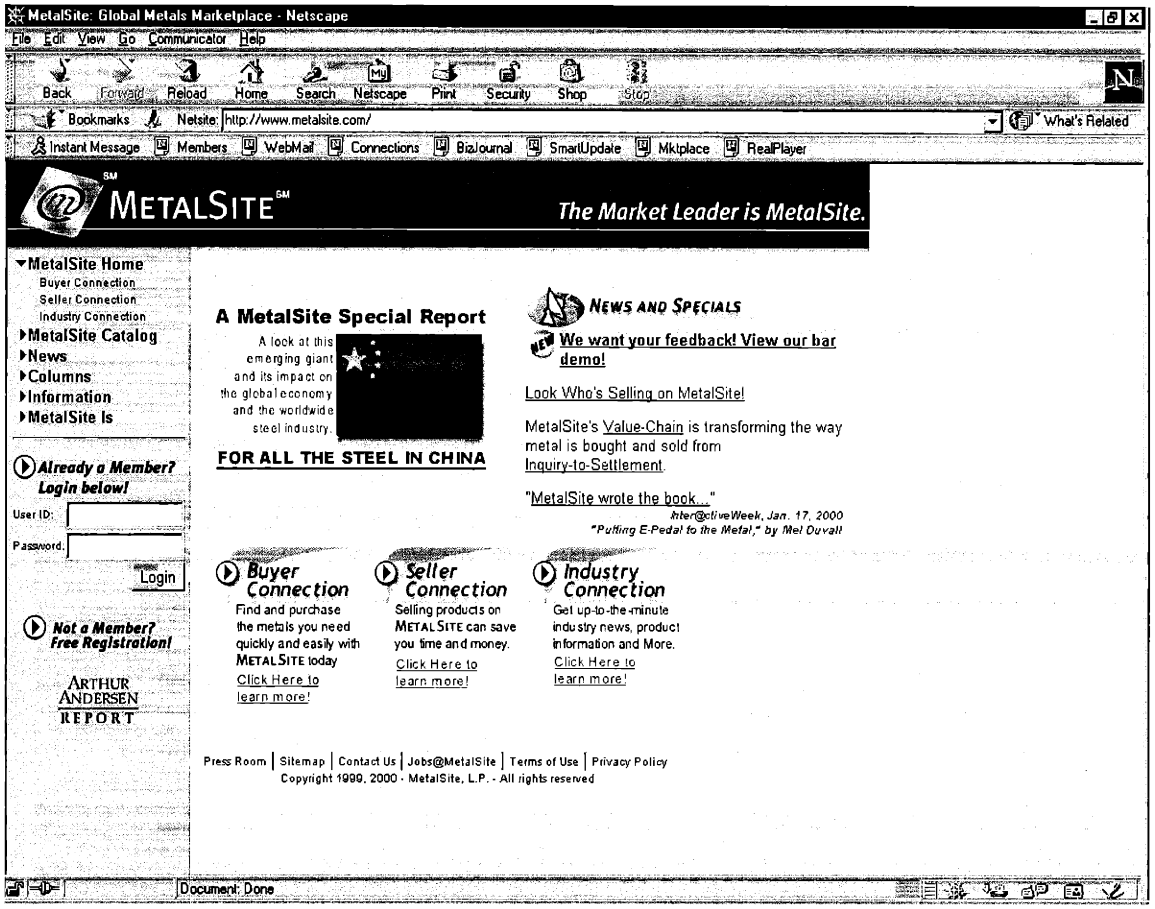
Fig. 3.3 Relationships with customers



Today, competition is increasing steadily in the steel marketplace on the Internet. There are several Websites already working to bring buyers and sellers together. Two of the best-known sites are MetalSite and e-Steel.

MetalSite's (see Figure 3.4) goal is to bring together buyers and sellers of metals. This company, launched in 1998 to conduct on-line sales of secondary material and excess prime steel, was founded by Steel Dynamics, Inc. in conjunction with LTV Steel and Weirton Steel. In September 1999, Bethlehem Steel and the U.S. largest service-center company, Ryerson Tull, joined the original founders as partners.

Fig. 3.4 MetalSite's Web Home Page



MetalSites's President and CEO, Patrick Stewart, has been surprised by the way industry in general has accepted this new scheme of doing business (Bagsarian, 1999). MetalSite sold 120,000 tons valued at $35-40 million in July 1999, which represented 1.1% of the year's U.S. shipments as an average over the years.

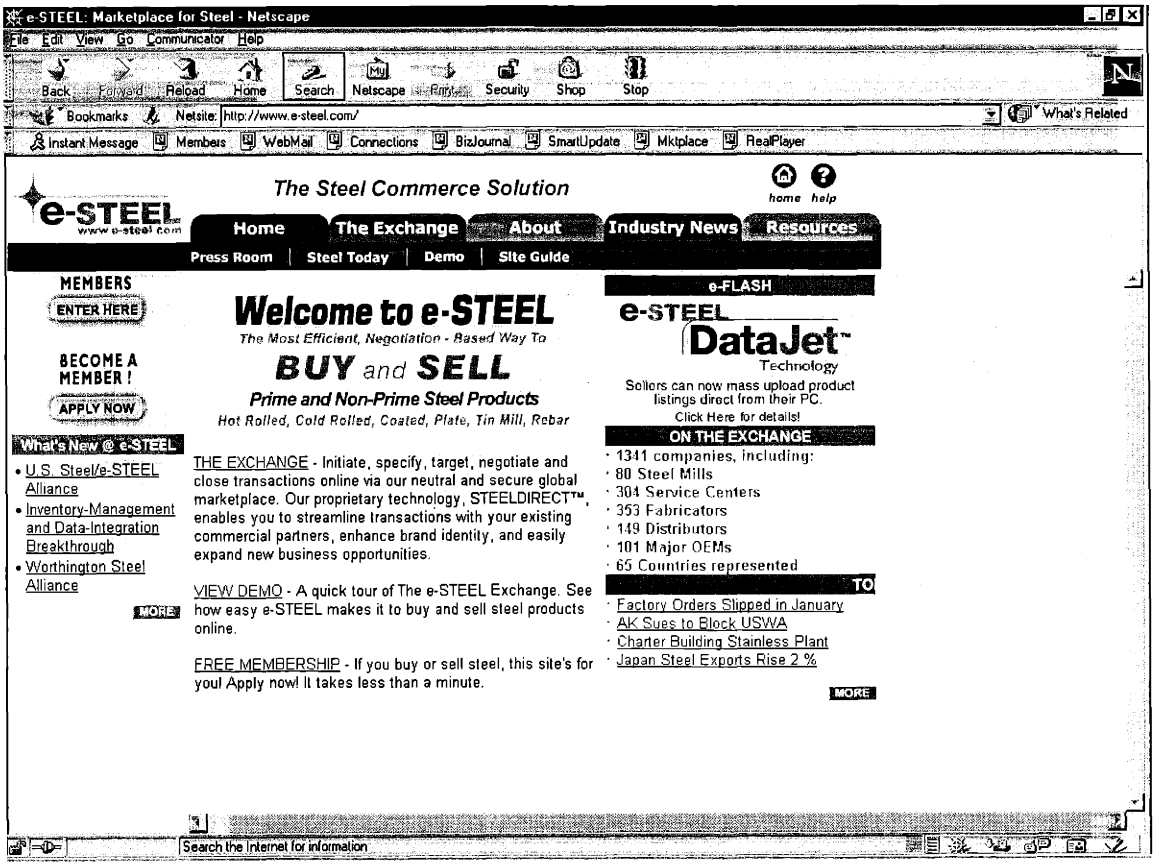
The service is free for buyers. Sellers pay a fee of 1-2% of the sale price based on volume. Sales through the on-line catalog have a fee of 0.25-1% for the seller.

MetalSite is moving into catalog sales of prime plate, pipe and tube, wire rod, and stainless. At this time, MetalSite is also starting a banking program. Through this system, sellers will not have to worry about extending financing to customers because this service will be provided by a bank which has greater expertise.

The other e-commerce site is e-Steel (see Figure 3.5), which started up in September 1999. At the beginning and in contrast to MetalSite, where the owners of the Website are steel companies, e-Steel claimed to be "neutral". However, in February 2000, e-Steel announced a strategic alliance with US Steel Group, a unit of USX Corporation. Like MetalSite, e-Steel sells secondary and prime materials. The company offers a trading environment in which a buyer can make an inquiry and sellers can respond with an offer. Fees for sellers in e-Steel are 0.875 – 1%.

The company combines e-commerce services and personalized software. Users can check product availability, post orders, and buy and sell steel -- one-to-one, one-to-some, or one-to-all.

Fig. 3.5 e-Steel's Web Home Page



Sites like MetalSite and e-Steel could revolutionize procurement procedures and globalize supply chains very quickly. As noted in *The Economist* (1/2000): "Once large firms move their purchasing online . . . .business partners and suppliers will have to do the same. It will become progressively harder for firms that cannot or do not want to trade online to survive".

