Creating Shareholder Value through Total Customer Solutions

by

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B.S. Chemical Engineering
Mississippi State University, 1981

Submitted to the Alfred P. Sloan School of Management
In Partial Fulfillment of the Requirements for the Degree of

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Abstract

This thesis examines how various chemical companies create shareholder value. Against the backdrop of the latest strategic thinking of Arnoldo C. Hax and Dean Wilde II as discussed in the Delta Model, the author reviews the strategic position of each company and compares them to the shareholder value they create. This thesis concludes that adopting the Total Customer Solutions strategic posture creates enhanced shareholder value.

The Chemical Industry, despite its rich and profound history, when compared to the Standard and Poor's 500 over the last five years, has been consuming value. In order to reverse these trends, companies have been focusing their energy on Rapid Globalization, Increased Mergers and Acquisitions, Business Transformation and Innovation. The advent of the Internet and how companies position themselves within this new space will also play a critical role in most companies' future success. The thesis suggests that all of these activities should be viewed from the Total Customer Solutions perspective, creating stronger alignment between strategy, adaptive processes, and execution.

The thesis concludes by suggesting how Eastman Chemical Company may utilize the principles embedded in the Delta Model to strategically reposition itself as a Total Customer Solutions Company.

Thesis Supervisor: Arnoldo C. Hax
Title: Alfred P. Sloan Professor of Management

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Biographical Note

Alexander Zalesky received his B.S. in Chemical Engineering from Mississippi State University in 1981. He joined Eastman Chemical Company in 1982, and has worked at locations in Texas, Tennessee, Argentina, and Mexico. He has broad experience in technical sales, sales management, and country management. Prior to his nomination to attend MIT he worked as Assistant to the Vice-Chairman and Executive Vice President of Eastman Chemical Company. Alexander is a native of La Paz, Bolivia, and became a U.S. citizen in 1985.

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I dedicate this thesis to my wife and children who have been with me all over the world and have richly blessed me with their love and support. I love you with all of my heart. To my mother and my parents-in-law who continue to rejoice in the victories of their children. To our extended families whose support has always been strong. To the friends here in Boston and around the world that always stood by our side during the fun as well as difficult times. To the wonderful teachers I have had in my life. Thank you Professor Hax and MIT for your insights and encouragement. I also want to thank the many colleagues at Eastman Chemical Company who over many years provided me with much unselfish guidance and support.

Finally I dedicate this thesis to my father, who based on my mother's stories, must have been an incredible person.

Those who wait for the Lord will gain new strength,
They will mount up with wings like eagles,
They will run and not get tired,
They will walk and not become weary Isaiah 40:31

And the Word became flesh
And dwelt among us,
And we beheld His Glory,
For of His fullness we have all received, and grace upon grace John 1:19

PREFACE

The chemical industry over the last century has undergone significant changes. Chemical Week magazine, in its December 1999 issue describe the metamorphosis of the industry during the last 100 years. While deep transformations over that time frame occurred and significant shareholder value was created, from many perspectives, both quantitative as well as qualitative, it has become increasingly clear that firms are not as profitable as before or as they wish to be. Analysts and owners argue that customer's knowledge and power, as well as downstream industry consolidation has created unbalanced power positions. Such power has resulted in lower returns for the firms. Furthermore the entrance in various industry segments of global retailers has created an immense pressure on the entire value chain to reduce costs. Continuous benchmark best in class practices has created a convergence of value proposition strategies. Ultimately the competitive model becomes either a "best product" or "differentiated product" choice where in many instances only few players create value. Furthermore the current impact of the Internet, described as the next significant technological change that will impact the industry, could also be seen as drivers that will further restructure the industry.

This thesis will review the possibility of defining a different business model. Its main goal is focused on increasing shareholder holder value in the chemical industry. The model will be based on a Total Customer Solutions perspective incorporating the latest strategic thinking of Arnoldo C. Hax and Dean Wilde II. Furthermore it also will explore the works of authors such as Michael Porter, Gary Hamel, Stephan H. Haeckel, Regis McKenna, Adrian J Slywotzky and David J. Morrison to understand their perspectives on shareholder value creation. The theory will then be reviewed against financial results of 11 major chemical companies.

In part two of this thesis the author will discuss the results of the above mentioned analysis with industry executives in order to gain a better understanding on the components of shareholder value creation. The thesis will conclude demonstrating why a Total Customer Solutions strategic position indeed is value creating as well as appropriate in these times of change.

CHAPTER 1 CHEMICAL INDUSTRY BACKGROUND

1.1 Chemical industry definition and general background

The chemical industry has undergone significant changes over the last century. Chemical Week magazine in its December 1999 issue clearly describe the metamorphosis of the industry during the last 100 years. In particular they divide the last 100 years into four "narrative lines." The first one is attributed to technological innovation, which over that time created approximately over 70,000 products penetrating every industry. The second narrative line describes the immense growth of the industry, specifically since 1970 where the worldwide chemical industry grew from 171 billion dollars to approximately 1.6 trillion dollars by the end of 1999. The third one is its globalization where significant investments have taken place by various countries throughout the world and where the chemical industry is recognized as one of the most international business platforms. The fourth one is the resilience of a few chemical companies who have been part of all of the last century, such as Du-Pont, Dow Chemical, BASF, and Bayer despite the changes that took place. The fifth and very significant one is the contribution of chemical products in improving the quality of life, yet also at times creating terrible damage when mismanaged[1]. The article concludes with prognosticating a future where continuous innovation, globalization, and higher living standards will continue to boost the demand for chemicals coupled to high environmental standards.

While this is a broad general mosaic of the chemical industry, to gain a better understanding of the industry itself, one must dig a little deeper. Archives of the Chemical Manufacturers Association (CMA), describe the brake down of the industry as follows: "Neither the Standard Industrial Classification (SIC) system of economic nomenclature, nor the new North American Industrial Classification System (NAICS) adequately capture the business of chemistry. The definitional foundations of both are based on the concept of related production activities. In contrast, the business of chemistry is largely market-driven (or focused). Participants have generally never viewed themselves along the lines of economic nomenclature but rather within four main

[1] Hunter David. "Closing Out the Century." Chemical Week Dec.22/29 1999: 5

segments – basic chemicals, specialty chemicals, life sciences, and consumer products -- each with its own characteristics, growth dynamics, markets, developments and issues[2]. The CMA goes on to describe three of the four segments as follows:

1.1.1 Basic Chemicals

"A $180 billion business in the U.S., basic (or commodity) chemicals are produced in large volumes to chemical composition specifications that are homogeneous in nature. That is, there is no product differentiation. Included are basic industrial chemicals, inorganic chemicals, bulk petrochemicals, organic chemical intermediates, plastic resins, synthetic rubber, man-made fibers, and other chemicals. Producers of basic industrial chemicals are selling molecules that are incorporated into a manufactured product or aid in processing." It goes on to state this segment is a mature market, low growth where prices are mainly driven by capacity utilization or raw material costs, resulting in low profit margins and high degree of cyclicality. A rough rule of thumb is that most commodities are priced less than $0.50 per pound. Long-term basic chemical prices are declining 1-3 % per year in real terms. Indeed, the price of ethylene (a key petrochemical building block) in 1998 was the same as it was in 1980. High barriers to entry exist because of large capital, scale, and energy requirements in addition to potentially large environmental liabilities. Access to hydrocarbon feedstock is also important. Technology is moderately high and based on reaction, catalysis, distillation, separation, synthesis and other chemical unit operations that are dedicated and are continuous in nature. Process technology tends to be more important than product technology. Plant size (or scale) also drives economics as well as critical mass in product. An ethylene cracker utilizing hydrocarbon feedstocks would typify many plant operations, but during the next several decades, the growing importance of biological sciences will lead to a shift toward biological raw materials and processes. Du Pont, for example, has recently commercialized a technology for producing man-made fibers using bio-science (and microbes) as opposed to traditional chemistry (and hydrocarbon-based feedstocks).

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[2] Chemical Manufacturers Association, The Business of Chemistry in the USA, Performance and Outlook 1999

Diffusion of the biosciences in basic chemicals could lead to the further development of "green chemistry."

The basic chemicals industry seems also to be driven by consolidation, often along regional lines and can involve some major transactions. Companies generally employ low-cost leadership strategies (through scale economies or proprietary process technology) and are often reluctant to give-up market share. The next 10 years will see fewer, larger companies focused on a range of commodity products, most likely in regional markets and at times creating global imbalance. Major entry barriers are high entry costs mainly due to the requirement of economies of scale as well as high exit costs.

1.1.2 Specialty Chemicals:

A $95 billion business in the United States, specialty chemicals are differentiated (and often technologically advanced) products. They are manufactured in lower volumes than basic chemicals and are used for a specific purpose such as a functional ingredient or as processing aids in the manufacture of a diverse range of products. Also referred to as performance chemicals, specialties enable customers to reduce overall systems costs, enhance product performance, and optimize manufacturing processing through custom solutions. That is, they are sold for what they do, rather than for what they contain. Included are adhesives and sealants, catalysts, coatings, electronic chemicals, fine chemicals, industrial gases, institutional and industrial cleaners, plastic additives, water management chemicals and other specialties. Basically, it is often perceived that specialty chemical companies are selling solutions to a problem. A feature distinguishing specialties from basic industrial chemicals is their large customer servicing or technical servicing component. Specialty chemical prices tend to be set by "value-in-use" not by cost, and historically their earnings were not impacted as much by demand pressures. That is, economics are driven by the value-added to the customer. This raises "switching costs" and offsets the bargaining power of customers. Critical mass in end-markets is also important. Traditionally, specialties have higher margins than commodities and a much lower cyclicality. Until recently earnings have also been less volatile. A rough rule of thumb is that most specialties are priced at more than $1.00 per pound. Long-term

specialty prices were rising over much of the last decade in real terms, but have softened in the late-1990s as a result of market changes.

Specialty chemical products have a higher value-added because they cannot easily be duplicated by other producers or are shielded from competition by patents. As a result, high barriers to entry can exist because of technology requirements. Capital needs are less important and more flexible than with basic chemicals but can still be relatively high. Although dedicated and continuous operations (at lower scales) are also typical in specialties, there are also a large number of plants that are general-purpose synthesis operations (with equipment for specific unit operations such as distillation, crystallization, filtration, etc.) or formulating plants. By definition, most specialties are niche businesses, and beyond a certain size, scale does not matter. On the other hand, strong technical servicing, marketing, and distribution competencies are a must as close customer relationships and servicing are paramount. Indeed, the final price of specialty chemical features a very high service component. Innovative chemistry and material applications technologies are growth drivers for most companies.
Consolidation and globalization is occurring although acquisitions tend to be smaller than in basic chemicals. Alliances to provide scale and scope are becoming important. On the other hand, specialty company margins are under pressure as demand has slowed and as "supply chain management" practices by large customer (with increasing bargaining power) have eroded "value-in-use." In addition, over-capacity has become a problem in some specialty segments. As a result, many of the factors behind the attractiveness of specialties have eroded. Some segments face environmental pressures such as "green" products and processes. Companies generally employ focus or product differentiation strategies and some are seeking to evolve through branding strategies. The next 10 years will see most specialty chemical companies focused on global markets.

1.1.3 Life Sciences:

A $100 billion business in the US, life science products are differentiated chemical and biological substances that interact with the biological processes of human, animals, plant and other life forms to induce specific outcomes. Included are pharmaceuticals,

biological products, diagnostic substances, animal health, vitamins, nutritional, and crop protection products. The latter is a $13.5 billion business and includes pesticides and other products for crop protection, plant disease management, and industrial and commercial pest management. Pharmaceuticals and other health-related products represent an $86.5 billion business. Biotechnology, a $14 billion technology platform, cuts across the two main businesses with applications in pharmaceuticals, diagnostics, crop seeds, traits and value-added grains, among others.

"Life sciences is the most dynamic of the three main businesses, with long-term growth potential of 1.5-6.0 X GDP." Life science markets also include hospitals, physicians, health care providers, testing laboratories, pharmacies, other retailers, as well as agriculture, forestry and some service sectors.

Prices are often based on cost-effectiveness and value-in-use considerations vis-à-vis other alternatives. Patent and other intellectual property protection is very important and development costs are high. These factors influence the economics of the business. As a result, life sciences have typically enjoyed profits margins that are multiples of those in basic chemicals. This is also reflected in greater shareholder value creation. Long-term prices have been rising about 1-3 % per year in real terms although large customers (HMOs, retail pharmacy chains, etc.) have increased bargaining power and prices (and profit margins) have been under pressure. A rough rule of thumb is that most of these products are priced well in excess of $10 per pound. Competition is largely based on innovation, product development and differentiation, geographical coverage, price, and customer service.

Technology advantages are extremely important in life sciences and there is increasing convergence between biology and chemistry as biotechnology innovations further diffuse. Indeed, the life sciences are synonymous with innovation. As a result, R&D spending in life sciences as a percent of sales are the highest among all the three chemical industries. For pharmaceutical companies, R&D spending ranges from 15 to 25 % while crop protection companies typically spend 10 to 15 % of sales on R&D. Life science products have a high value-added because they cannot easily be duplicated by other producers or are shielded from competition by patents. Capital needs are moderately high

but flexible. Plants are usually batch-oriented synthesis or formulating operations where quality control and a clean environment are critical. Beyond a certain size, scale does not matter. Microbial ferments or mammalian cell bio-reactors would typify many biotechnology operations. Pharmaceutical companies are increasingly outsourcing their fine chemical needs in order to focus on R&D. For a number of pharmaceuticals, biotechnology represents a more efficient and cost-effective means of manufacture. Strategic acquisitions, alliances and research agreements as well as investment in internal capabilities are important in life sciences. Some consolidation is occurring and industry concentration is relatively high. (For example, the top 10 firms account for more than 75 % of world crop protection sales.) Sustainable product differentiation and intellectual property are significant competitive factors. A number of life science companies have vertically-integrated downstream into seeds. This, in turn, will adversely affect the demand for crop protection products based on traditional chemistry. Recent consumer concerns in Western Europe over genetically modified organisms (GMOs) have eroded some of the luster of this market.