CHAPTER FOUR

Analysis of Hylsamex's Competitive Position: Before e-Commerce

In Chapters Four and Five, I will analyze Hylsamex and its position in the steel industry from two perspectives: first, the company's competitive position before the advent of e-Commerce, then taking a second look at Hylsamex's position today with the additional impact of e-Commerce via the Internet. In both cases, the analyses will be conducted using the three frameworks described in Chapter One: Porter's Five Forces Model, the Hax/Wilde Delta Model, and Porter's Value Chain framework.

4.1 FIVE FORCES ANALYSIS

Barriers to Entry (mildly attractive)

The possibility of new entrants in the steel industry will be difficult because the switching costs, capital requirements and experience effect are important factors not easy to accomplish.

Barriers to exit (mildly unattractive)

Any company in this industry will have hard times trying to get out of business. The asset specialization, one-time cost of exit, strategic interrelationship, emotional barriers and government and social restrictions are high; for this reason, from this point of view, the industry is considered an unattractive one.

Rivalry among Competitors (mildly unattractive)

The steel industry is a mature industry. The companies in it have very strong competence in trying to get to market with low costs, state of the art technology, better processes, etc. All these factors make the steel industry an unattractive for the companies.

Power of Buyers (neutral)

All the issues used to measure this factor are considered neutral, with exception of the availability of substitutes for the industry products and the industry threat of forward integration which are considered as unattractive and the buyers' threat of backward integration which is considered as attractive.

Power of Suppliers (neutral)

In this factor, it is very clear that the suppliers are very important for the industry manufacturers, but we cannot forget that the industry companies are very important for the suppliers. A big proportion of the suppliers' profits depends on their sales to the steel industry companies.

Availability of Substitutes (neutral)

During the last decades, there is a great development of the plastic industry. A lot of products are made of plastic instead of steel. For this reason, the steel companies have improved their technologies and by consequence, they have improved the quality, characteristics, costs, etc. of steel products, trying to avoid this change. There is a wide spread assumption that plastic or other materials cannot replace the steel completely. Even more, many companies with products that were made of steel and then changed to plastic, are going back to use steel.

Government Actions (neutral)

The Government actions play a very important role in the steel industry. In many countries this industry is like a symbol; for this reason, the governments have to be aware of

any circumstance that could affect the companies. In this case, I think that the steel industry should be considered as a neutral.

OVERALL ASSESSMENT (medium attractiveness)

Fig. 4.1 Five Forces analysis of industry attractiveness

	-- --	--	0	+	++
Barriers to entry				✔	
Barriers to exit		✔			
Rivalry among competitors		✔			
Power of buyers			✔		
Power of suppliers			✔		
Availability of substitutes			✔		
Government actions			✔		

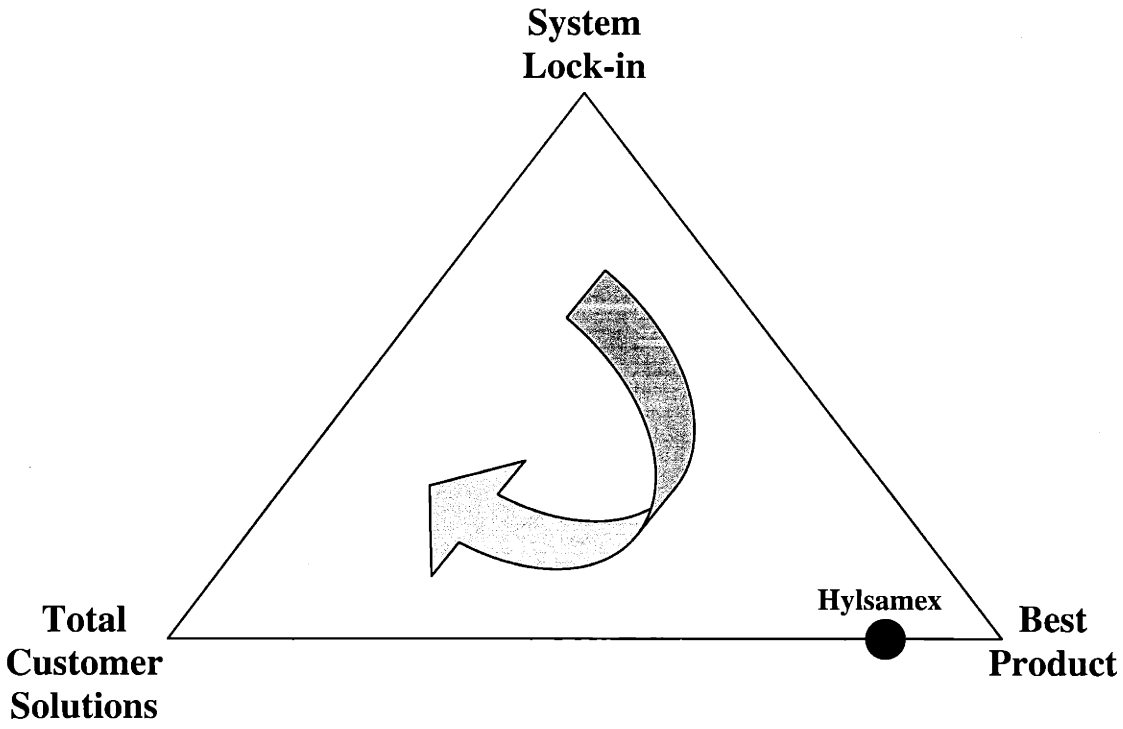
So to summarize the attractiveness of the industry, I considered that it is medium attractive for other companies to invest in.

4.2 DELTA MODEL ANALYSIS

The company has worked hard to attain a low-cost structure. Its main goal is to become the high-margin steel company in North America through cost reduction. Differentiation in the steel industry is hard to gain because the products are commodities.

For these reasons, I have positioned Hylsamex as a Best Product company in the Triangle.

Fig. 4.2 Delta Model Positioning



Hylsamex Mission

The management of Hylsamex have a very clear mission for the company. It is :

> ***To establish Hylsamex as North America's highest-margin steel company through:***
>
> - ***Operating with one of the industry's lowest cost structures***
> - ***Offering increased amounts of value-added, superior quality, and higher margin products to the market***

In order to accomplish this mission, the company has invested $1.5 billion during the last eight years in a modernization program.

Some of the challenges facing the company are:

- **Product Scope:** Even though the steel industry is a mature industry, every company looks to improve the quality of its products. In the case of Hylsamex, it is trying to increase the output of high value-added products.
- **Market Scope:** The challenge for Hylsamex (and probably this applies to all companies) is to find other markets for its products. As mentioned earlier, plastic has become a frequent and viable substitute for steel in many products. Steel companies should extend their marketing efforts toward encouraging the production of these products in steel rather than plastic. Product quality across different markets is a key issue requiring focused attention by the company.
- **Geographic Scope:** Hylsamex has several opportunities to move into other markets. The company should take advantage of its low cost structure to venture further into foreign markets and avoid becoming dependent on the economic situation of just one market.
- **Unique Competencies:** Hylsamex is recognized in Mexico as an excellent company with capable people. However, outside Mexico this recognition decreases. The company has huge potential growth in other countries, and the company's technology can play an important role if Hylsamex continues to develop new ways of improving the steel-making processes.

4.3 VALUE CHAIN ANALYSIS

This model assesses seven Critical Success Factors (see Appendix)

Managerial Structure (mildly strong)

This factor is considered a strength because the management control system, the corporate culture and corporate image are some of the characteristics that make Hylsamex a very competitive company in the market.

Finance (mildly strong)

The current situation of the company is solid because, even when the results have not been very good, it is ready to compete in a stronger way because of all the investments that the company has made to improve the production. Hylsamex has very good image and relations with the financial community, which allows the company to access financial sources in good conditions.

Human Resources Management (mildly strong)

The relation of the management with the unionized personnel is extremely good. This relation allows the management to run the company with more favorable environment that the rest of the companies in Mexico.

Technology (strong)

The technology of Direct Reduced Iron (DRI) developed by Hylsamex in 1957 is still used in these days and is one of the world's two most prevalent commercial DRI technologies using natural gas. The company sells this technology and gives training and technical assistance to many companies around the world. The company continues developing new improvements to the processes.

Procurement (mildly strong)

The company has very good procurement systems and well-prepared people to manage these systems. The relationship with the suppliers is very strong.

Manufacturing (mildly strong)

All the factors involved with the manufacturing processes are managed very well in the company. The facilities, the human resources and the processes are adequate to have a manufacturing process that allows the company to produce with high quality and low cost.

Marketing and Sales (mildly strong)

The marketing and sales factor is a strength because the company has the infrastructure and the people have the knowledge of the product to sell and give the customer a good service. Even when the products are commodities, some of the customers look for products made by Hylsamex.

Overall Assessment of the Critical Success Factors (Mild strength)

Hylsamex is a well-known company with good products in quality and prices. These characteristics are the result of good manufacturing processes (critical success factors).

Fig. 4.3 Value Chain analysis of Critical Success Factors

	Weak	Mildly Weak	Even	Mildly Strength	Strength
Managerial Structure				✔	
Finance				✔	
Human Resources Mgmt.				✔	
Technology					✔
Procurement				✔	
Manufacturing				✔	
Marketing & Sales				✔	

CHAPTER FIVE

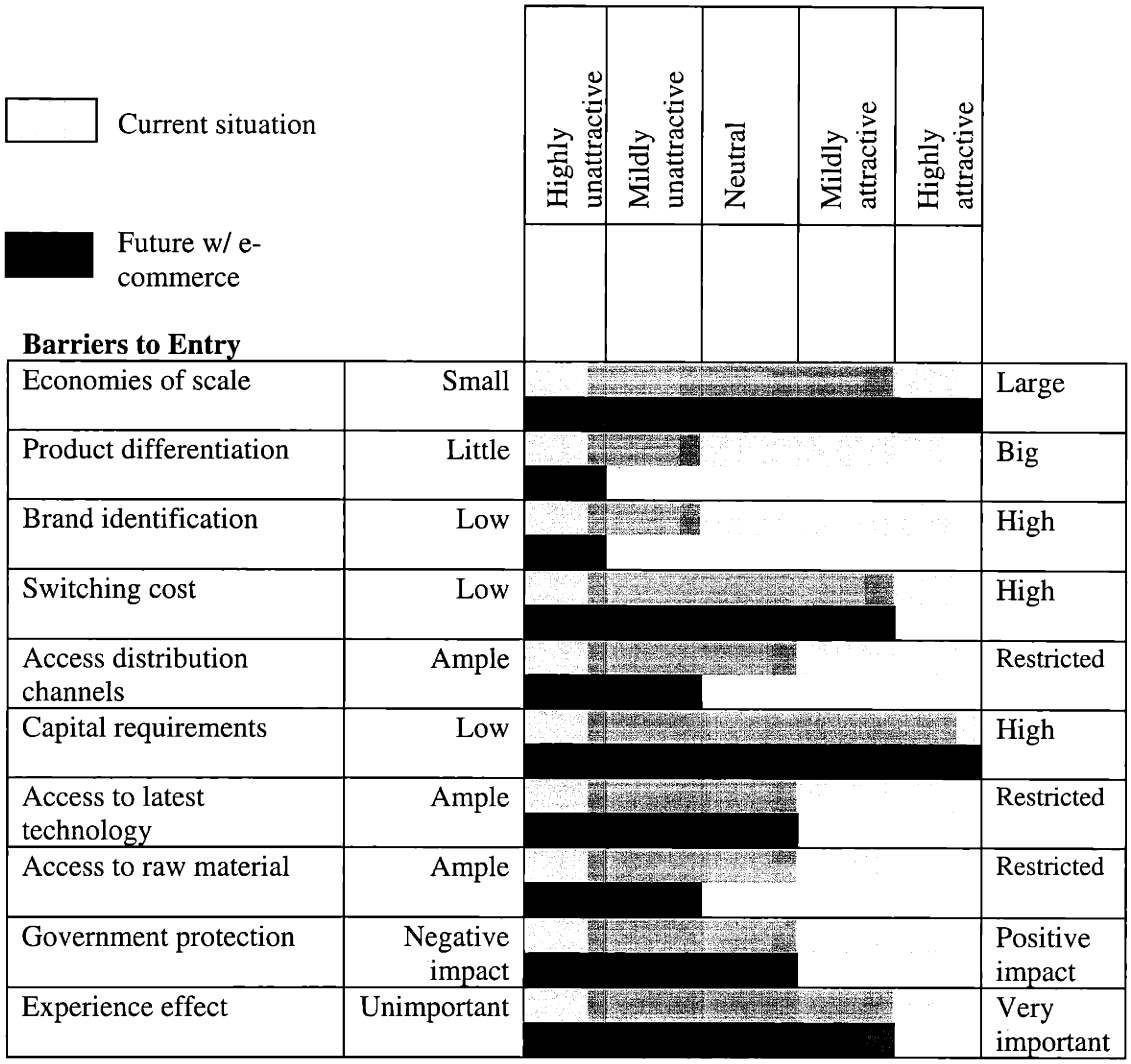
Impact of E-commerce On Hylsamex's Competitive Position

This chapter presents the results of my analysis of Hylsamex using the three models to determine the impact of e-commerce on the company's competitive today in the steel industry.

5.1 FIVE FORCES MODEL ANALYSIS

This model compares the industry before and after e-commerce and offers an explanation for the differences that were identified. The sign (+ or -) inside parentheses indicates if e-commerce has affected that factor to produce increased or decreased the attractiveness of the industry.

BARRIERS TO ENTRY: NEUTRAL



(+) Economies of scale: By using the Internet, the number of potential consumers will increase and production will also increase to satisfy demand.

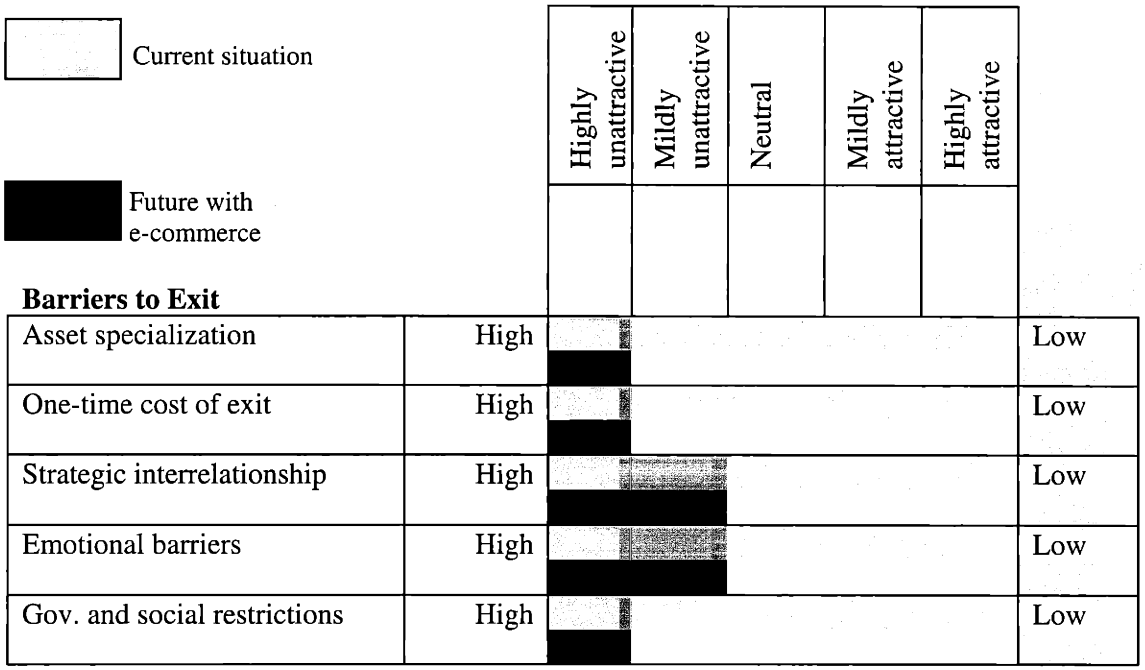
(-) Product differentiation: The characteristics of the products will become less important because price will be the driver.

(-) Brand identification: Costumers who come to the company via the Internet will be less interested in a product's brand name and more interested in its price.

(-) Access to distribution channels: Companies that use the Internet will have the same opportunities for product distribution as their competitors.

(-) Access to raw materials: e-commerce will allow companies in the steel industry to obtain materials more efficiently.

BARRIERS TO EXIT: MILDLY UNATTRACTIVE



There are no changes in these factors from prior to e-commerce to the current situation.

RIVALRY AMONG COMPETITORS: MILDLY UNATTRACTIVE

Current situation

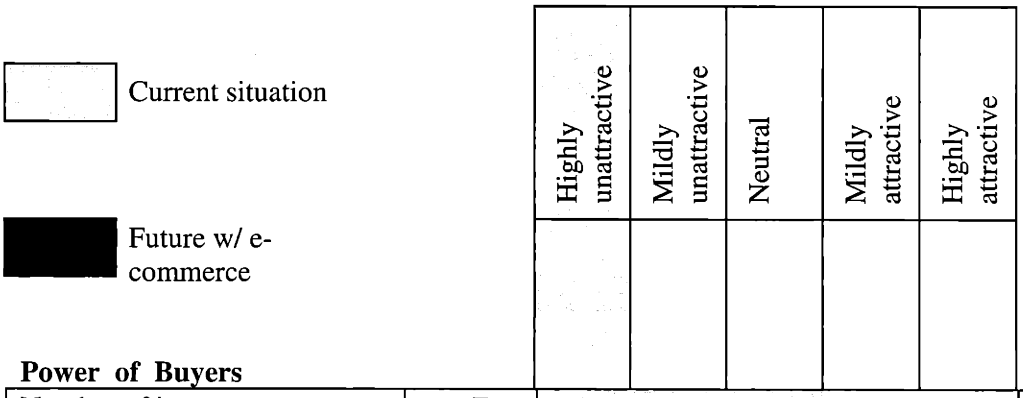
Future w/ e-commerce

Rivalry / competitors		Highly unattractive	Mildly unattractive	Neutral	Mildly attractive	Highly attractive	
Number of equally balanced competitors	Large						Small
Relative industry growth	Slow						Fast
Fixed or storage cost	High						Low
Product features	Commodity						Specialty
Capacity increases	Large increments						Small increments
Diversity of competitors	High						Low
Strategic stakes	High						Low

(+) Fixed or storage costs: One of the main benefits of e-commerce is the opportunity to obtain materials when as needed, thereby reducing inventory expenses.