"For pharmaceuticals and other health care products, demography will play a large role in long-term demand trends. International competition is rising, bringing with it increasing import penetration in pharmaceuticals. There is also increasing penetration by generics while development costs continue to rise[3]."

After significant literature research to find other views or definitions about the chemical industry, it has been difficult to find a better description for the industry and these segments, as described herein by the CMA.

Finally, some concluding statistics suggest that the U.S. chemical industry produces over 70,000 different products, employs over 1 million people and of those about 90,000 are scientists and engineers. The US chemical industry represents approximately 25% of the $1.5 trillion dollar global industry[4].

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[3] Chemical Manufacturers Association, The Business of Chemistry in the USA, Performance and Outlook 1999

[4] Chemical Manufacturers Association, US Chemical Industry Statistical Handbook, 1999

Thus far, the previously mentioned qualitative analysis would suggest a thriving and healthy industry. And therefore from a Porter's five forces analysis a highly attractive one. Prior to jumping to such judgement the next step of the analysis should be to evaluate the financial health of the industry. In an interview with David Hunter, Editor in Chief, Vice President and Editorial Director of Chemical Week, he mentions that "it is very difficult to analyze and make much sense of the available global data in a collective aggregate context, such as the entire chemical industry." Instead he suggested reviewing trends by industry segments, individual companies or specific financial line items in order to get a better understanding or interpretation of the trends. This paper will conduct a fairly detailed analysis of eleven chemical companies in chapters three and four. Before pursuing such detailed work and in order for the reader to have a broad and complete understanding of the chemical industry, general industry trends are now discussed.

1.2 U.S. Chemical industry performance assessment

Based on CMA data shown in figure 1.1 and 1.1a attached at the end of this chapter, the overall U.S. chemical industry revenue measured as sales by corporations grew from $261 billion in 1988 to $430 billion in 1998. This represents an approximate 65% growth or a 5.1% annual growth rate. Net Income as a percent of Sales varied between 9.9% and 3.9% with the trend over the last five years improving. Net Income as a percent of Assets varied between 8.4% and 3.6% with the trend over the last five years remaining close to 7%. Capital expenditures more that doubled over that time frame, going from $13 billion to $28.4 billion per year. Research and development funding increased $11.1 billion to $19.3 billion per year with over 17,200 patents granted in 1998. What seems quite impressive is that the amount of people employed remained flat at slightly over 1 million people over that same time period, demonstrating strong gains in productivity given the 2.3% annual volume growth. Finally average Return on Equity (ROE) for the chemical industry, as shown in figure 1.2, stayed fairly constant at about 19% over the last five years[5], Return on Assets (ROA) declined from 7.8% to 7.1% over the same time period.

[5] Chemical Manufacturers Association, US Chemical Industry Statistical Handbook, 1999

Foreign direct investment by International chemical companies in the U.S. grew 228% over the ten years and U.S. foreign investment grew 166% over the same time frame.

Reviewing the same statistics but now only for the basic chemicals or industrial chemicals sector, we find that revenue measured as sales by corporations grew from $115 billion in 1988 to $152 billion as shown in figure 1.1. This represents an approximate 43% or at a 2.8% annual growth rate. As shown in the chart this industry seems to be on a negative trend over the last two years. Net Income as a percent of Sales varied between 8.8% and 4.6% with the trend over the last five years flat to negative. Net Income as a percent of Assets varied between 8.2% and 3.2% with the trend over the last five years remaining close to 3.2 and flat. Capital expenditures more that doubled closely followed by research and development. Prices over the last decade increased 2.2% while inflation as measured by the consumer price index (CPI), increased 3.3%. This negative trend was also reflected by declining overall corporate profits, which declined from $24 billion to $21 billion between 1995 and 1998. Financial ratios shown in figure 1.3, show that ROE over the last five years has declined from 16.9% to 10.9% and ROA from 5.3% to 4.2%.

Figures 1.4 and 1.5 show data for the chemical-pharmaceutical industry and the remaining chemical industry (excluding industrial and pharmaceutical products) respectively. One could assume that the data then reflects the specialty chemicals industry. Data reflected in figure 1.4 shows that the chemical-pharmaceutical industry is the sector with highest returns, with and ROE in the mid to high 20% and ROA around 10%. Reviewing figure 1.5 we see that those products or industry that is not either basic or pharmaceutical driven falls in the middle of the profitability range. ROE varies from 26% 16.3% and ROA is close to 6% over the last two years. Hence based on this information one could conclude that the basic chemicals industry is the least profitable sector, and the chemical-pharmaceutical industry sector the most profitable one. The specialty chemicals seem to fall in between these two. Two recent articles reviewed discuss the implications of poor profitability trends both in the basic chemical industry and the specialty chemicals industry. The first one reveals that capital expenditures over the next years will be considerably trimmed down (over 17%) both in the basic chemical

industry as well as the specialty sector due to poor profitability[6]. In the second one Joseph Chang states "Although specialty chemical stocks have historically traded at a premium to their commodity chemical counterparts, a reversal is taking place. The gap between the P/E multiples of the two groups has been converging since 1995. Today, the valuation premium that was once attributable to the higher margin, less cyclical business of specialty chemical has disappeared. In December 1995, the Young & Partners U.S. specialty chemical index sold at a trailing 12-month P/E of 16.2x versus 10.3x for the U.S. basic chemicals index. By December 1998, the gap had narrowed, with specialties at 14.7x and basics at 12.4x, and by this July, the P/E of the specialties (17.9x) trailed that of the basic (21.5x)." Mr. Chang sites "Customers emphasis on purchasing and supply chain management " as reasons for severely weakening the pricing power of the specialty chemicals industry[7]. He concludes by stating that many specialty chemicals, such as lube and polymer additives have become increasingly commoditized, and the industry has been hampered by a lack of product innovation. Numerous other articles in Chemical Week, Chemical Market Reporter, Chemical and Engineering News going back to 1996 present the same story. Words such as "the day of reckoning has arrived", "significant erosion of prices and profitability predicted", "while demand for plastic resins soars, profitability declines", "cash margins drop 48% in European chemical companies", "continued poor profitability continues to drive further industry consolidation" are used to define the state of the industry.

1.3 Summary and conclusion

The data presented would allow one to conclude that the overall U.S. chemical industry, from a historic macroeconomic perspective, has been a strong and healthy industry. Representing over 25% of the world's chemical industry output, employing close to 90,000 scientists, with 2.3% productivity gains over the last decade and over 70,000 products improving the quality of life, it is still considered one of the pillars of the U.S.

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[6] Nielsen, Kar "Chemical Industry Trims Down in '99." Chemical Week March 3, 1999:39

[7] Chang, Joseph, " P/E multiples converge for commodity, specialty chemicals." Chemical Market Reporter. Aug 99 : 1,12.

industrial economy. From figure 1.1 we also infer that the basic chemical industry is the largest sector in revenue and volume, hence driven by scale economics and perhaps process and product efficiency in order to remain profitable. Furthermore the author proposes that the specialty chemical industry is an industry whose objectives could be categorized as driven by solving specific customer or market specific needs and hence demonstrating improved economics. Finally the chemical-pharmaceutical or life sciences industry is driven primarily by technological innovation basing its profitability on proprietary technologies and products.

Likewise while the macroeconomic perspective of the industry appears healthy, analyzing the literature over the last five years reveals that the economic health of individual sectors and or companies may not be so strong, at best presenting mixed results. In order to revert the negative profitability trends significant industry consolidation via mergers and acquisitions, joint ventures and alliances is taking place. Companies have been securing stronger vertical and horizontal positions as well as technology platforms and segment positions that will allow them to continue to grow. Globalization and privatization of the industry has also been a primary driver of growth creating further consolidation within the industry.

As this paper unfolds it presents the profile of eleven chemical companies, their position within the three industry segments, and their shareholder value creation. Part of the objective is to understand their different business models, customer focus and why some create greater shareholder value than others. Finally that portion of the analysis will position these companies within the Delta Model, a model that describes three specific ways of creating shareholder value.

In the 1990s, life sciences have been the fastest growing part of the US chemical industry.

Figure 1.1

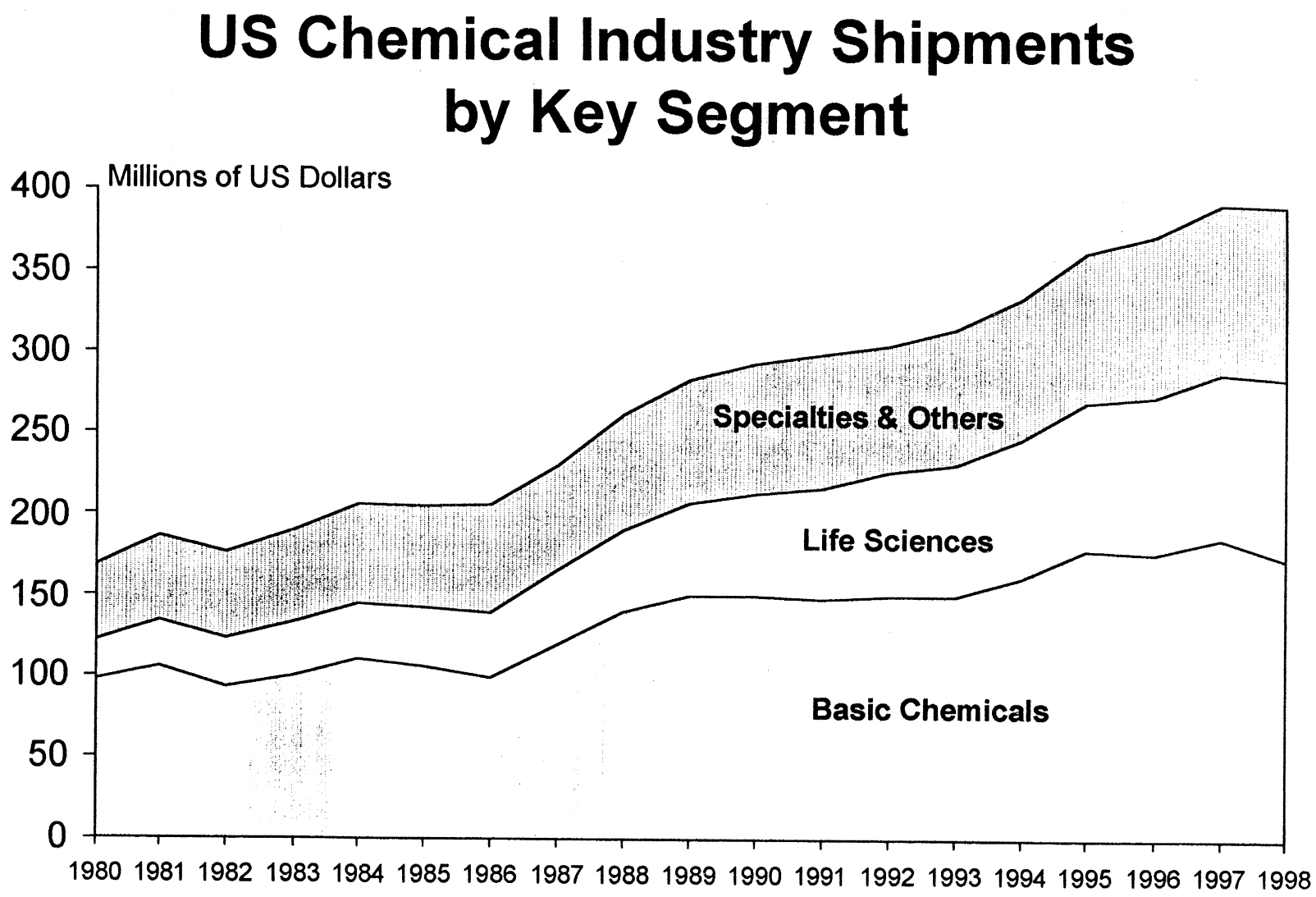

Figure 1.1a

CHEMICALS & ALLIED PRODUCTS (SIC 28): KEY INDICATORS OF INDUSTRY PERFORMANCE, 1988-1998

Item/Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Annual Growth Rates 1998/88	1998/93	1998/97
Shipments (billion $)	261.2	283.2	292.8	298.5	305.4	314.9	333.9	362.1	372.8	392.2	391.7	4.1%	4.5%	-0.1%
Production Index (1992=100)	92.2	95.1	97.3	96.4	100.0	101.4	104.7	107.5	110.5	115.0	115.5	2.3%	2.6%	0.5%
Corporation Sales (billion $)	261.6	278.3	287.6	297.8	315.5	325.1	357.6	397.7	413.9	426.8	430.6	5.1%	5.8%	0.9%
Net Income - After Taxes (billion $)	23.4	24.0	22.7	19.5	12.4	15.2	29.6	36.0	39.8	41.7	42.6	6.2%	22.9%	2.0%
Net Income to Sales (%)	9.0%	8.6%	7.9%	6.6%	3.9%	4.7%	8.3%	9.1%	9.6%	9.8%	9.9%	--	--	--
Total Assets (billion $)	277.6	293.3	325.4	357.7	385.4	418.3	462.3	517.0	546.8	563.3	593.8	7.9%	7.3%	5.4%
Net Income to Assets (%)	8.4%	8.2%	7.0%	5.5%	3.2%	3.6%	6.4%	7.0%	7.3%	7.4%	7.2%	--	--	--
Capital Expenditures (billion $)	12.4	15.4	17.5	18.5	18.4	18.0	17.8	23.1	23.3	25.4	28.1	8.6%	9.4%	10.5%
Operating Rate (%)	84.0%	83.7%	83.0%	80.1%	80.3%	78.8%	79.1%	79.1%	78.6%	78.7%	78.4%	--	--	--
Producer Price Index (1982=100)	116.3	123.0	123.6	125.6	125.9	128.2	132.1	142.7	142.1	143.8	144.7	2.2%	2.5%	0.6%
Total Employment (thousands)	1,057	1,074	1,086	1,076	1,084	1,081	1,057	1,038	1,034	1,036	1,043	-0.1%	-0.7%	0.7%
Average Hourly Wage - Production Workers ($)	12.71	13.09	13.54	14.04	14.51	14.82	15.12	15.62	16.17	16.58	17.16	3.0%	3.0%	3.5%
Funds for Research & Development (billion $)	10.8	11.9	13.2	14.4	15.1	16.7	16.7	17.3	17.7	18.7	19.6	6.1%	3.3%	4.5%
Exports (billion $)	31.9	35.1	38.2	42.9	44.0	45.1	51.6	60.8	61.8	69.5	68.0	7.9%	8.6%	-2.1%
Imports (billion $)	19.9	20.8	22.5	24.2	27.7	29.2	33.9	40.4	44.9	50.3	54.6	10.6%	13.4%	8.5%
Trade Surplus (billion $)	12.0	14.4	15.8	18.8	16.3	15.9	17.7	20.4	16.9	19.1	13.4	1.1%	-3.4%	-30.0%

*Company funds (excluding deferal contracts). 1997 data are CMA estimates based on company data from annual reports.
Sources: U.S. Department of Commerce, U.S. Department of Labor, Federal Reserve Board, National Science Foundation, and CMA analysis.