(-) Diversity of competitors: Because the Internet allows companies to obtain new customers, Hylsamex's competitors will have the same opportunity; therefore the possibility of new competitors will increase.

POWER OF BUYERS: MILDLY ATTRACTIVE



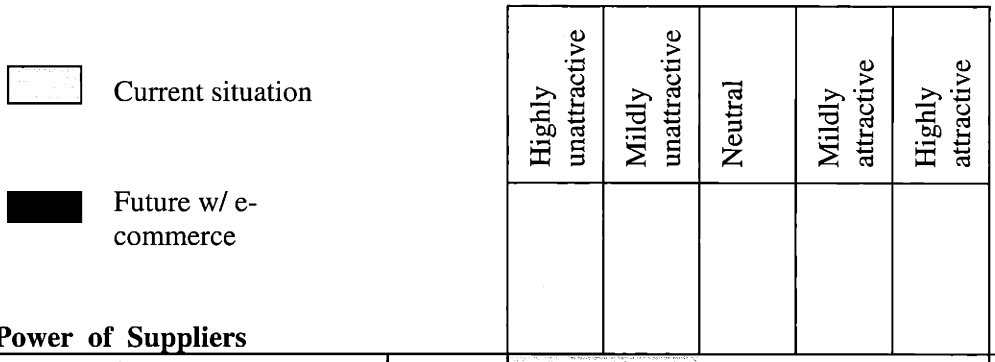
Power of Buyers		
Number of important buyers	Few	Many
Availability of substitutes for industry products	Many	Few
Buyer switching costs	Low	High
Buyers' threat of backward integration	High	Low
Industry threat of forward integration	Low	High
Contribution to quality or service of buyers' products	Small	Large
Total buyers' cost contributed by the industry	Large fraction	Small fraction
Buyers' profitability	Low	High

(+) Number of important buyers: The Internet will open new opportunities with customers because the products will become familiar to many more people.

(+) Total buyers' cost contributed by the industry: The traditional consumers of steel are companies where the steel is one of the main raw materials and it represents a large portion of their costs. With the Internet, these buyers will decrease their costs.

(+) Buyers' profitability: Most steel customers are large profitable companies that operate in diverse industries. The expectation is that because of the Internet, these buyers will increase their profits.

POWER OF SUPPLIERS: NEUTRAL



Power of Suppliers		
Number of important suppliers	Few	Many
Availability of substitutes for suppliers' products	Low	High
Differentiation or switching cost of suppliers' products	High	Low
Suppliers' threat of forward integration	High	Low
Industry threat of backward integration	Low	High
Suppliers' contribution to quality of service	Large	Small
Total industry cost contributed by suppliers	Large	Small fraction
Importance of the industry to suppliers' profit	Small	Large

(+) Number of important suppliers: The Internet will increase the number of potential suppliers to steel companies.

(+) Total industry cost contributed by suppliers: Steel companies will have an opportunity to obtain raw materials at a cheaper price; for this reason suppliers will lose "power".

AVAILABILITY OF SUBSTITUTES: NEUTRAL

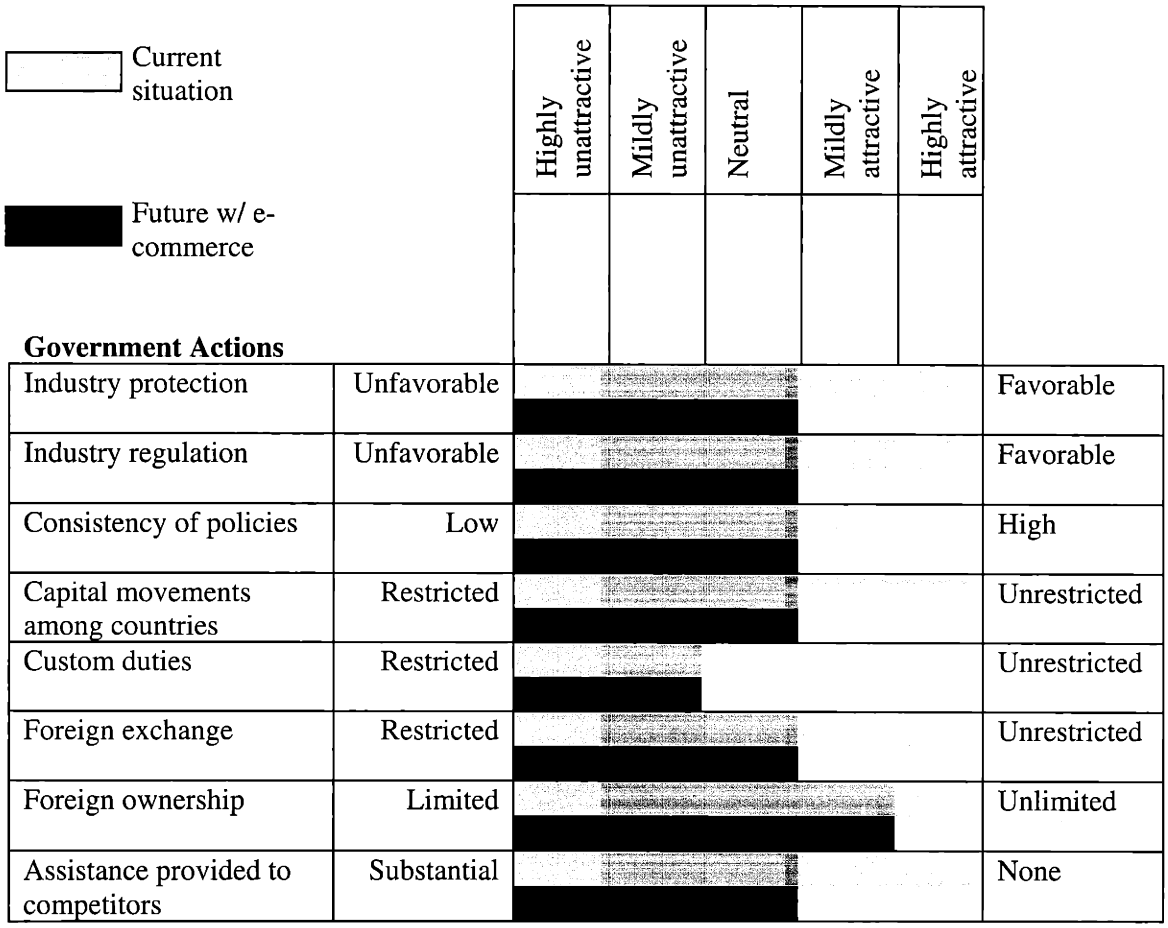
Current situation

Future w/ e-commerce

Availability of Substitutes		Highly unattractive	Mildly unattractive	Neutral	Mildly attractive	Highly attractive	
Availability of close substitutes	Large						Small
User's switching costs	Low						High
Substitutes producer's Profitability & aggressiveness	High						Low
Substitute price/value	High						Low

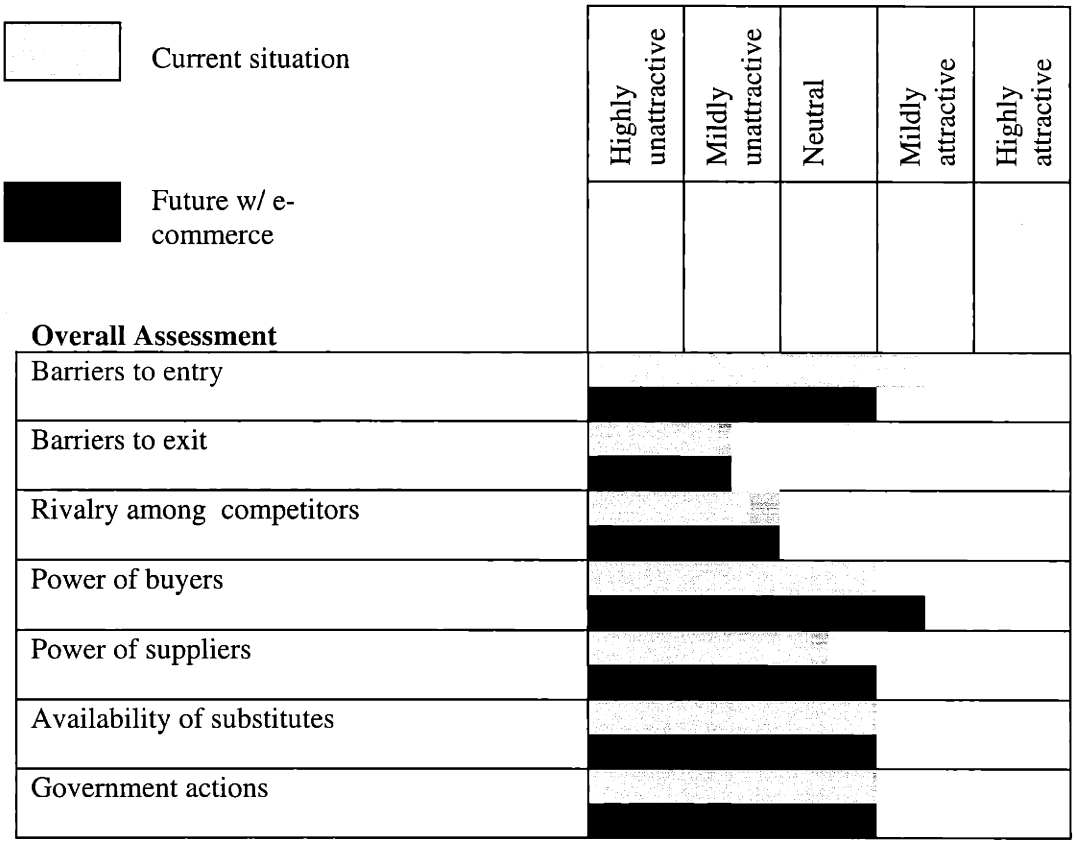
The addition of e-commerce has brought no changes in the current situation.

GOVERNMENT ACTIONS: NEUTRAL



The addition of e-commerce has brought no changes in the current situation.

OVERALL ASSESSMENT: MEDIUM ATTRACTIVENESS



Although there are some changes in factors such as Barriers to Entry and Power of Suppliers, these are not strong enough to change the overall assessment -- the steel industry in Mexico is a medium attractive one.

Current situation

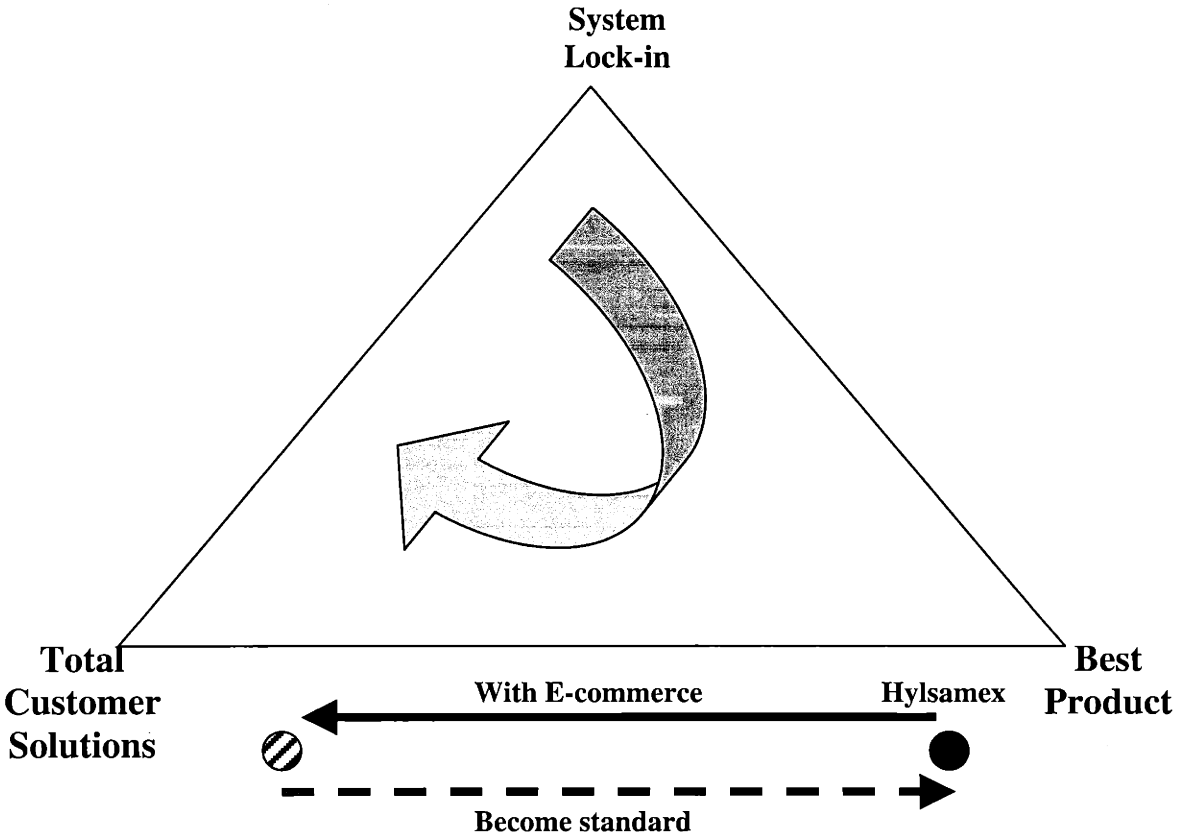
Future w/ e-commerce

Overall Industry Assessment	Low Attractiveness	Medium Attractiveness	High Attractiveness
Overall assessment			

5.2 DELTA MODEL ANALYSIS

One of the biggest benefits of e-commerce is that it allows companies to help customers acquire the products cheaper and at the right time, thus reducing their inventory costs. This is precisely what the Delta Model does as the next step after achieving the Best Product. The next step, called "Total Customer Solution", helps the company compete in the industry by thinking in terms of the customers (i.e., reducing their costs and/or increasing their profits). So, Hylsamex, through the use of e-commerce, can move in the Delta Model to the Total Customer Solution corner.

However, this position will move back to Best Product at the point when Internet use becomes an industry standard. So, the advantage acquired at this time by using the Internet will disappear, but the benefit to the company should be the additional customers it has gained if the company is able to retain them as customers.



5.3 THE VALUE CHAIN ANALYSIS

This framework is used to analyze which of the company's activities are going to be affected with the implementation of an e-commerce strategy.

PRIMARY ACTIVITIES

Inbound Logistics

Receiving: The process of receiving the materials for manufacturing will not change with the e-commerce.

Storing: No change.

Material Handling: No change.

Warehousing: No change.

Inventory Control: The constant communication through the net within the company and with customers and suppliers, should improve the efficiency in the inventory management.

Vehicle scheduling: The coordination of the vehicle schedule will be easier as more information is known. The quality of this information (quantity, timing, etc.) will be improved with the use of the web.

Returns to suppliers: No change. This activity probably will increase in frequency because suppliers may be different with the use of the Internet.

Operations

Machining: No change.

Packaging: No change.

Assembly: No change.

Equipment maintenance: No change.

Testing: No change.

Printing: No change.

Facility operation: No change.

Outbound Logistics

Finished goods warehousing: No change.

Material handling: No change.

Delivery vehicle operation: The instantaneous information provided by the web, will allow to make more efficient the delivery process.

Order processing: This process can be done online, which is easier for everybody, bringing savings in the companies involved.

Scheduling: This process can be done in a more efficient way when the people in charge have the right information at the right moment. This information can be obtained on the web.

Marketing and Sales

Advertising: The company should modify the way it advertises its products because customers acquired through the Internet may be different from its current customers. Additionally, the Web gives the possibility of having a big "showroom" to promote the products of the company.

Salesforce: This probably will diminish in size because the Internet will facilitate selling the products without sales effort from sales personnel.

Quoting: The system of quotes probably should change to adjusted to this new medium forselling, i.e., the Internet.

Channel selection: This must change because the sales process is completely different from the current situation.

Channel relations: This should remain unchanged.

Pricing: This should be modified because the price of products sold through the Internet should be lower compared to products sold in the traditional way.

Service

Installation: The procedure to install the product can be published on the web.

Repair: No change. There is the alternative to post on the web the possible solution to the most common problems with the product.

Training: The customers will be quite different, but the process with some of them should remain unchanged. There is the alternative of using the Web to offer instruction manuals and even courses to use the product.

Parts supply: The whole process of ordering parts will be improved with the use of the internet.

Product adjustments: The web can work as a filter in some cases; a lot of the difficulties that the customer can find in the product can be solved on the web with the corresponding savings for the company. The normal procedure should be used when this solution is not possible through the net.

SUPPORT ACTIVITIES

Procurement

This activity should encounter significant change with the introduction of the Internet. Some of raw materials, supplies, and other consumable items, as well as assets, will become feasible to buy on-line. This will bring savings to the company and some benefits from a logistics standpoint.