Note: For indicators of health, safety and environmental performance, please see Section 7 (Health, Safety and the Environment).

TOTAL CHEMICALS AND ALLIED PRODUCTS

Figure 1.2

FINANCIAL RATIOS:

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Profitability Measures:											
Operating Margin (%)	9.3%	8.9%	7.9%	7.7%	9.0%	10.8%	11.7%	10.6%	9.8%	10.0%	9.6%
Basic Earning Power (%)	11.6%	10.1%	7.8%	4.4%	5.0%	8.9%	9.6%	9.6%	9.5%	8.8%	8.5%
Return on Revenues (%)	8.8%	8.1%	6.7%	4.1%	4.8%	8.5%	9.1%	9.6%	9.8%	9.9%	8.0%
Return on Assets (%)	8.4%	7.2%	5.6%	3.4%	3.7%	6.6%	7.0%	7.3%	7.5%	7.2%	6.4%
Return on Equity (%)	19.2%	16.9%	13.4%	8.7%	10.2%	19.0%	20.3%	19.4%	20.2%	19.9%	16.7%
Return on Net Assets (%)	9.4%	8.0%	6.2%	3.7%	4.1%	7.3%	7.8%	8.1%	8.3%	7.9%	7.1%
Return on Fixed Capital (%)	24.5%	20.4%	15.4%	9.2%	10.6%	19.5%	21.8%	24.7%	26.1%	25.9%	19.8%
Return on Working Capital (%)	24.7%	22.5%	18.6%	11.5%	12.8%	23.3%	24.6%	26.7%	27.6%	26.0%	21.8%
Cost of Capital (%)	10.2%	10.1%	9.6%	10.8%	7.8%	8.6%	8.0%	8.1%	8.1%	7.5%	8.9%
Economic Return on Capital Employed (%)	7.5%	4.3%	2.6%	0.9%	2.4%	6.9%	5.8%	5.8%	8.5%	7.3%	5.2%
Spread Between Return on Equity and Cost of Equity (%)	4.9%	2.4%	-0.6%	-4.6%	-2.1%	5.7%	7.5%	6.7%	7.6%	8.4%	3.6%
Effective Tax Rate (%)	27.6%	28.7%	28.5%	22.7%	25.9%	26.0%	27.2%	23.9%	21.8%	18.4%	25.1%
Cash Dividends to Net Income (%)	44.2%	57.3%	62.4%	109.3%	94.4%	50.3%	57.1%	51.2%	53.8%	60.5%	64.0%
Cash Flow Measures:											
Cash Flow as a % of Long-Term Debt	43.8%	32.9%	25.2%	22.4%	17.4%	28.3%	26.0%	26.5%	28.1%	23.6%	27.4%
Cash Flow-to-Capital Expenditure Ratio (%)	260.7%	205.1%	174.5%	173.1%	155.4%	296.7%	236.2%	229.6%	243.6%	208.5%	218.3%
Cash Flow Return on Assets (%)	13.7%	11.0%	9.0%	8.5%	7.0%	11.6%	10.5%	10.1%	11.0%	9.4%	10.2%
Cash Flow as a % of Revenues (%)	14.5%	12.5%	10.8%	10.4%	9.0%	14.9%	13.7%	13.4%	14.5%	13.0%	12.7%
Free Cash Flow Return on Assets (%)	3.5%	1.7%	0.8%	-1.4%	-0.7%	2.9%	1.8%	2.3%	2.1%	1.4%	1.5%
Free Cash Flow as a % of Revenues (%)	3.7%	1.9%	0.9%	-1.7%	-0.8%	3.7%	2.4%	3.1%	2.8%	2.0%	1.8%

INDUSTRIAL CHEMICALS

Figure 1.3

FINANCIAL RATIOS:

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Profitability Measures:											
Operating Margin (%)	9.7%	8.9%	5.0%	4.2%	5.8%	9.1%	10.9%	9.9%	9.2%	8.4%	8.1%
Basic Earning Power (%)	11.0%	8.3%	4.3%	-2.5%	2.9%	5.7%	7.1%	5.8%	6.8%	5.3%	5.5%
Return on Revenues (%)	8.4%	7.0%	4.2%	-2.1%	3.4%	6.1%	6.7%	4.9%	5.6%	5.3%	4.9%
Return on Assets (%)	7.7%	5.8%	2.9%	-1.5%	2.3%	4.3%	4.8%	3.6%	4.4%	3.7%	3.8%
Return on Equity (%)	17.0%	13.6%	7.4%	-4.4%	7.0%	13.3%	16.9%	11.2%	14.5%	12.3%	10.9%
Return on Net Assets (%)	8.6%	6.3%	3.2%	-1.6%	2.5%	4.7%	5.3%	4.0%	4.9%	4.0%	4.2%
Return on Fixed Capital (%)	20.0%	13.9%	6.9%	-3.3%	5.2%	9.9%	11.5%	9.2%	11.2%	9.5%	9.4%
Return on Working Capital (%)	24.8%	19.7%	11.8%	-6.1%	9.5%	17.5%	18.4%	14.4%	18.2%	15.3%	14.3%
Cost of Capital (%)	10.2%	10.0%	9.3%	12.4%	7.9%	8.4%	7.3%	7.3%	7.2%	6.7%	8.7%
Economic Return on Capital Employed (%)	6.3%	5.0%	1.5%	-5.5%	0.2%	3.3%	7.0%	1.6%	4.9%	5.8%	3.0%
Spread Between Return on Equity and Cost of Equity (%)	2.7%	-0.9%	-6.5%	-17.7%	-5.2%	0.2%	4.2%	-1.3%	2.1%	0.9%	-2.1%
Effective Tax Rate (%)	30.1%	30.5%	32.2%	-40.8%	22.3%	25.0%	32.6%	37.1%	35.1%	30.2%	23.4%
Cash Dividends to Net Income (%)	33.2%	57.8%	68.8%	-135.7%	76.7%	41.9%	49.3%	46.1%	40.5%	50.2%	32.9%
Cash Flow Measures:											
Cash Flow as a % of Long-Term Debt	42.8%	31.4%	17.5%	9.5%	11.4%	17.2%	22.4%	16.7%	20.2%	18.4%	20.8%
Cash Flow-to-Capital Expenditure Ratio (%)	174.5%	130.3%	100.2%	73.4%	95.3%	167.5%	180.9%	112.9%	133.5%	115.7%	128.4%
Cash Flow Return on Assets (%)	14.0%	11.2%	7.3%	4.5%	5.6%	8.3%	10.8%	7.6%	9.6%	8.8%	8.8%
Cash Flow as a % of Revenues	15.2%	13.6%	10.4%	6.5%	8.3%	11.7%	15.0%	10.2%	12.2%	12.7%	11.6%
Free Cash Flow Return on Assets (%)	2.2%	-1.3%	-1.9%	-5.1%	-0.9%	1.9%	0.6%	-0.5%	-0.1%	-1.4%	-0.7%
Free Cash Flow as a % of Revenues	2.4%	-1.6%	-2.7%	-7.4%	-1.3%	2.6%	0.9%	-0.7%	-0.2%	-2.1%	-1.0%

PHARMACEUTICALS

Figure 1.4

FINANCIAL RATIOS:

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Profitability Measures:											
Operating Margin (%)	10.7%	12.4%	14.4%	13.3%	14.3%	13.9%	14.3%	11.6%	10.0%	10.6%	12.5%
Basic Earning Power (%)	16.6%	16.7%	17.0%	14.2%	11.9%	12.7%	12.7%	11.2%	10.4%	11.8%	13.5%
Return on Revenues (%)	15.1%	15.8%	15.2%	12.9%	12.4%	14.2%	14.4%	15.0%	14.2%	15.9%	14.5%
Return on Assets (%)	12.4%	12.8%	12.7%	10.3%	9.1%	9.5%	9.7%	9.3%	9.3%	11.1%	10.6%
Return on Equity (%)	25.3%	25.8%	25.4%	21.4%	20.9%	25.8%	25.3%	21.9%	22.8%	28.2%	24.3%
Return on Net Assets (%)	13.8%	14.2%	14.6%	11.5%	10.1%	10.4%	10.7%	10.2%	10.3%	12.5%	11.8%
Return on Fixed Capital (%)	43.8%	46.0%	42.3%	35.7%	34.8%	40.5%	43.2%	46.8%	46.3%	55.7%	43.5%
Return on Working Capital (%)	34.5%	38.0%	35.7%	30.5%	28.1%	32.2%	33.3%	33.5%	32.7%	36.2%	33.5%
Cost of Capital (%)	11.2%	11.4%	10.9%	10.1%	9.0%	9.1%	8.9%	9.4%	9.4%	8.7%	9.8%
Economic Return on Capital Employed (%)	13.6%	16.6%	1.6%	10.4%	11.1%	20.0%	9.0%	7.2%	18.2%	16.1%	12.4%
Spread Between Return on Equity and Cost of Equity (%)	10.0%	10.3%	10.4%	7.1%	7.7%	11.6%	11.6%	8.4%	9.4%	15.7%	10.2%
Effective Tax Rate (%)	25.0%	23.4%	25.2%	27.6%	23.7%	25.4%	23.5%	17.0%	11.2%	6.2%	20.8%
Cash Dividends to Net Income (%)	58.2%	57.8%	54.3%	75.6%	74.9%	60.6%	68.3%	68.2%	77.5%	71.3%	66.7%
Cash Flow Measures:											
Cash Flow as a % of Long-Term Debt	85.0%	95.6%	51.4%	67.0%	46.7%	49.4%	33.0%	27.2%	37.2%	30.8%	52.3%
Cash Flow-to-Capital Expenditure Ratio (%)	389.2%	507.9%	280.6%	312.5%	301.4%	478.0%	290.6%	307.1%	442.3%	387.3%	369.7%
Cash Flow Return on Assets (%)	17.1%	18.2%	10.8%	14.8%	12.5%	15.8%	10.7%	8.7%	12.2%	10.6%	13.1%
Cash Flow as a % of Revenues (%)	20.8%	22.6%	12.9%	18.5%	17.0%	23.6%	15.9%	14.1%	18.7%	15.2%	17.9%
Free Cash Flow Return on Assets (%)	3.9%	4.8%	4.8%	0.6%	0.7%	3.0%	1.8%	2.2%	1.5%	2.7%	2.6%
Free Cash Flow as a % of Revenues (%)	4.7%	5.9%	5.8%	0.8%	1.0%	4.4%	2.6%	3.5%	2.2%	4.0%	3.5%

OTHER CHEMICAL PRODUCTS

Figure 1.5

FINANCIAL RATIOS:

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Profitability Measures:											
Operating Margin (%)	8.1%	7.2%	6.8%	7.7%	8.6%	10.3%	10.5%	10.8%	10.2%	11.1%	9.1%
Basic Earning Power (%)	9.3%	8.1%	6.3%	6.9%	1.8%	9.6%	9.8%	13.1%	12.0%	9.5%	8.6%
Return on Revenues (%)	6.4%	5.4%	4.3%	5.1%	0.9%	7.0%	7.6%	10.9%	11.0%	8.5%	6.7%
Return on Assets (%)	6.8%	5.4%	4.4%	5.2%	0.9%	6.9%	7.2%	10.2%	9.2%	6.8%	6.3%
Return on Equity (%)	17.6%	14.1%	11.2%	13.0%	2.6%	19.2%	18.6%	26.0%	22.8%	17.3%	16.3%
Return on Net Assets (%)	7.8%	6.1%	5.0%	5.9%	1.1%	7.9%	8.2%	11.5%	10.5%	7.5%	7.1%
Return on Fixed Capital (%)	20.7%	16.5%	13.5%	16.4%	3.0%	23.0%	26.8%	39.3%	38.1%	31.1%	22.8%
Return on Working Capital (%)	19.0%	15.7%	13.0%	15.5%	2.8%	21.1%	23.5%	34.8%	32.1%	24.2%	20.2%
Cost of Capital (%)	9.6%	9.3%	9.0%	8.9%	6.6%	8.3%	8.2%	8.3%	8.2%	7.2%	8.4%
Economic Return on Capital Employed (%)	6.4%	-2.9%	5.0%	4.8%	-0.5%	2.6%	0.5%	12.4%	4.7%	1.4%	3.4%
Spread Between Return on Equity and Cost of Equity (%)	3.9%	0.3%	-2.0%	0.4%	-8.9%	6.7%	6.6%	14.1%	11.0%	6.5%	3.9%
Effective Tax Rate (%)	27.1%	33.4%	31.0%	24.6%	48.1%	27.8%	26.5%	22.1%	22.8%	28.1%	29.2%
Cash Dividends to Net Income (%)	43.6%	56.1%	72.9%	58.0%	335.0%	42.5%	47.9%	35.6%	33.9%	46.8%	77.2%
Cash Flow Measures:											
Cash Flow as a % of Long-Term Debt	31.8%	15.6%	27.0%	26.5%	10.5%	22.4%	18.1%	35.7%	24.3%	16.7%	22.9%
Cash Flow-to-Capital Expenditure Ratio (%)	421.1%	230.9%	324.0%	300.9%	146.3%	305.6%	232.2%	434.3%	281.0%	208.5%	288.5%
Cash Flow Return on Assets (%)	11.5%	6.3%	10.2%	9.5%	4.2%	8.7%	6.7%	12.6%	8.5%	6.2%	8.5%
Cash Flow as a % of Revenues (%)	11.0%	6.3%	10.1%	9.4%	4.3%	8.7%	7.1%	13.4%	10.1%	7.8%	8.8%
Free Cash Flow Return on Assets (%)	4.7%	3.2%	1.7%	2.7%	-1.6%	4.4%	3.9%	6.7%	5.9%	3.3%	3.5%
Free Cash Flow as a % of Revenues (%)	4.5%	3.2%	1.6%	2.6%	-1.6%	4.4%	4.1%	7.1%	6.9%	4.1%	3.7%

CHAPTER 2 THE DELTA MODEL; DISCOVERING NEW SOURCES OF PROFITABILITY

2.1 Introduction

While a natural flow of this paper would be to present the eleven chemical companies in this chapter, the writer prefers to introduce the reader to the main strategic model that will be used to evaluate these companies first. Understanding the model will then allow the reader to understand the rationale for differentiating these companies within the model. The Delta Model: Discovering New Sources of Profitability's abstract begins by stating that: "Existing management frameworks do not describe all the ways companies successfully compete today." The authors' research on more than 100 companies, the basis of the Delta model 1. Defines strategic positions that reflect fundamentally new sources of profitability, 2. Aligns these strategic options with a firm's activities and provides congruency between strategic direction and execution, and 3. Introduces adaptive processes capable of continually responding to an uncertain environment. Three strategic options having 3 distinct economic perspectives are described - Best Product, Customer Solutions, and System Lock-in. These strategic options provide a mechanism for defining the vision of a business. The Delta Model links strategy with execution by selecting a distinctive strategic position and then integrating it with a company's collective processes, renamed adaptive processes. They are adaptive because the resources allocated to each one of them will depend on the strategic posture of the firm. The authors identify 3 fundamental processes that are always present and are the repository of key strategic tasks: 1. Operational Effectiveness, 2. Customer Targeting, and 3. Innovation[8]." Furthermore Delta Model subscribes to focus on the proper segmentation and granular metrics in order to identify the sources of economic profitability. Finally the model also proposes the discipline of business experimentation. The rational is based on the fact that continuous change calls for business innovation, and that through flexible experimentation the business will arrive at the appropriate business model. While "The Delta Model" is one of many available strategic models available (and this paper will also review other strategic perspectives), there are three specific

[8] Hax, Arnoldo C., and Wilde, Dean L. II, The Delta Model: Discovering New Sources of Profitability. Copyright 1999

reasons why this model may be a viable model. First, the model requires a corporation to stake out a strategic vision for the company. Will it be Best Product, Total Customer Solutions, or Systems Lock-In driven, or a hybrid of anyone of those positions? To explicitly articulate that strategic position, even if it is only internally done within a firm, allows for the alignment of resources, capabilities and purposes of an organization. The second reason for choosing this model is that it links strategy to change. The current electronic revolution described as the next industrial revolution will create significant opportunities as well as new business designs. As such, regardless of the strategic position one defines for the corporation, this position is then linked to adaptive processes that allows the firm to monitor, understand, anticipate and respond to change. Strategy in itself can be a complex process. However it is only powerful if it is understood by the firms employees and with such understanding executed to create shareholder value. Finally, the Delta Model is presented as "a framework that is more enriching as well as the integrative glue between two contemporary strategy models, Michael Porter's Competitive Positioning Framework Gary Hamel's and C. K. Prahalad's Core Competencies and its Resource Based Strategic Frameworks."

2.2 Strategic choices: Three distinct options

The Delta Model or "triangle" offers three distinct strategic options: Best Product, Total Customer Solutions, and Systems Lock-In. This paper will briefly describe each option and its possible relationship to the chemical industry.

Best Product

The Best-Product strategic option is built on the classic forms of competition through low cost or differentiation. Its relevant economic drivers are centered on a product, the value chain and or service. A Company can achieve cost leadership by aggressively pursuing economies of scale, product and process simplification, and significant product market share that allow it to exploit experience and learning effects. A Company can also differentiate itself from its competitors by enhancing its product attributes or value chain activities. Thus it can achieve this differentiation through technology, or special services. Customers are likely to be generic and usually served through mass distribution channels.

First to market and continuous innovation of product properties or value chain activities are drivers that create differentiation and ultimately attract customers. Finally this position is described as a consequence of the emerging industrial era. When applying this strategic position to the chemical industry, it could be argued that this position best represents the basic chemicals industry segment or also described as industrial chemicals segment. Huge economies of scale, low cost production, certainly technological and process innovation to reduce value chain costs are the norm and value creation drivers.

Total Customer Solutions

As the name of this strategic option state, the focus is the customer and the main goal creating superior and sustainable financial performance by expanding the customer economics. A prominent concept in defining this option is bonding, i.e. attracting, satisfying, and retaining the customer its central objective. Customer solutions companies learn everything they can about their customers, so as to design and provide customized solutions to their problems and needs. Rather than focusing on the product economics, they focus on enhancing the customer economics and through this relationship creating greater shareholder value for the company. Total Customer market share participation vs. product or market share is a typical metric used to measure performance. Finally, customer solutions companies do not ignore the value chain, they focus on the expanded supplier - customer value chain to enhance or improve and strengthen the link with their customers. A possible example cited is to link producer - customer innovation resources to create and improve new products, taking duplicative resources out of the value chain. Usually customized products and solutions are provided through direct channels to the customer.

The current information revolution via the Internet and e-business tools has created a unique opportunity for chemical companies to develop closer links and relationships with their strategic customers. As such, there are now numerous articles in the press discussing how chemical companies continue to invest in Customer Relationship Management (CRM) software in order to strengthen their understanding and relationships with current customers. Chemical Week in an article written October 27, 1999 states that CRM

software installation is the second most important IT strategy amongst chemical companies, behind supply chain management (SCM).

The Delta Model states that there are three major ways of achieving a Total Customer Solutions position: First by redefining customer relationships and bonding with customers, i.e. blurring the line between the suppliers and customers boundaries. The second way is by pursuing horizontal product expansions in order to provide a complete line and bundling of products and solutions. The third one is through vertical penetration into unnecessary or value chain diluting activities the firm's customers are currently engaged in, if value creating for the producer.

Applying the Total Customer Solutions position to the chemical industry is somewhat difficult, because chemical companies are not publicly explicit as to their relationships with customers. Reviewing annual reports and likewise companies web sites, one is not able to clearly define their strategic customer relationships as well as customer intentions. Without a doubt that most of them state their customer focus and at times it is expressed via their innovation and technology initiatives, but seldom expressed as a desire to bond with customers. The closest segment that approaches this concept is the specialty chemicals sector, stating their desire to provide unique solutions to customer problems or needs. The Delta Model describes National Starch as an example of a Total Customer Solutions company based on their relationship with Boeing. It appears that National Starch through their superb adhesive technology and superb customer relationship with Boeing has been able to forge a close relationship and enhance the value creation proposition for both companies (wings are no longer welded, they are glued). On the other front, the flurry of merger and acquisition activity and the pursuing of additional technology platforms in order to create a one stop shop for customers is a form of drafting a Total Customer Solutions position, i.e. enhancing the horizontal product scope to better serve customers.

Systems Lock In

The Systems Lock-In strategic position is described as the one with highest value creating potential. "Instead of focusing on the product or the customer, the firm is now

concerned about all the meaningful players in the system that contribute to the creation of economic value in the industry in which the business resides in. In this strategic option bonding plays the most influential role. Besides the normal industry competitors, the firm is also concerned with nurturing, attracting and retaining relationships with so called industry complementors. In essence the critical issue here is to look at the overall architecture of the system in its broadest sense and see how one could gain competitor lock out and customer lock in. In fact it becomes the defacto proprietary standard. Systems and technology are the keys that create the opportunity for Systems Lock-In. Applying this concept to the chemical industry one could state that few companies achieve total Systems Lock-In positions such as Microsoft or Visa- MasterCard, if any. Nevertheless assuming that technological innovation is one of the key elements of System Lock-In positions business units protected by patents, trade marks, and brands could achieve such positions. However it is difficult to argue that entire companies in the chemical industry achieve such position.

2.3 Linkage of the Strategic choices with the Delta Model's adaptive processes

In the previous section we described the three strategic choices offered by the Delta Model. While defining such strategic choices is often a reiterative process, and defining a strategic direction a business imperative, that in it is no recipe for success. Most often companies fail to execute their strategies due to various reasons, amongst one of them the fact that things have changed since the firm first engaged in its quest for strategic direction. Another one is that business processes are not aligned with the vision of the company and therefore are poorly linked to the strategy. In order to align execution to strategy, The Delta model calls for the integration of three collective processes that most businesses face and not only one of them. Those three business processes are defined as Operational Effectiveness or delivering products to customers, Customer Targeting, Customer Segmentation or developing customer relationships, and Innovation or developing new products or services.

Operational effectiveness: is the process defined for delivering the products and services to the customer. It includes all elements of the supply chain with primary focus of producing and delivering the product in a cost-effective way supporting the strategic position of the business. It is defined to be at the heart of the productive engine as well as a critical source of capacity increases and process innovation.

Customer Targeting: This process is primarily responsible for determining the sets of activities that deal with, attracting, satisfying and retaining the customer. It assures that customer relationships are managed in a most effective way. Its primary concern is to identify and select attractive customers, enhance the customer's performance and establish the best revenue infrastructure for the business (value proposition).

Innovation: This process assures a stream of continuos stream of new products and services to maintain the future viability of the business. It employs all the resources of the firm, technical, production, and marketing to develop an innovative infrastructure for the business. The heart of this process is the renewal of the business in order to sustain the competitive advantage and superior financial performance.

Linking the three strategic positions within the Delta model and the adaptive processes will take a different priority depending on what position one chooses. If Best Product is the choice, then operational effectiveness followed by innovation and customer targeting will be the order of enterprise focus. If Total Customer Solutions is the strategic choice, then customer targeting followed by operational effectiveness and innovation will the order of focus. If the choice is Systems Lock-in, then system architecture innovation followed by customer targeting and operational effectiveness will the order of focus.

2.4 Segmentation and Granular Metrics

The Delta Model states that there are three specific levels of segmentation the firm must address. The first one deals with one of the most critical questions a firm has to answer: What businesses are they in? While the answer to that question may seem fairly straightforward, it is only through proper segmentation that the firm can create strategic

focus and understanding of its strategic position. The model states that further segmentation steps will differ based on the strategic choices within the triangle, but that answers to all three dimensions are necessary if one desires to have a complete picture of the competitive scope in which any business operates. Hence the second question the business will answer is: What is the competitive position of the business? "To adequately describe the business unit, we need to characterize its business scope, its core competencies and capabilities." The most common segmentation dimensions to answer that question are Product, Market, Consumer Channel, Customers, Complementors, Geography, Processes, and Core Competencies of the unit. In each case the analysis dwells on current strengths and future desired or needed characteristics. The third question, which leads to the third level of segmentation is: What are the drivers of business performance? "Effective drivers and metrics are one of the most significant limitations facing businesses today due to their over dependence on financial measures, metrics that do not link strategy with execution and the need for granular metrics." Granular metrics allows the firm to clearly understand specific variability vs. managing by averages. As such there are many ways to slice the data for granularity. Improving business performance, detecting variability, learning and innovation should be the main goal of segmentation and granular metrics. While segmentation is industry and firm specific, the industrial chemical sector seems to be dominated by product or platform, geographic, and channel segmentation. Customer, Market, Channel, and Geography segmentation would primarily drive the specialties chemical sector. The pharmaceutical sector would be driven by Technology Platforms, Markets, Channels, Complementors and of course also Geography. I believe that each sector clearly also focuses on processes and Core Competencies.

2.5 Experimentation

"Most business conduct trials to launch a business or product concept with the intent of seeing whether it will work. Trials are great if the concept is the right one. The problem today is that more often than not our concept is not exactly right, or if it was the market shifted beneath our feet. A better presumption is that whatever we are doing is not exactly right and we are engaged in a continuous and systematic search for the truth." The model

states that there are five defined phases that a business undergoes during experimentation; 1) Strategic positioning of the business, 2) Expectations of business, business drivers, 3) Designing the experimentation process and elements of experimentation, 4) The actual testing phase and 5) the screening or learning phases. The experimentation phases can be applied to the three adaptive processes, i.e. operational effectiveness, customer targeting, and innovation.

Current business models are quite often built on uncertain outcomes and it is only through systematic experimentation processes that these firms build and improve their business models.