Technology Development

The technology in each step of the process should be improved to adapt to the new way of doing business.

Human Resources Management

Selection: The Internet can be used to recruit new employees, which will allow access to a broader range of candidates for different positions.

Promotion: No changes

Placement: No changes

Appraisal: No changes

Rewards: Incentives related to procurement and sales should be modified to take into consideration the new situation.

Management development: Personnel training and education should focus on technologies developed around the Internet. Additionally, some of this development may be done over the Web.

Labor employee relations: No change.

Firm Infrastructure

Planning: The process of strategic and operational planning should reflect the mix of the "new products" that are sold through the Internet.

Finance: The finance people of the company should have identified very well the impact of the e-commerce in the results of the company. The share price of the company will reflect, among other things, how the company is doing using the internet.

Accounting: Information reported by the company should include products sold on-line.

Legal: The Legal Department must establish appropriate policies for the process of buying and selling on-line.

Government affairs: In the future, governments must enact laws about how the Internet is used. Companies that use the Internet as part of their operations should be aware and participate in the design of rules that will be implemented.

Quality management: No change.

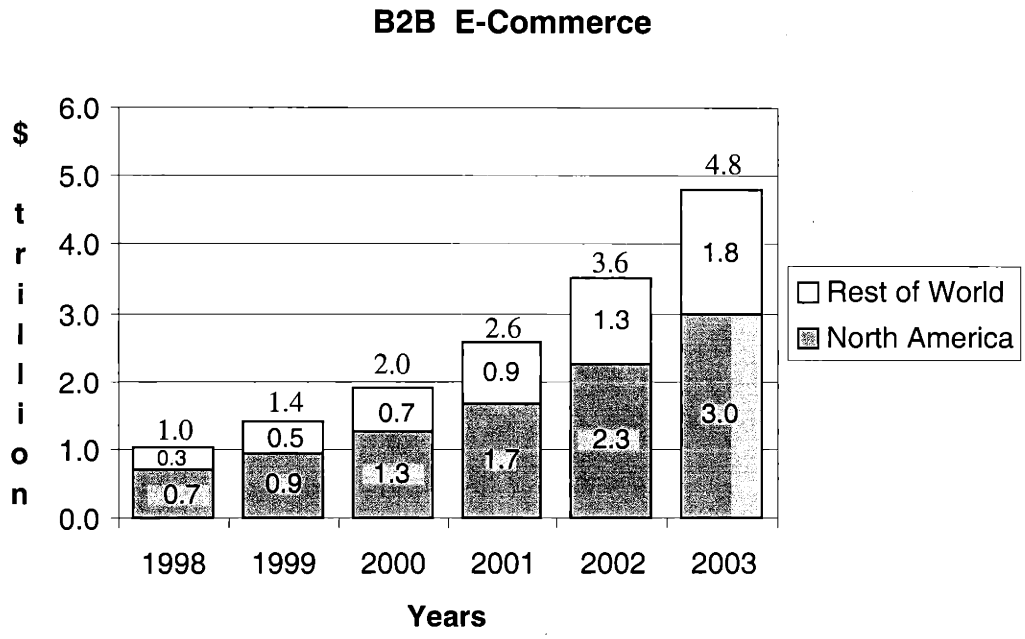
CHAPTER SIX

The Future of E-Commerce

6.1 PERSPECTIVES

The expected growth in e-commerce via the Internet is huge. Research by the Boston Consulting Group (BCG) shows that B2B e-commerce will grow from $1.03 trillion to $4.8 trillion in 2003, a growth of 36% per year (see Figure 6.1).

Figure 6.1



Source: BCG, Dec. 1999

According to Morgan Stanley Dean Witter, $32 billion worth of steel will be traded through the Internet by 2001 compared with only $150 million in 1999 (Trickett, Dec. 1999).

Andersen Consulting estimates that 40-60% of all metal produced in the world will be sold via the Internet by 2005 (Trickett, Dec. 1999).

Arthur French, chairman and CEO of Metals USA, Inc., in Houston, Texas, a consolidator of metal centers, thinks that e-commerce will represent 30% of all metals sold in North America, Europe, and Japan in the next five years (Metal Center News, Aug. 1999).

While the consulting firms and analysts all seem to have different predictions as to the size of future Internet, on one thing all of them agree: the use of the Internet for doing business will increase almost daily, with upward growth rates. Also they agree that the companies that are not ready to handle this new way of working will have a difficult time surviving.

CHAPTER SEVEN

Summary

As has been noted throughout this thesis, the use of the Internet is becoming more commonplace every day. Its growth over the last few years has been impressive, and expected growth for the future is very high. The way companies operate has changed forever, and it will continue changing as the use of the Internet grows.

As shown in this analysis, strategic use of e-commerce in a company like Hylsamex should offer significant opportunities for improving its strategic position against its competitors. The Five Forces framework shows that the industry's overall assessment is not affected too much with the internet. The activities of the Value Chain performed by the company will change, and the Delta Model shows that the company will be able to move to a better position through adopting strategies that help the company's customers improve their economic status.

However, this improved position for the company will be momentary, disappearing as soon as competitors implement similar kinds of Internet use. Thus, the big threat for companies is to find ways to retain these "new" customers. Service before and after the actual sale will continue to play a key role in the company's processes.

Therefore, the decision for Hylsamex regarding Internet strategies and use is not IF the company should pursue it or not, but rather HOW and WHEN. Hylsamex and its associated companies should adapt this new technology and use it in the best way possible.

Companies that adapt the best will be industry leaders in the future; the companies that do not adapt will have a hard time surviving.

The real question for all companies is how to go into e-commerce. Among alternatives, there are three possible ways for them to extend their business to the Internet:

- with a Dot Corp group,
- with a Dot Com, or
- with a mix of the two above

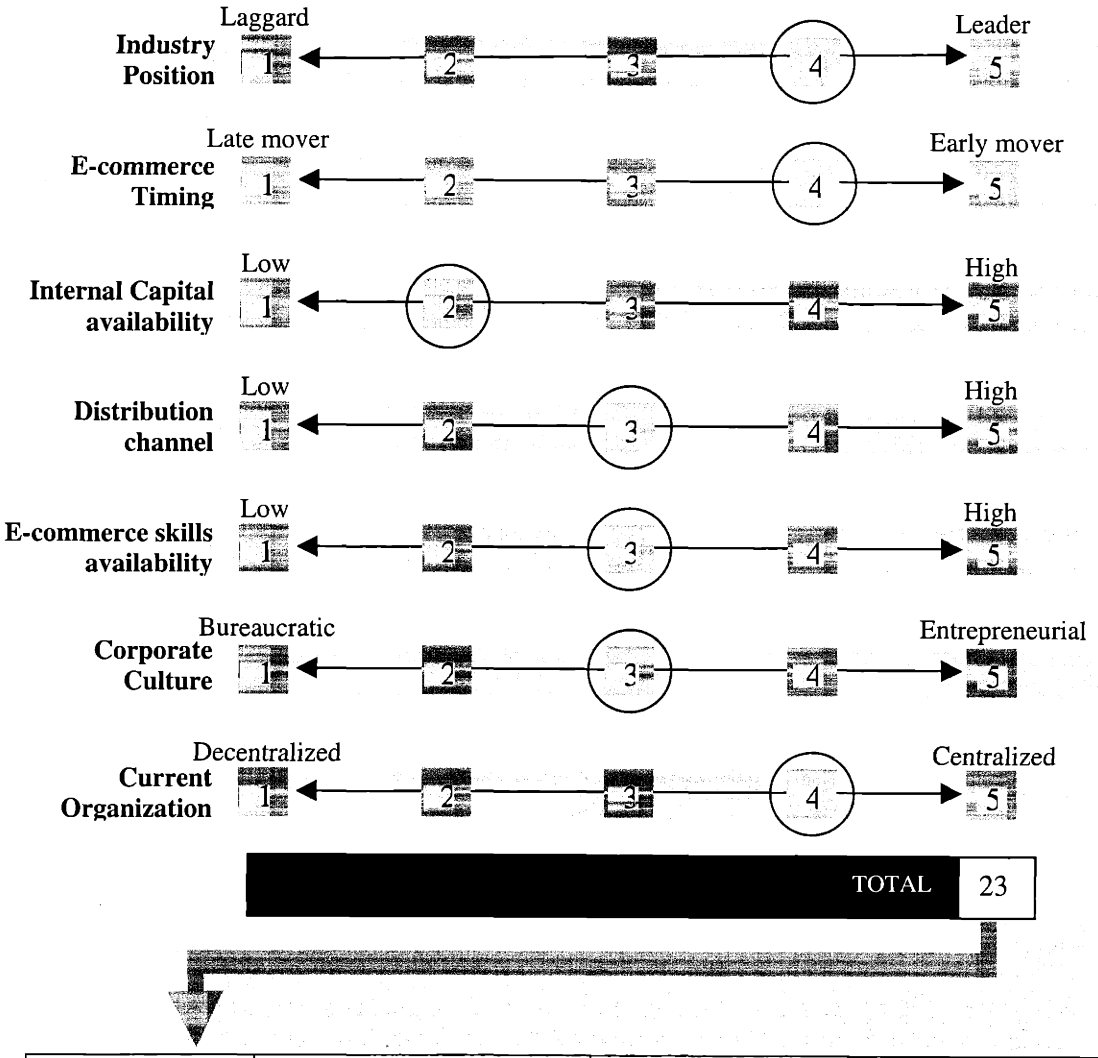
The decision regarding which alternative to take will depend on the e-commerce objectives and the characteristics of the company. If the objective is to extend the existing business on-line, the best approach is a Dot Corp. In this alternative, the head of the Dot Corp would report to a CEO or Division President.

If the objective is to experiment with new business and market models, the better approach is the Dot Com, which should operate as an independent entity with its President reporting to a Board of Directors.

A procedure has been developed by Forrester Research Inc. which enables companies to determine the best approach in an objective way. For this procedure, a company is "graded" in the following factors:

- Industry Position
- E-commerce timing
- Internal Capital availability
- Distribution Channel control
- E-commerce skills availability
- Corporate culture
- Current Organization

Applying these factors to Hylsamex, the scores in each factor are:



Score	Recommended Structure	Rationale
Less than 15	Dot com	Can't catch up using current business model:need to leapfrog with a Dot Com to overcome capital, cultural, and skills limitations.
Between 15 and 25	Dot Corp	Have opportunity to achieve radical improvements in current business model: can obtain resources and can control potential channel conflicts.
Greater than 25	Both Dot Com and Dot Corp	Have the resources, control, and culture to extend leadership in existing business model and develop leadership position with new models

Source: Forrester Research, Inc.

Based on this methodology, the best strategy for Hylsamex is to go into e-commerce with a Dot Corp.

According to the analysis done by Forrester Research, Inc., any company that decides to implement this kind of strategy will also find that some roles and responsibilities of the involved personnel will have to change. Some examples of these changes are:

	Today	**Dot Corp**
Strategists	- Assess implications of industry developments on business strategy - Identify potential product lines and market segments - Prepare 3-5 year plan	- Assess impact of Web on strategy - Identify potential Web-based products and services - Identify and negotiate third-party alliances
Marketers	- Research customer preferences - Define physical product features and functionality - Orchestrate advertising promotions, and marketing efforts	- Research on-line buying experience - Define Web-based products and service features and functionality - Orchestrate on-line product development process
Operationists	- Manage the order fulfillment process	- Design fulfillment and logistics processes - Identify and manage third-party fulfillment and logistics vendors
Technologists	- Design and develop internally used applications - Operate technology infrastructure	- Design apps to support external users and rapid release cycles - Develop Internet middleware and commerce apps

Source: Forrester Research, Inc.

These are just some of the things that the company will have to modify. However, in times of changes, most of the them caused by improvements in technology, the companies that want to continue or begin to be leaders should "go aboard" and adapt their systems to operate in the new environment. The "ship" will not wait for anybody. Given that this is the beginning of a new era, I think now is the right time for Hylsamex to invest in e-commerce.

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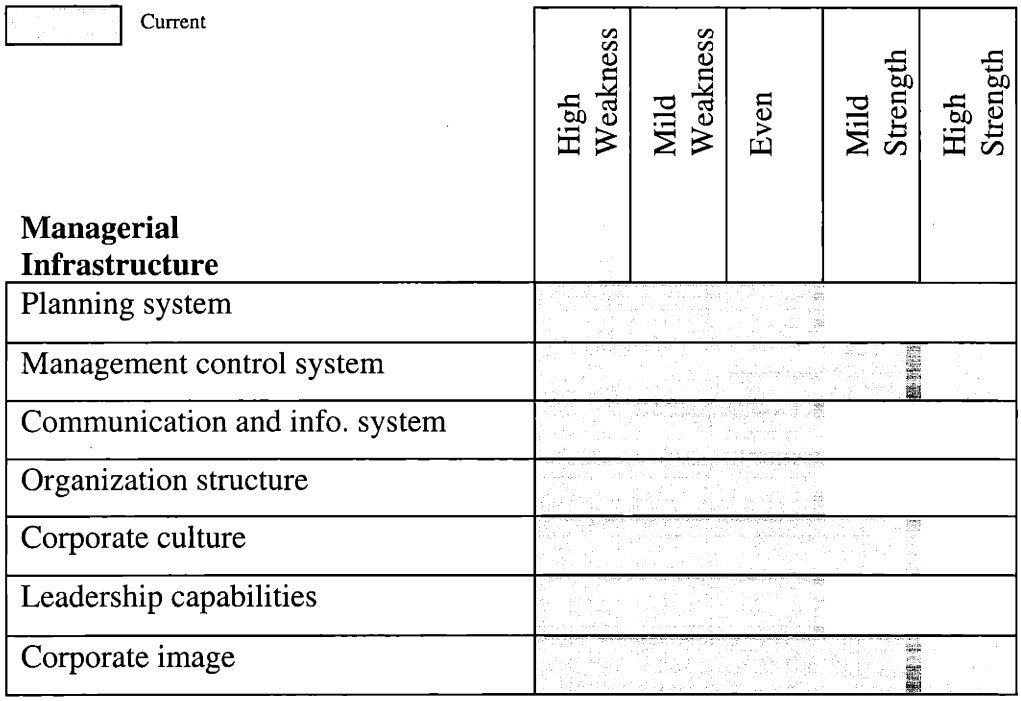
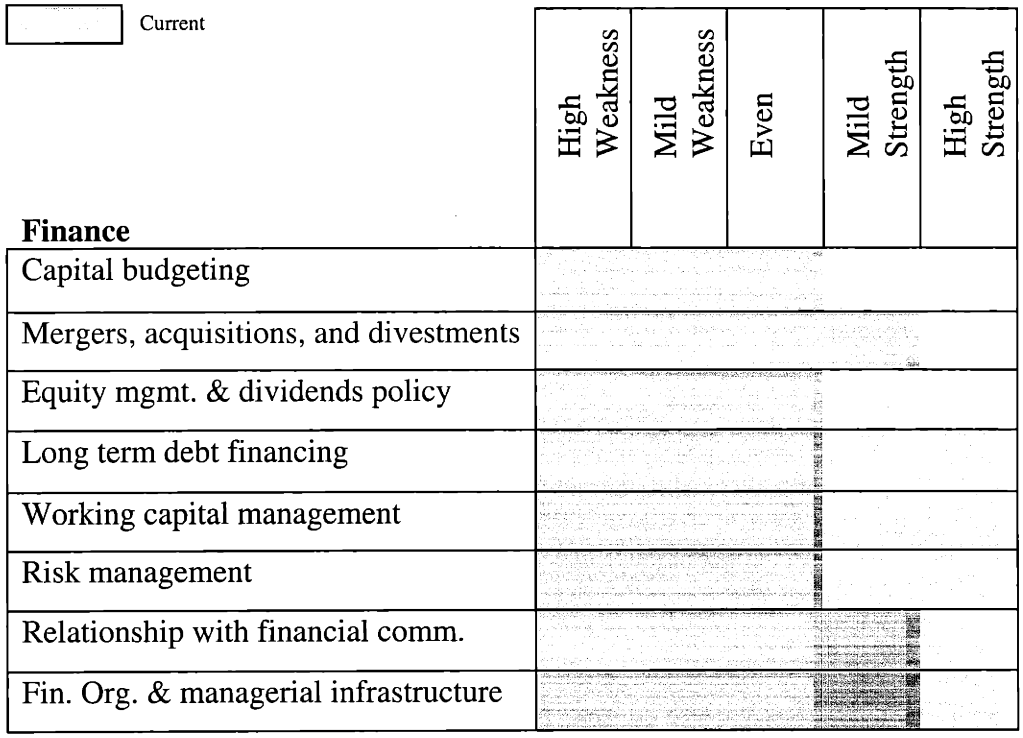
APPENDIX


Current
High Weakness
Mild Weakness
Even
Mild Strength
High Strength
Managerial Infrastructure
Planning system
Management control system
Communication and info. system
Organization structure
Corporate culture
Leadership capabilities
Corporate image


Current
High Weakness
Mild Weakness
Even
Mild Strength
High Strength
Finance
Capital budgeting
Mergers, acquisitions, and divestments
Equity mgmt. & dividends policy
Long term debt financing
Working capital management
Risk management
Relationship with financial comm.
Fin. Org. & managerial infrastructure

Current

Human Resources Management	High Weakness	Mild Weakness	Even	Mild Strength	High Strength
Selection, promotion, and placement					
Reward system					
Labor/employee relations and voice					
HRM organization and managerial infrastructure					