Scaled experimentation in the industrial sector is rather difficult, given the large investments in capital assets required. Many companies will start with small "pilot plants" to test certain technologies or product platforms. Still those are potentially significant investments and then only move on to full commercialization of the technology or product platform. The specialty chemicals sector is most likely to have better opportunities to engage in full market experimentation in order to find if their products or services indeed are value creating. And the pharmaceutical industry is based on technology trial and error. We can see that these phases are quite expensive and require longer-term trials before products are launched into the market.

Conclusion

The Delta Model, Discovering New Sources of Profitability defines that a corporation has to clearly define how it will create value. Three strategic positions are suggested, Best Product, Total Customer Solutions or Systems Lock-in. Furthermore three adaptive processes are defined that align strategy and execution of strategy; Operational Effectiveness, Customer Targeting and Innovation. Each one of these adaptive processes will take a different priority based on the strategic position one will choose. Segmentation and Granular metrics allow the firm to clearly understand the reasons for its strategic positioning, advantages, core competencies as well as strengths and weakness of their business model. Finally Experimentation becomes a process for continuos business innovation and positioning improvement.

Like many models, they only become useful tools in their application. Likewise in their application one is able to determine its strengths and weaknesses. From the writer's perspective this model seems to be a fairly inclusive model. By inclusive it is meant that it incorporates the latest strategic thinking and reflects that processes have to be adaptable and that experimentation is essential as we embark in an era of unprecedented change.

CHAPTER THREE CHEMICAL COMPANIES PROFILES

3.1 Introduction

One of the objectives of this thesis is to analyze Eastman Chemical Company and ten peer companies that are utilized in benchmarking Eastman's financial performance. The reason for benchmarking is to measure and assess the performance of a company and then over time realize the progress of its strategic competitive decisions. Following the analysis, the objective is to derive a business model that creates increased shareholder value. Eastman Chemical Company utilizes the following companies to benchmark its progress: E. I. Du Pont de Nemours and Company (Du Pont), Dow Chemical Company, Imperial Chemical Company (ICI), Akzo Nobel N.V., Union Carbide Corporation (UCC), Rohm & Haas Company, Solutia, Witco, Crompton & Knowles Corporation, Cytec Industries Incorporated[9].

Some of them main reasons for selecting these companies are:

- These companies make public disclosure of financial data,
- These companies are based in the USA or in countries with reasonably comparable financial standards,
- They provide a balance between USA and non USA firms,
- They provide an appropriate balance between Industrial and Specialty chemical businesses.

This chapter will present each of the companies, their stated mission or vision, businesses they are in, specific goals if mentioned and significant 1998, 1999 events that have taken place. Then the author based on the company's vision and mission statements as well as industry literature will position each chemical company within the context of the three strategic choices of the Delta Model.

[9] 1998-1999 Eastman Financial benchmarking report

3.2 Eastman Chemical Company

Vision[10]:

To be the World's Preferred Chemical Company

Mission:

To Create Superior Value for Customers, Employees, Investors, Suppliers and Publics, driven by our Quality Policy, Eastman Way and Responsible Care. Focusing on Exceeding Customer Expectations while Achieving our Major Improvement Opportunities.

1998 Sales: $4.481 billion

Business Headquarters: Kingsport, Tennessee

Business Segments:	% of Sales
• Specialty and Performance	61%
• Core Plastics	24%
• Chemical Intermediates	15%

Financial Goals:

- Focus on Maintaining an Advantaged Cost Structure
- Bias to reduce Capital Intensity
- Prioritize uses of Cash
- Create Shareholder Value faster
- Achieve more predictable Earnings Growth
- Bias towards Higher Growth
- Proactively Market Strategies
- Leverage Leadership Positions

Acquisitions and Divestitures:

- Acquired Ernst Jager, Fabrik Chemischer Rohstoffe, GmbH & Co.
- Acquired Lawter International, Inc

Stock Repurchase:

- Eastman's Board of Directors approved the repurchase of $400 million in shares.

[10] www.eastman.com

Comments:

Eastman Chemical Company is a company in transformation. Six years after spinning off from Eastman Kodak, the company's management has focused its resources on creating a less asset and capital intensive company. It is acquiring companies that primarily are in the specialty arena and it is also becoming a global company. Eastman's assets and Sales outside of the U.S. have significantly increased over the last three years.

Analyzing Eastman from the Delta Model perspective one could state that while the company has primarily been product centric driven, the intent has always been in exceeding customer's expectations. Eastman is the only chemical company in the U.S. that has received the Malcolm Baldridge award. Recent reorganization announcements and official corporate statements would allow the writer to assume that Eastman is pursuing a Total Customer Solution's strategic posture.

Current perceived Strategic Posture: In transformation from Product centric to Total Customer Solutions

3.3 E. I. Du Pont de Nemours and Company (Du Pont)

Vision Statement[11]:

We, the people of Du Pont,
dedicate ourselves daily to the work of improving life on our planet.
We have the curiosity to go farther ... the imagination to think bigger ...
the determination to try harder ... and the conscience to care more.
Our solutions will be bold. We will answer the fundamental needs of the people we live with to ensure harmony, health, and prosperity in the world.
Our methods will be our obsession. Our singular focus will be to serve humanity with the power of all the sciences available to us.
Our tools are our minds. We will encourage unconventional ideas, be daring in our thinking, and courageous in our actions. By sharing our knowledge and learning from each other and the markets we serve, we will solve problems in surprising and magnificent ways.
Our success will be ensured. We will be demanding of ourselves and work relentlessly to complete our tasks. Our achievements will create superior profit for our shareholders and ourselves.
Our principles are sacred. We will respect nature and living things, work safely, be gracious to one another and our partners, and each day we will leave for home with consciences clear and spirits soaring.

1998 Sales: $24.8 billion

Business Headquarters: Wilmington, Delaware

Business Segments:	% of sales
• Pigments & Chemicals	13%
• Nylon Enterprise	17%
• Polyester Enterprise	10%
• Specialty Fibers	12%
• Specialty Polymers	15%
• Agriculture & Nutrition	11%
• Performance Coatings & Polymers	15%
• Pharmaceuticals	4%
• Diversified Businesses	3%

Financial Goals:

- Focus on short term financial performance via implementation of Six Sigma philosophy throughout every division in the company.
- Requiring every business unit to include asset and productivity strategies in their business plans. The goal is to reduce projected capital needs by over $1 billion in the next five years.

[11] www.dupont.com

Acquisitions/Divestitures:

- Exited the energy business in 1998 via Conoco IPO for $4.2 billion
- Acquired Herberts, coatings company of Hoechst AG, for $1.9 billion in October 1998. Herberts is the leading supplier of auto coatings in Europe.

Joint Ventures/Alliances:

- Signed letter of intent in May 1998 to form a joint venture with Alpek S.A. de C.V., a subsidiary of Alfa S.A. de C.V. of Mexico , to produce and market polyester staple fiber. Expected production is 750 million pounds annually.
- Completed purchase of Merck's 50% interest in The DuPont Merck Pharmaceutical Co. for $2.6 billion.
- Divested of its 50% share in the coal operations joint venture with Rheinbraun AG, known as CONSOL Energy, Inc.
- In July 1999, announced that it will merge with Pioneer Hi-Bred International, Inc. by acquiring the remaining 80% of the company that it does not own for $7.7 billion. Pioneer Hi-Bred International is the world's leading supplier of agricultural genetics.

Stock Repurchase:

- Repurchased approximately 13 million shares of outstanding common stock for $769 million (approximately 1% of total stock outstanding)

Comments:
Du Pont is the largest chemical company in the U.S., specifically before the merger of Dow Chemical with Union Carbide. As described in their vision, they rely heavily on technology, science, and product solutions. From their vision statement it is not quite clear if they are product centric, customer centric or technology centric company. Recently we had the opportunity to listen to Du Pont's chairman. He characterized "Du Pont as a company in transition." Their recent stated intentions to focus their long-term efforts in the life sciences segment is no longer so clear. They now say their future growth will be based on the new economy and biology.
Recently the company also embarked in the Six Sigma total quality program as a means to improve process efficiencies and financial results. Based on most of the literature search it appears that Du Pont is primarily a technology driven company. That is further emphasized by their new logo of bringing the "Miracles of Science" to humanity. Without significant additional inside information the writer would assume that Du Pont is currently in a hybrid position, pursuing process efficiency, customer solutions and technological innovation.

Strategic Posture: Hybrid, company in transformation

3.4 Dow Chemical Company

Purpose[12]:

Provide superior solutions for our customers and society through science and good thinking

Vision Statement:

To be the best at applying chemistry to benefit customers, employees, shareholders and society

Mission Statement:

To be the most productive, best value-growth chemical company in the world.

Core Values:

People are the source of our success. We treat one another with respect, promote teamwork, and encourage personal freedom and growth. Leadership and excellence in performance are sought and rewarded.
Customers are the reason we exist. They receive our strongest commitment to meet their needs.
Our Products and Services reflect dedication to quality, innovation, and value.
Our Conduct demonstrates integrity and commitment to ethics, safety, health, and the environment.

1998 Sales: $18.4 billion

Business Headquarters: Midland, Michigan

Business Segments:	% of sales
• Performance Plastics	28%
• Performance Chemicals	14%
• Plastics	20%
• Chemicals	13%
• Hydrocarbons and Energy	8%
• Agricultural Products	13%
• Diversified Businesses	4%

Financial Goals:

- Earn 3% above cost of capital over life of the business cycle; earn cost of capital in the trough of the cycle.
- Implementation of Six Sigma philosophy enterprise wide to reduce costs and increase productivity.
- Grow Earnings Per Share by 10% across the business cycle.

Acquisitions/Divestitures:

- Announced in August 1999, that it will merge with Union Carbide
- Divested Dowbrands consumer products business for $1.2 billion in January 1998.

[12] www.dow.com

- Purchased remaining shares of Mycogen (previously had 47% stake) for $418 million in November 1998. Mycogen is a diversified agribusiness and biotechnology company.
- Exited the magnesium business by closing all associated plant sites

Joint Ventures/Alliances:

- Sold business and certain assets of Dow-United Technologies Composite Products, a 50/50 joint venture, to GKN Westland Aerospace in 1998. The JV will be dissolved in 1999.
- Sold Radian, LLC (environmental services unit) in 1998
- Formed alliance with Biosource Technologies to identify and patent novel gene characteristics
- Formed alliance with Illinois Foundation Seeds to assist with marketing biotech traits.

Stock Repurchases

- Repurchased $742 million worth of common stock (8.1 million shares or 4% of total stock)

Comments:
Dow Chemical recently initiated an offer to merge with Union Carbide. Thus if approved, it will be come the second if not the largest chemical company in the U.S. Clearly this move demonstrates that size and growth are important elements in order to create shareholder value. Dow's apparent strategy has been one of both vertical and horizontal integration. Vertical by acquiring significant positions in base chemicals, and horizontally by pursuing an expansion of their specialty chemicals portfolio. Based on the Delta Model theory I propose that Dow strategically primarily pursue a Total Customer Solutions strategic posture. As with most chemical companies, process efficiency and innovation are also cornerstones of Dow's strategy. Hence it could be called a hybrid strategy that is primarily driven by bringing solutions to its customers. "They are committed to maximizing their customers successes."

Strategic Posture: Primarily Total Customer Solutions but also highly driven by innovation and process excellence.

3.5 Imperial Chemical Industries (ICI)

Mission[13]:

ICI intends to be the world leader in the chemical industry in creating value for customers and shareholders - and to achieve it through the following means: Market driven innovation in products and services. Winning in quality growth markets worldwide. Inspiring and rewarding talented people. Exemplary performance in safety and health. Responsible care for the environment. The relentless pursuit of operational excellence.

1998 Sales: $15.4 billion

Business Headquarters: London, England

Business Segments:	% of sales
• Coatings	24%
• Specialty Products	36%
• Materials	15%
• Industrial Chemicals	25%

Financial Goals:

- 20% return on assets across the industry cycle (currently 12% at the lighter end of the industry cycle)

Acquisitions/Divestitures:

- Sold explosives operations in Canada , Latin America, and Europe, and the distribution business in the US to Orica Limited in 1998 for $370 million
- Sold 'Propafilm' oriented polypropylene films business to UCB SA in 1998.
- Sold Teesside Utilities and Services business to Enron for $497 million in 1998
- Sold Natural Colors business of Quest to Christian Hansen for $91 million in 1998
- Acquired Mydrin AGS GmbH, an adhesives company in Germany for $36 million in March 1998
- Acquired European Home Improvement business of Williams PLC for $579 million in May 1998
- Acquired Mona Industries, Inc., a privately held US manufacturer and marketer of innovative specialty and personal care ingredients in July 1998
- Divested South African distribution business to JLM. Divestiture includes colors and industrial chemicals division in South Africa as well in 1999
- Divested specialty coatings business to PPG in 1999 for $685 million
- Sold polyurethanes, titanium dioxide, aromatics, and petrochemicals business to Huntsman ICI Holdings (HICI) for $2.8 billion. Huntsman owns 70% of HICI with the remaining 30% owned by ICI.
- Sold its 80% share in the olefins cracker at Wilton, UK to HICI.

[13] www.ici.com

Other:

- Plan to continue to divest or dilute their interest in non-core businesses where they no longer has a long-term competitive advantage – primarily in industrial chemicals

Comments:

ICI states that they drive their business innovation based on understanding what the customer needs and providing its customers with products that will give them an edge in the market place. By reviewing the literature and reading announcements on their web-site, one could assume that they are also a company in transformation. "ICI's ingredients for success: 1) Determination to create value for shareholders, 2) Sell-off cyclical, low margin, commodity businesses, 3) Concentration on fast growing, high margin markets, 4) Focus on efficiency and productivity improvements and finally 5) Focus on high value, knowledge centered businesses." While they seem a company in transformation, their strategic posture is not quite clear. It appears they want to be knowledge based centered, consumer products centered, product centered, and or customer centered.