Current

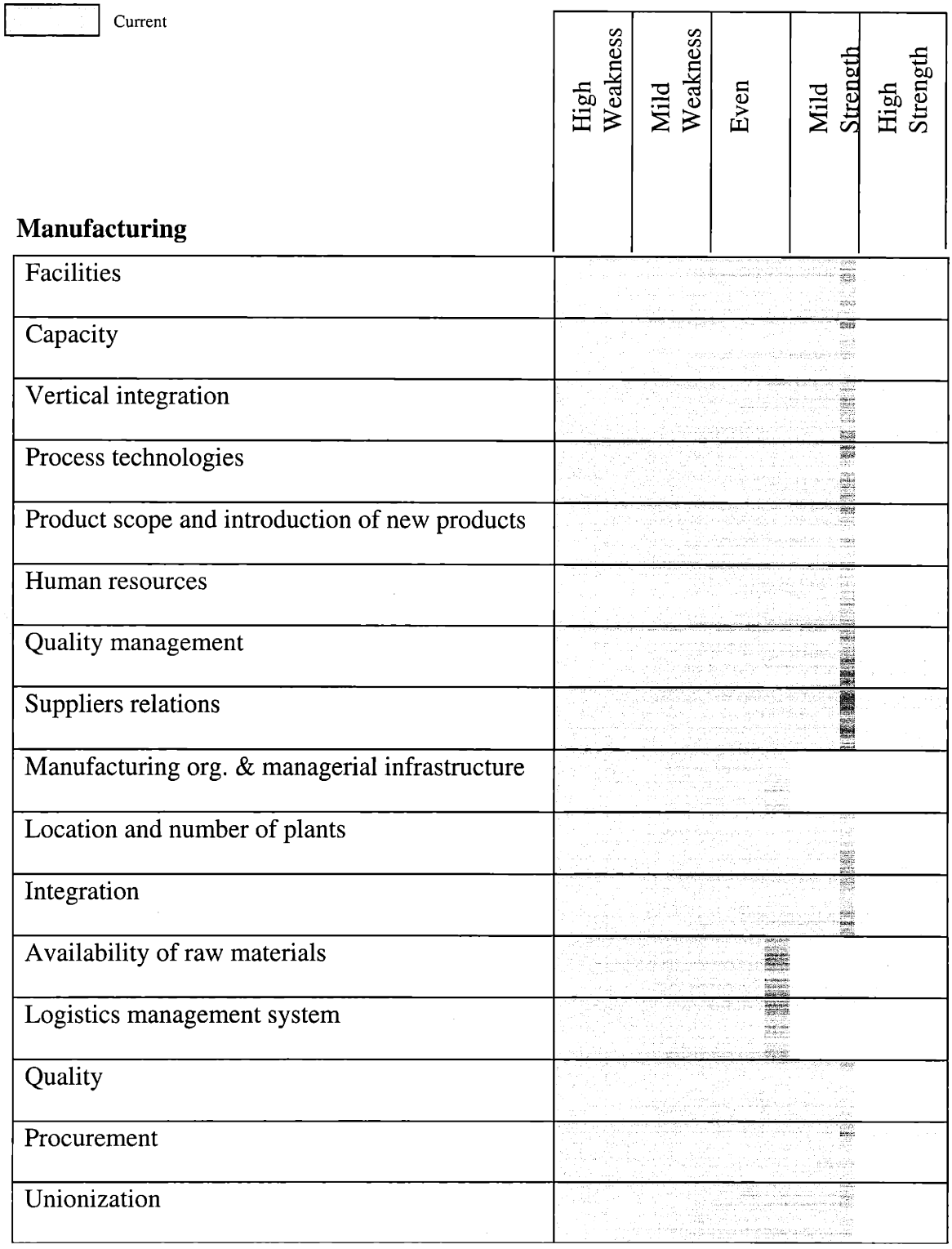
Technology	High Weakness	Mild Weakness	Even	Mild Strength	High Strength
Technology selection					
Timing of new technology introduction					
Horizontal strategy of technology					
Project selec., eval., resource alloc., & control					
R&D facilities					
Human resources					
Development of new products					
R&D funding					
Patents					

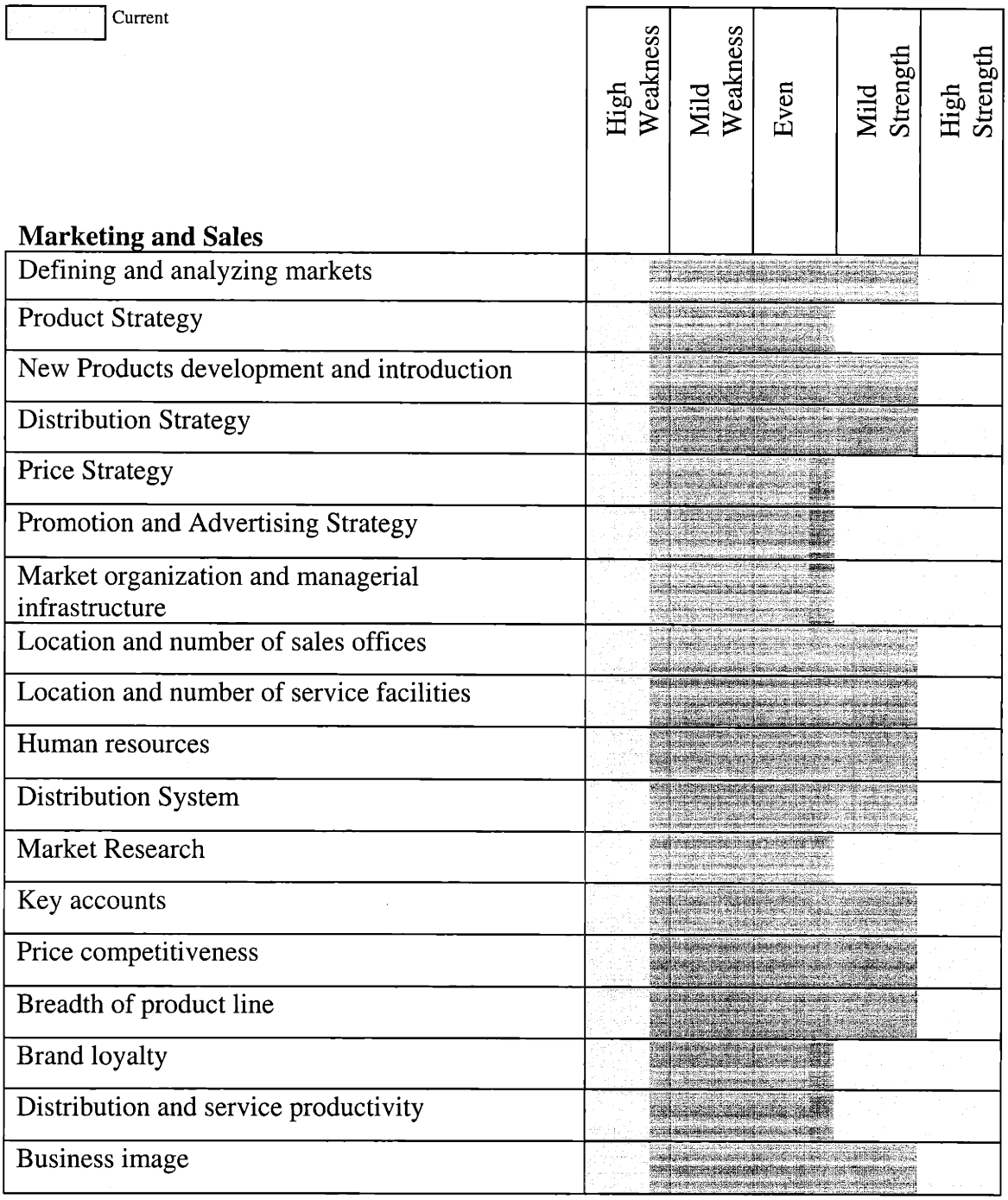
Current

Procurement	High Weakness	Mild Weakness	Even	Mild Strength	High Strength
Selection, evaluation, & development of suppliers					
Quality management of purchased goods					
Materials management of purchased goods					
Value, price/cost analysis, & standardization					
Procurement org. & managerial infrastructure					

Current

Manufacturing




Current
High Weakness
Mild Weakness
Even
Mild Strength
High Strength
Marketing and Sales
Defining and analyzing markets
Product Strategy
New Products development and introduction
Distribution Strategy
Price Strategy
Promotion and Advertising Strategy
Market organization and managerial infrastructure
Location and number of sales offices
Location and number of service facilities
Human resources
Distribution System
Market Research
Key accounts
Price competitiveness
Breadth of product line
Brand loyalty
Distribution and service productivity
Business image

Current

Critical Success Factors	High Weakness	Mild Weakness	Even	Mild Strength	High Strength
Managerial Infrastructure					
Finance					
Human Resources Management					
Technology					
Procurement					
Manufacturing					
Marketing and Sales					
Overall Assessment					