Strategic Posture: Hybrid, biased towards customer solutions.

3.6 Akzo Nobel N. V.

Mission[14]:

Our Company

Akzo Nobel is a multicultural company. We are market-driven and technology-based, serving customers throughout the world with healthcare products, coatings, and chemicals. Akzo Nobel conducts its diversified activities through Business Units, which report directly to the Board of Management. We maintain a product portfolio with leading positions in important market segments.

Our People

Akzo Nobel regards people as its most important resource. We foster leadership, individual accountability, and teamwork.
Our employees are professionals whose entrepreneurial behavior is result-oriented and guided by personal integrity. They strive for the success of their own units in the interests of Akzo Nobel as a global company. In return, our employees can count on opportunities for individual and professional development in an international working environment. We offer them rewarding and challenging assignments with room for initiative.

Our Commitments

We will focus our efforts on the success of our customers.
We will provide competitive returns on our shareholders' investments.
We will create an attractive working environment for our employees.
We will conduct our activities in a socially responsible manner.

Our Ambition

To be the first choice of customers, shareholders and employees, and to be a respected member of society.

1998 Sales: $14.1 billion

Business Headquarters: Arnhem, The Netherlands

Business Segments:	% of sales
• Pharma	19%
• Coatings	38%
• Chemicals	27%
• Fibers	16%

Acquisitions/Divestitures:

- Acquired Courtaulds plc for $3.15 billion in 1998
- Divested Architectural Coatings & Packaging Coatings to PPG Industries for $228 million in 1998

[14] www.akzo-nobel.com

- Divested Plastic Packaging, and Laminate and Aluminum Tubes business to Schroder Ventures for $106 million in 1998
- Announced July 19, 1999 that it will acquire the Paper Chemicals business of Dongsung Chemical, Ltd. of South Korea.
- Announced in July 1999 that it will sell its ethoxylated and propoxylated bisphenol A derivatives business to Seppic Belgium.
- Announced in June 1999 that it has acquired Fina's cationic business. Terms were not disclosed.
- Announced in June, 1999, that it has agreed to divest PRC DeSoto International, Inc. (formerly Courtaulds Aerospace Coatings & Sealants business) to PPG for $513 million.

Other:

- In March 1998, acquired 83% of coating company Marshall Boya ve Vernik Sanayii AS, Turkey for $107 million.
- Acquired the remaining 50 percent in the Akcros chemical joint venture from partner Elementis plc, UK for $90 million in October 1998.
- Combined fibers operation of Courtaulds and Akzo Nobel and spun them off into new company called Acordis.
- Announced July 22, 1999 that it has agreed to sell Akzo Nobel information Services to Origin which in turn will provide information technology services to Akzo Nobel
- Announced on July 19, 1999 that it will form worldwide joint venture with Taiwan's Coin Chemical Industrial Co. ltd. For the production, marketing & distribution of peroxide. Akzo Nobel will own 60% of the joint venture.

Comments:
Akzo Nobel is a company pursuing a horizontal strategy as well as a "grow from within" strategy. Based on personal experience they seemed to be very close to their customers as reflected by their mission statement. Nevertheless as any large conglomerates it is a company in transition as reflected by the various acquisitions, divestitures and joint ventures.

Strategic Posture: Hybrid, inclined towards Total Customer Solutions

3.7 Union Carbide Corporation (UCC)

Mission[15]:

Given the pending merger with Dow Chemical, the writer could not find specific statements to Union Carbide's Vision or Mission.

1998 Sales: $5.7 billion

Business Headquarters: Danbury, Connecticut

Business Segments:	% of sales
• Specialties and Intermediates	73%
• Basic Chemicals and Polymers	27%

Financial Goals:

- Targeted cost reduction improvement by 2000 of $1.1 billion. Noted they were "way ahead of schedule" as of the end of 1998.
- Continue its target of earning $4 per share by year 2000. Low likelihood of achieving, per the annual report.

Acquisitions/Divestitures:

- Announced in August 1999 that it will merge with Dow Chemical

Joint Ventures/Alliances:

- In April 1998, announced the formation of 3 JV companies with Berhad, the national oil company of Malaysia. These 3 ventures will be 1) a 600,000 metric ton per year ethylene plant, 2) a 385,000 metric ton per year ethylene oxide/glycol plant, and 3) a multiple specialties and intermediates derivatives plant in Malaysia

Stock Repurchases:

- Repurchased 6.1 million shares of its common stock for an average price of $276 million. This is approximately 5% of the common stock outstanding.

Comments:

Union Carbide is a leading global chemical company with many of the industry's most advanced process technologies and most efficient large-scale chemical production facilities in the world. Their official position on customers is as follows: "Customers keep us in business. Bringing value to customers is at the heart of our strategic objective: to be the low-cost and preferred supplier of the products we make. We anticipate and satisfy customers' needs, supplying only products and services that customers perceive as adding value - on time and at competitive prices. We also solicit frequent customer evaluations of our service and products and make improvements promptly. Our people make it easy

[15] www.unioncarbide.com

for customers to do business with us." Based on this statement it is fairly clear that Union Carbide pursue primarily a Best Product strategic posture followed by ensuring customer satisfaction.

Strategic Posture: Primarily Best Product

3.8 Rohm and Haas Company

Vision[16]:

Rohm and Haas is a highly innovative, growing global specialty polymer and chemical company building on an ever-broadening technical base.

Our customers regard us as indispensable to their success. We are their best and most consistent supplier of products and services. The general public views the company as a valued corporate citizen and a good neighbor.

Our employees behave as owners and feel accountable for their performance and the success of the company.

Ethical behavior, teamwork, fast action, and a passion for constant improvement are the hallmarks of our culture

1998 Sales: $3.7 billion

Business Headquarters: Philadelphia, Pennsylvania

Business Segments:	% of sales
• Performance Polymers	66%
• Chemical Specialties	24%
• Electronic Materials	10%

Financial Goals:

- Continue cost reduction initiative via supply chain improvements in Performance Polymers

Acquisitions/Divestitures:

- Merged with Morton International in June 1999 creating creates a global specialty chemical company with combined annual revenues of $6.5 billion and leadership positions in adhesives, specialty coatings, electronic materials, and salt.
- Acquired LeaRonal, for $460 million. LeaRonal develops and manufactures specialty chemicals used in the manufacture of circuit boards semiconductor packaging and electronic connector packaging.

Joint Ventures/Other Interests:

- Sold its interests in AtoHaas and RohMax joint ventures in June 1998 for $287 million. The joint ventures were involved with production of acrylic sheet, and production of additives to petroleum products, respectively.

[16] www.rohmhaas.com

- Purchased an additional 15% interest (48% in total) in Rodel in 1999. Rodel is a privately held company which utilizes precision polishing technology serving the semiconductor, memory disk, and glass polishing industries.
- Announced in June 1999, formation of a 50/50 jv with Stockhausen (sub of Degussa-Huls) to manufacture acrylic acid. The jv will be operational by the end of year 2000 with capacity of 330,000 m.t./year. Included in the agreement is that Rohm & Haas will acquire Stockhausen's merchant monomer business in Europe.
- Sold its interest in Polytribo, its toner resins and ink jet materials jv with Fujikura Kasei. As part of the transaction, Rohm & Haas will acquire Polytribo's ink jet material business.

Stock Repurchases:

- Repurchased 17.5 million shares of common stock at a total cost of $562 million (approximately 11% of outstanding shares)

Comments:

Rohm & Haas is a company that has undergone radical transformation, specifically during 1999. Its merger with Morton International is clearly a horizontal strategy, giving Rohm & Haas a more robust breath of products to serve its customers. The core of the company's businesses is considered to be specialty chemicals. Based on their current strategy, a literature research and industry interview, the writer believes that Rohm & Haas is pursuing a Total Customer Solutions strategy.

Strategic Posture: Total Customer Solutions

3.9 Witco

1998 Sales: $1.9 billion

No Vision or Mission Statements available.

Business Headquarters: Greenwich, Connecticut

Business Segments:	% of sales
• Polymer Chemicals	25%
• OrganoSilicones	22%
• Performance Chemicals	34%
• Oleochemicals & Derivatives	19%

Financial Goals:
- Revenue growth of twice GDP

Acquisitions/Divestitures:
- Merged with Crompton & Knowles in June 1999
- Announced in June 1999, agreement to divest oleochemicals & derivatives business to Goldschmidt & SKW Trostberg AG. Divestment should take place in August 1999.

Comments:
Witco recently merged with Crompton and Knowles, yet for purposes of benchmarking data, we still profile this company pre merge date. As such the mission and vision statement of Witco is the same as the one for Crompton and Knowles. The new company is called CK Witco. At first glance it is not quite clear the purpose for the merger other than perhaps to increase in size and reduce infrastructure costs. Company officials state CK Witco is one of the largest specialty chemical companies. The market took a negative view of the merger.

Strategic Posture: Hybrid between Product centric and Customer Solutions

3.10 Solutia

Mission[17]:

We will increase shareowner value by applying our knowledge of chemistry to provide creative solutions for our customers.
We will accomplish this by:

- Meeting customer commitments.
- Engaging the full potential of our people and rewarding them for delivering shareowner value.
- Consistently meeting financial expectations with priority on cash management and our cost of doing business.
- Delivering profitable, long-term growth.
- By being a responsible company that operates safely, with respect for the environment and the communities in which we do business.

1998 Sales: $2.8 billion

Business Headquarters: St. Louis, Missouri

Business Segments:	% of sales
• Chemicals	31%
• Fibers	34%
• Polymers and Resins	35%

Financial Goals:

- Cost savings initiative with target of $100 million annual savings by 2001
- 10% compound annual growth in earnings per share
- Focus on free cash flow
- Become a $ 5 billion dollar company by 2003

Acquisitions/Divestitures:

- Announced intentions to focus on acquisitions in Asia and Latin America
- Announced in April 1999 they will be forming a 50/50 jv with FMC to manufacture and market phosphorous chemicals

Stock Repurchases:

- Stock repurchase of 5.5 million shares for $161 million (approximately 5% of total stock)

[17] www.solutia.com

Comments:
Reviewing the literature as well as Solutia's Corporate web-site we find that this appears to be a customer centric company. Resulting from a Monsanto spin-off, the company is pursuing a strategy of "growth from within" as well as through mergers or acquisitions that make sense. The market has not reacted very favorably to Solutia's current growth strategy as will be seen later by the low Market to Sales ratio, eventhough the management and management strengths are similar to Monsanto's company. Nevertheless, the writer based on the industry literature search and official Solutia news, assumes that the strategic posture of the company is one of Total Customer Solutions.

Strategic Posture: Total Customer Solutions

• 3.11 Crompton and Knowles Corporation

1998 Sales: $1.8 billion

Business Headquarters: Stamford, Connecticut

Business Segments:	% of sales
• Performance Chemicals	25%
• Crop Protection	19%
• Colors	13%
• Polymers	19%
• Polymer Processing Equipment	19%
• Other	5%

Acquisitions/Divestitures:

- Merged with Witco in 1999.
- Acquired the extrusion business of Betol Machinery for $5.9 million
- In January 1999, sold specialty ingredients business to Chr. Hansen Holding A/S of Denmark for $103 million.
- Acquired Kunststoffund Kabelmaschinenbau, an extrusion systems manufacturer located in Haan, Germany.

Joint Ventures:

- Formed a jv with Bayer in 1998 utilizing the company's Gustafson seed treatment business. $180 million was received by C&K in the transaction.
- Formed a jv with GIRSA, a sub of DESC, S.A. de C.V. to produce nitrile rubber products in Mexico.

Strategic Posture: Best Product

3.12 Cytec Industries, Inc.

Vision[18]:

"First we will be best, then we will be first."
We will be a world-class chemical company through:
Customer Satisfaction
Technology Innovation
Manufacturing Excellence
Employee Commitment
So that we can take pride in our achievements and our shareholders will enjoy the highest return on their investment.

1998 Sales: $1.4 billion

Business Headquarters: West Paterson, New Jersey

Business Segments:	% of sales
• Water & Industrial Process Chemicals	24%
• Performance Products	28%
• Specialty Materials	34%
• Building Block Chemicals	14%

Financial Goals:
- Achieve an operating margin of 15% by the end of 1999, and 17% by the end of 2002
- Double digit annual growth in earnings per share
- Annual growth in sales volume of 5% assuming global economic growth of 2%

Acquisitions/Divestitures:
- Acquired assets of the OrePrep minerals processing product line from Baker Petrolite for $9 million in 1998. The product line was integrated into the existing mining chemicals product line.
- Acquired the remaining 50% of the Dyno-Cytec jv in Europe for $55.7 million. This jv produces and sells cross-linking resins for coating applications primarily in Europe.
- Acquired American Materials & Technologies Corporation (AMT) for $24 million. AMT manufactures and markets advanced composite materials for customers in aerospace defense, and other industries. In October 1998 the graphite shaft business was sold for $6.2 million in cash.
- In 1998, divested of bulk molding compounds business to Bulk Molding Compounds for $17 million in cash
- Announced in August 1999, that it will acquire Inspec Mining Chemical for $25 million

[18] www.cytec.com

Stock Repurchases:

- Repurchased 3.6 million shares for $113 million, which is approximately 8% of common shares outstanding.

Comments:
Cytec's official posture around being a customer centric organization is reflected by the following comments seen on their front page web-site:"Our leadership stems from our commitment to our customers. We're dedicated to helping them achieve their business objectives by developing high-quality products that improve their products and manufacturing process performance. Cytec's network of applications specialists provides cutting-edge technical support to customers around the world."
They also claim to be one of the few specialty chemical companies vertically integrated. Based on literature research the writer believes that Cytec is pursuing a Total Customer Solutions strategic posture.

Strategic Posture: Total Customer Solutions

3.13 Conclusion

Reviewing the eleven chemical companies' strategic posture from a corporate perspective it is somewhat difficult to precisely judge their strategic postures, i.e. Best Product, Total Customer Solutions, or Systems Lock-In. Take the examples of Du Pont or Dow Chemical. These are large conglomerates in multiple business and with multiple Business Units, where each business has different characteristics. As an overall description the chemical industry is most often characterized by its product centric business designs vs. its customer centric designs. Few companies have the discipline, resolve, and capability to pursue a customer centric strategy. In reality many companies as stated earlier are companies in transformation, trying to move from product centric business designs into more value adding ones. Given their continuing relative benchmarking with each other it appears that most company's strategic postures are currently converging based on their statements of becoming customer centric. If the Delta Model is directionally correct, one could assume that those companies that purse such strategy would indeed have the possibility to create greater shareholder value and brake-out from the mold.
All companies are currently pursuing various process optimization strategies, either via TQM or Six Sigma. It is apparent that even if you are a specialty chemical company, customers and competitors will not allow inefficiencies in the value chain.

The next chapter will review the financial metrics of these companies and determine how the market values their strategic posture.

CHAPTER 4 FINANCIAL COMPARISONS OF CHEMICAL COMPANIES

4.1 Introduction

This chapter is divided into two sections. The first one is comprised of presenting in standardized fashion the balance sheet and income statements for the previously mentioned eleven chemical companies, the composite. (Those statements are also normalized to allow comparisons between companies). This section presents financial results for the last three years. While that data in itself is relevant, it is argued that in order to make full and accurate benchmark comparisons data should be analyzed over a complete industry cycle. An approximate cycle for the chemical industry is said to last between 6-7 years. Therefore, the second portion of this chapter will present selected specific financial ratio comparisons over an 8-year period, starting from 1990 to 1998. (This still does not guarantee that the data will catch the entire cycle). The data in this section will be presented only for five of the eleven companies. There are two reasons; 1) The charts become too crowed to be able to differentiate trends and movements of all eleven companies, 2) The author compares the most successful companies based on market valuation to Eastman Chemical in order to understand performance strengths and weaknesses. It is important to underscore that the charts definition of the composite still involves all eleven companies and not only five.

These selective financial ratios will be used and evaluated in a context of two complementing shareholder value business models, the Delta Model as well as the Profit Zone Model. Given that this thesis was started in late 1999 most of the above data reflects results through 1998. However Market Valuation to Sales and Market to Book values were available January first 2000. Hence I incorporate those values in market valuation calculations.

4.1.1 Uniform Balance Sheets and Income Statements

Figures 4.1, 4.2, and 4.3 are the standardized income statements as well as balance sheets for Eastman, Dow, ICI, Akzo Nobel, Union Carbide, Rohm & Haas, Witco, Solutia, Cytec, Crompton & Knowles and Du Pont for 1996, 1997, and 1998 respectively. These

figures are shown at the end of this section. The data as presented reflects the company's 1998 asset structure, i.e. whatever acquisition or divestiture that may have previously occurred, is reflected in the data and incorporated for the previous years in order to maintain the right perspective on financial ratio comparisons. Figures 4.1a, 4.2a, and 4.3a are the normalized income and balance sheets for the respective years. These figures are also attached at the end of this section.

Relevant Discussion

Sales Revenue. In 1996 Sales Revenue varies from the smallest firm with $1.5 billion (Cytec) to the largest company $23.6 billion (Du Pont). The average revenue for the composite is about $9.3 billion. Reviewing the two subsequent years we see that the average revenue for the composite drops to $9 billion. The spread from small to large is now slightly larger where Cytec is still the smallest company with $1.5 billion in sales and Du Pont the largest with $24.8 billion. The industry shows improved efficiency given that gross profit remains quite stable, despite the loss of revenue.

S&GA Expenses. One has to be careful in drawing too many conclusions when viewing this data, because some companies include distribution costs as part of S&GA data and others do not. Nevertheless we see that the data in 1998 ranges from the low of 5.4% (Union Carbide) to the high of 26.6% (Akzo Nobel). Over the three years, the composite S&GA varies between 13.36% in 1996 to 12.99% in 1998, i.e. relatively stable. If S&GA is taken as a proxy for Customer targeting, then it is worthwhile mentioning that Dow, Rohm and Haas and Du Pont outspend Eastman and Union Carbide. Likewise it could be assumed that Union Carbide is significantly more focused on operational effectiveness.

R&D Expenditures. R&D expenditures for the composite rise from 3.6% to 4.24% over the last three years. In all three years, Rohm & Haas, Akzo Nobel and Du Pont outspend the composite and are the strongest contributors. Union Carbide has consistently the leanest expenditures in this area each year over the last three years. Again if R&D is taken as a proxy for Innovation, one can begin to conclude that Du Pont, Akzo Nobel, and Rohm and Haas pursue either Total Customer Solutions strategic postures.

Earnings from Continuing Operations and Net Earnings. Most companies show a deteriorating trend over the last three years in earnings from continuing operations resulting in lower net earnings. For most companies earnings from continuing operations are the same as net income. However Du Pont seems to consistently have higher net earnings results. The reason is that Du Pont's net income is impacted by income from operations of discontinued businesses or gain on disposal of discontinued businesses. Those infusions of earnings differentiate Du Pont's total net income but at an earnings from continuing operations level they do not seem to be significantly stronger than the average of the composite. This is an important issue given the higher market valuations offered to Du Pont by the market. These large gains on disposal of businesses or discontinuing operations reflect a business or company in transformation.

Other. Du Pont seems to outperform the composite when it comes to Net Trade Receivables and inventories held, each year over the three years. The overall composite does not seem to change significantly along those two variables over the three years. Most other variables remain fairly constant for the entire composite.

The next step is to review significant financial ratios more in depth and compare the best companies of the composite to Eastman. How to determine those companies becomes the question. If markets are efficient then markets indeed should determine them. In order to arrive at the four best companies and Eastman, the author calculated Market to Sales Ratios for all companies as shown in bottom of figures 4.1, 4.2, and 4.3.
Du Pont, Dow, Rohm and Haas and Union Carbide most often seem to outperform the composite, hence they become the companies we will review in closer detail.

Selected 1996 Financial Data Figure 4.1

(Millions)	Eastman	Dow	<----Converted to $----> ICI	Akzo Nobel	Union Carbide	Rohm & Haas	Witco	Solutia	Cyteo	Crompton & Knowles	DuPont	Average Composite
Sales	$4,782	$20,053	$17,177	$13,400	$6,106	$3,982	$2,263	$2,977	$1,445	$1,804	$23,644	$9,285
Cost of Sales	$3,603	$14,147	$13,442	$8,172	$4,880	$2,587	$1,760	$2,325	$1,007	$1,253	$16,840	$6,641
Gross Profit	$1,179	$5,906	$3,734	$5,228	$1,226	$1,395	$503	$652	$438	$551	$6,804	$2,644
S&GA	$332	$2,136	$2,730	$3,388	$321	$631	$258	$339	$200	$280	$2,119	$1,240
R&D	$184	$761	$312	$679	$159	$187	$73	$88	$43	$52	$990	$334
Operating Earnings	$663	$3,009	$692	$ 1,160	$746	$577	$171	$33	$195	$219	$3,695	$1,050
Interest expense	$67	$494	$287	$199	$76	$39	$69	$36	$22	$114	$409	$175
Earnings Before Tax	$607	$3,288	$813	$1,110	$845	$530	($326)	$33	$198	($9)	$4,347	$1,083
Income Taxes	$227	$1,187	$258	$303	$236	$167	($78)	$1	$73	$13	$1,416	$358
Earnings from Continuing Operations	$380	$1,907	$449	$787	$593	$363	($247)	$32	$125	($22)	$2,931	$692
Net Earnings	$380	$1,907	$449	$787	$593	$363	($315)	$32	$125	($22)	$3,636	$755
Dividends per Share	$1.72	$3.00	$0.52	$1.12	$0.75	$0.57	$1.12	-	$0.00	$0.27	$1.12	$0.85
Shares Outstanding (YE)	77.86	241.14	725.00	284.66	126.44	189.43	56.76	116.20	45.49	72.03	1127.00	298.42
Earnings per share	$4.84	$ 7.71	$ 0.62	$ 2.77	$ 4.28	$1.82	$ (5.54)	$ 0.27	$2.01	$ (0.31)	$ 3.23	$1.69
Net Trade Receivables	$671	$2,985	$2,175	$2,078	$836	$685	$390	$412	$207	$268	$3,516	$1,355
Inventories	$465	$2,815	$2,268	$2,316	$541	$483	$285	$291	$106	$362	$2,436	$1,190
Total Current Assets	$1,345	$9,830	$7,220	$5,455	$1,873	$1,456	$853	$891	$416	$742	$9,133	$3,787
Net Land, Bldg.,&Equip.	$3,520	$8,484	$7,277	$5,665	$3,409	$2,066	$735	$911	$582	$498	$11,670	$4,130
Total Assets	$5,266	$24,673	$14,778	$12,187	$6,546	$3,933	$2,392	$2,483	$1,261	$1,657	$32,324	$10,223
Trade Payables	$312	$1,596	$1,785	$1,301	$268	$319	$155	$223	$101	$151	$1,226	$712
Short-Term Debt	$0	$1,272	$700	$1,484	$112	$145	$95	$0	$0	$9	$3,907	$772
Current Liabilities	$787	$6,004	$4,820	$4,053	$1,278	$886	$610	$770	$313	$357	$9,118	$2,821
Long-Term Debt	$1,523	$4,196	$1,917	$1,283	$1,487	$562	$701	$0	$89	$1,055	$5,052	$1,634
Total Liabilities	$3,627	$16,685	$8,890	$7,587	$4,288	$2,205	$1,764	$1,827	$947	$1,754	$21,731	$6,768
Preferred Stock	$0	$34	$0	$0	$144	$131	$0	$0	$0	$0	$237	$55
Owners' Equity	$1,639	$7,988	$5,888	$4,600	$2,258	$1,728	$628	$656	$315	($96)	$10,593	$3,456
Depreciation & Amortization	$314	$1,298	$679	$721	$312	$262	$129	$166	$89	$83	$1,526	$526
Net Capital expenditures	$789	$1,344	$1,527	$1,101	$721	$334	$161	$192	$73	$39	$1,783	$727
Number of Employees (YE)	17,505	40,300	60,600	70,700	11,745	11,633	6,724	0	4,700	5,691	88,000	30,009
Market Price (high)	$76.25	$95.50	9.54	$35.52	$49.88	$27.50	$37.38	-	$40.88	$20.13	$99.38	$41.57
Market Price (low)	$50.75	$68.25	7.30	$26.28	$36.38	$18.29	$28.13	-	$20.38	$13.00	$69.63	$28.76
Market Price (YE close)	$55.25	$90.94	8.27	$35.23	$40.88	$27.21	$30.50	$0.00	$40.63	$19.25	$94.13	$38.70
Market Value	$4,302	$21,929	$5,994	$10,030	$5,168	$5,154	$1,731	$0	$1,848	$1,387	$106,079	
Book Equity Value	$1,639	$7,988	$5,888	$4,600	$2,258	$1,728	$628	$656	$315	($96)	$10,593	
Total Debt	$1,523	$5,468	$2,617	$2,767	$1,599	$707	$796	$0	$89	$1,064	$8,959	
M/B RATIO	2.62	2.75	1.02	2.18	2.29	2.98	2.76	N/A	5.88	-14.38	10.01	
MVA	1.51	1.57	1.01	1.45	1.44	1.87	1.46	0.74	2.22	1.89	3.95	
RETURN ON SALES	13%	16%	5%	8%	14%	13%	-14%	1%	14%	-1%	18%	
ASSET TURNS	0.94	0.83	1.14	1.15	0.95	1.01	0.88	1.20	0.99	1.09	0.66	
MARKET VALUE/SALES	0.90	1.09	0.35	0.75	0.85	1.29	0.76	0.00	1.28	0.77	4.49	
ROE	24	24.32	7.3	18.42	28.04	21.94	-38.92	9.76	30.46	28.91	35.11	
Ke	13.5	13.13	11.67	11.3	14.59	12.03	10.57	13.86	12.03	12.03	12.76	
(ROE-Ke)	10.5	11.19	-4.37	7.12	13.45	9.91	-49.49	-4.1	18.43	16.88	22.35	

Normalized 1996 Income Statement and Balance Sheets Figure 4.1a

	Eastman	Dow	ICI (<—Converted to $—>)	Akzo Nobel	Union Carbide	Rohm & Haas	Witco	Solutia	Cytec	Crompton & Knowles	DuPont	Composite
Sales	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of Sales	75.35%	70.55%	78.26%	60.99%	79.92%	64.97%	77.78%	78.10%	69.69%	69.47%	71.22%	71.53%
Gross Profit	24.65%	29.45%	21.74%	39.01%	20.08%	35.03%	22.22%	21.90%	30.31%	30.53%	28.78%	28.47%
S&GA	6.94%	10.65%	15.89%	25.29%	5.26%	15.85%	11.42%	11.39%	13.85%	15.51%	8.96%	13.36%
R&D	3.85%	3.79%	1.82%	5.07%	2.60%	4.70%	3.23%	2.96%	2.97%	2.90%	4.19%	3.60%
Operating Earnings	13.86%	15.01%	4.03%	8.66%	12.22%	14.49%	7.58%	1.11%	13.50%	12.12%	15.63%	11.31%
Interest expense	1.40%	2.46%	1.67%	1.48%	1.24%	0.98%	3.06%	1.21%	1.55%	6.33%	1.73%	1.88%
Earnings Before Tax	12.69%	16.40%	4.73%	8.29%	13.84%	13.31%	-14.40%	1.11%	13.70%	-0.52%	18.39%	11.66%
Income Taxes	4.75%	5.92%	1.50%	2.26%	3.87%	4.19%	-3.46%	0.03%	5.07%	0.70%	5.99%	3.85%
Earnings from Continuing Operations	7.95%	9.51%	2.61%	5.87%	9.71%	9.12%	-10.93%	1.07%	8.63%	-1.22%	12.40%	7.45%
Net Earnings	7.95%	9.51%	2.61%	5.87%	9.71%	9.12%	-13.93%	1.07%	8.63%	-1.25%	15.38%	8.14%
Dividends per Share	$1.72	$3.00	$0.52	$1.12	$0.75	$0.57	$1.12	$0.00	$0.00	$0.27	$1.12	$0.85
Shares Outstanding (YE)	78	241	725	285	126	189	57	116	45	72	1127	298
Earnings per share	$4.84	$7.71	$0.62	$2.77	$4.28	$1.82	($5.54)	$0.27	$2.01	($0.31)	$3.23	$1.69
Net Trade Receivables	12.74%	12.10%	14.72%	17.05%	12.77%	17.42%	16.32%	16.59%	16.37%	16.16%	10.88%	13.25%
Inventories	8.83%	11.41%	15.35%	19.00%	8.26%	12.28%	11.90%	11.72%	8.37%	21.87%	7.54%	11.64%
Total Current Assets	25.54%	39.84%	48.86%	44.76%	28.61%	37.02%	35.68%	35.88%	33.01%	44.79%	28.25%	37.04%
Net Land, Bldg.,&Equip.	66.84%	34.39%	49.24%	46.48%	52.08%	52.53%	30.75%	36.69%	46.16%	30.05%	36.10%	40.40%
Total Assets	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Trade Payables	5.92%	6.47%	12.08%	10.67%	4.09%	8.11%	6.49%	8.98%	8.03%	9.13%	3.79%	6.97%
Short-Term Debt	0.00%	5.16%	4.74%	12.18%	1.71%	3.69%	3.97%	0.00%	0.00%	0.56%	12.09%	7.56%
Current Liabilities	14.94%	24.33%	32.62%	33.26%	19.52%	22.53%	25.52%	31.01%	24.80%	21.57%	28.21%	27.59%
Long-Term Debt	28.92%	17.01%	12.97%	10.53%	22.72%	14.29%	29.30%	0.00%	7.06%	63.66%	15.63%	15.98%
Total Liabilities	68.88%	67.62%	60.16%	62.25%	65.51%	56.06%	73.75%	73.58%	75.06%	105.82%	67.23%	66.20%
Preferred Stock	0.00%	0.14%	0.00%	0.00%	2.20%	3.33%	0.00%	0.00%	0.01%	0.00%	0.73%	0.53%
Owners' Equity	31.12%	32.38%	39.84%	37.75%	34.49%	43.94%	26.25%	26.42%	24.94%	-5.82%	32.77%	33.80%

Selected 1997 Financial Data Figure 4.2

(Millions)	Eastman	Dow	ICI	Akzo Nobel	Union Carbide	Rohm & Haas	Witco	Solutia	Cytec	Crompton & Knowles	DuPont	Average Composite
			<----Converted to $---->									
Sales	$4,678	$18,441	$18,602	$12,768	$6,502	$3,999	$2,187	$2,969	$1,291	$1,851	$24,089	$9,270
Cost of Sales	$3,582	$14,740	$14,541	$7,516	$5,146	$2,544	$1,629	$2,316	$931	$1,276	$16,925	$6,756
Gross Profit	$1,096	$5,278	$4,061	$5,252	$1,356	$1,455	$558	$653	$360	$575	$7,164	$2,671
S&GA	$337	$1,880	$3,103	$3,308	$324	$637	$250	$276	$193	$269	$2,061	$1,230
R&D	$191	$785	$385	$669	$157	$201	$72	$87	$45	$54	$1,072	$353
Operating Earnings	$506	$2,613	$573	$ 1,275	$875	$617	$236	$290	$122	$252	$4,031	$1,088
Interest expense	$87	$471	$573	$182	$79	$39	$53	$41	$6	$103	$389	$194
Earnings Before Tax	$446	$2,948	$923	$1,226	$966	$611	$153	$290	$150	$149	$2,786	$1,020
Income Taxes	$160	$1,041	$353	$349	$279	$201	$63	$98	$36	$57	$1,354	$383
Earnings from Continuing Operations	$286	$1,808	$488	$857	$676	$410	$90	$192	$114	$92	$1,432	$616
Net Earnings	$286	$1,808	$488	$857	$659	$410	$95	$192	$114	$87	$2,405	$711
Dividends per Share	$1.76	$3.36	$0.54	$1.13	$0.79	$0.63	$1.12	0.01	$0.00	$0.05	$1.23	$0.89
Shares Outstanding (YE)	78.44	225.47	727.00	285.21	136.94	182.63	57.50	117.41	45.14	73.37	1130.00	298.07
Earnings per share	$3.66	$ 7.81	$ 0.60	$ 3.01	$ 4.89	$2.17	$ 1.66	$ 1.55	$2.39	$ 1.18	$ 2.12	$2.74
Net Trade Receivables	$715	$3,257	$2,682	$2,008	$815	$657	$384	$425	$227	$262	$3,438	$1,416
Inventories	$511	$2,921	$2,218	$2,147	$604	$459	$235	$325	$132	$357	$2,792	$1,219
Total Current Assets	$1,490	$8,640	$8,494	$5,170	$1,866	$1,397	$790	$1,001	$453	$715	$9,107	$3,763
Net Land, Bldg.,&Equip.	$3,881	$8,052	$6,653	$5,171	$3,780	$2,008	$780	$923	$630	$475	$12,601	$4,107
Total Assets	$5,778	$24,040	$15,574	$11,392	$6,964	$3,900	$2,298	$2,768	$1,614	$1,549	$36,689	$10,679
Trade Payables	$281	$1,731	$1,920	$1,208	$273	$252	$238	$221	$116	$145	$1,074	$718
Short-Term Debt	$0	$2,062	$3,456	$910	$429	$97	$53	$193	$0	$2	$6,152	$1,335
Current Liabilities	$954	$7,011	$7,799	$3,384	$1,504	$850	$568	$895	$375	$363	$11,217	$3,397
Long-Term Debt	$1,714	$4,196	$5,003	$1,070	$1,458	$509	$645	$597	$324	$896	$5,897	$2,059
Total Liabilities	$4,025	$16,365	$15,328	$6,595	$4,616	$2,103	$1,653	$2,899	$1,227	$1,569	$25,419	$7,777
Preferred Stock	$0	$40	$0	$0	$0	$126	$0	$0	$0	$0	$237	$40
Owners' Equity	$1,753	$7,675	$246	$4,796	$2,348	$1,797	$644	($131)	$387	($20)	$11,270	$2,901
Depreciation & Amortization	$327	$1,297	$1,293	$703	$340	$279	$111	$142	$79	$80	$1,361	$569
Net Capital expenditures	$749	$1,198	$1,206	$750	$755	$254	$202	$165	$91	$50	$2,089	$676
Number of Employees (YE)	16,076	42,900	67,500	68,900	11,813	11,592	5,970	8,800	5,200	5,519	89,000	31,719
Market Price (high)	$65.38	$102.63	10.88	$50.11	$56.81	$33.75	$47.63	27.75	$50.94	$27.38	$69.34	$47.72
Market Price (low)	$50.75	$75.75	6.86	$30.75	$40.50	$23.54	$29.44	18.69	$33.88	$17.88	$46.38	$32.37
Market Price (YE close)	$59.56	$101.50	9.90	$46.40	$42.94	$31.92	$40.81	$26.69	$46.94	$26.50	$60.06	$43.37
Market Value	$4,672	$22,885	$7,195	$13,233	$5,880	$5,829	$2,347	$3,134	$2,119	$1,944	$67,868	
Book Equity Value	$1,753	$7,675	$246	$4,796	$2,348	$1,797	$644	($131)	$387	($20)	$11,270	
Total Debt	$1,714	$6,258	$8,459	$1,980	$1,887	$606	$698	$790	$324	$898	$12,049	
M/B RATIO	2.67	2.98	29.30	2.76	2.50	3.24	3.64	-23.92	5.47	-96.78	6.02	
MVC	1.51	1.63	1.45	1.74	1.51	2.03	1.74	2.18	2.07	2.27	2.54	
RETURN ON SALES	10%	16%	5%	10%	15%	15%	7%	10%	12%	8%	12%	
ASSET TURNS	0.85	0.82	1.21	1.15	0.96	1.02	0.93	1.13	0.90	1.15	0.66	
MARKET VALUE/SALES	1.00	1.24	0.39	1.04	0.90	1.46	1.07	1.06	1.64	1.05	2.82	
ROE	16.86	23.13	15.46	19.3	30	24.66	14.92	73.14	32.37	-149	22.5	
Ke	14.08	13.3	11.81	12.57	14.83	13.32	11.81	12.94	11.05	12.19	13.7	
(ROE-Ke)	2.78	9.83	3.65	6.73	15.17	11.34	3.11	60.2	21.32	-161.19	8.8	

Normalized 1997 Income Statement and Balance Sheets Figure 4.2a

	Eastman	Dow	ICI	Akzo Nobel	Union Carbide	Rohm & Haas	Witco	Solutia	Cytec	Crompton & Knowles	DuPont	Composite
	<----Converted to $---->											
Sales	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of Sales	76.57%	79.93%	78.17%	58.87%	79.14%	63.62%	74.49%	78.01%	72.13%	68.92%	70.26%	72.89%
Gross Profit	23.43%	28.62%	21.83%	41.13%	20.86%	36.38%	25.51%	21.99%	27.87%	31.08%	29.74%	28.82%
S&GA	7.20%	10.19%	16.68%	25.91%	4.98%	15.93%	11.45%	9.30%	14.96%	14.55%	8.56%	13.27%
R&D	4.08%	4.26%	2.07%	5.24%	2.41%	5.03%	3.28%	2.93%	3.46%	2.90%	4.45%	3.80%
Operating Earnings	10.82%	14.17%	3.08%	9.98%	13.46%	15.43%	10.78%	9.77%	9.45%	13.63%	16.73%	11.74%
Interest expense	1.86%	2.55%	3.08%	1.43%	1.22%	0.98%	2.42%	1.38%	0.44%	5.58%	1.61%	2.09%
Earnings Before Tax	9.53%	15.99%	4.96%	9.60%	14.86%	15.28%	6.98%	9.77%	11.60%	8.04%	11.57%	11.01%
Income Taxes	3.42%	5.65%	1.90%	2.73%	4.29%	5.03%	2.86%	3.30%	2.80%	3.06%	5.62%	4.13%
Earnings from Continuing Operations	6.11%	9.80%	2.62%	6.71%	10.40%	10.25%	4.12%	6.47%	8.80%	4.97%	5.94%	6.64%
Net Earnings	6.11%	9.80%	2.62%	6.71%	10.14%	10.25%	4.34%	6.47%	8.80%	4.69%	9.98%	7.67%
Dividends per Share	$1.76	$3.36	$0.54	$1.13	$0.79	$0.63	$1.12	$0.01	$0.00	$0.05	$1.23	$0.89
Shares Outstanding (YE)	78	225	727	285	137	183	58	117	45	73	1130	298
Earnings per share	$3.66	$7.81	$0.60	$3.01	$4.89	$2.17	$1.66	$1.55	$2.39	$1.18	$2.12	$2.74
Net Trade Receivables	12.37%	13.55%	17.22%	17.63%	11.70%	16.85%	16.70%	15.35%	14.06%	16.94%	9.37%	13.26%
Inventories	8.84%	12.15%	14.24%	18.85%	8.67%	11.77%	10.24%	11.74%	8.17%	23.03%	7.61%	11.42%
Total Current Assets	25.79%	35.94%	54.54%	45.38%	26.79%	35.82%	34.37%	36.16%	28.05%	46.17%	24.82%	35.24%
Net Land, Bldg.,&Equip.	67.17%	33.49%	42.72%	45.39%	54.28%	51.49%	33.97%	33.35%	39.01%	30.66%	34.35%	38.46%
Total Assets	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Trade Payables	4.86%	7.20%	12.33%	10.61%	3.92%	6.46%	10.37%	7.98%	7.21%	9.39%	2.93%	6.72%
Short-Term Debt	0.00%	8.58%	22.19%	7.99%	6.16%	2.49%	2.30%	6.97%	0.00%	0.11%	16.77%	12.50%
Current Liabilities	16.51%	29.16%	50.08%	29.70%	21.60%	21.79%	24.73%	32.33%	23.23%	23.44%	30.57%	31.81%
Long-Term Debt	29.66%	17.45%	32.12%	9.39%	20.94%	13.05%	28.08%	21.57%	20.07%	57.87%	16.07%	19.29%
Total Liabilities	69.66%	68.07%	98.42%	57.90%	66.28%	53.92%	71.96%	104.73%	76.00%	101.30%	69.28%	72.83%
Preferred Stock	0.00%	0.17%	0.00%	0.00%	0.00%	3.23%	0.00%	0.00%	0.01%	0.00%	0.65%	0.38%
Owners' Equity	30.34%	31.93%	1.58%	42.10%	33.72%	46.08%	28.04%	-4.73%	24.00%	-1.30%	30.72%	27.17%

Selected 1998 Financial Data Figure 4.3

	Eastman	Dow	ICI	Akzo Nobel	Union Carbide	Rohm & Haas	Witco	Solutia	Cytec	Crompton & Knowles	DuPont	Average Composite
	<----Converted to $---->											
Sales	$4,481	$18,441	$15,372	$14,079	$5,659	$3,720	$1,942	$2,835	$1,445	$1,796	$24,767	$9,006
Cost of Sales	$3,546	$13,887	$12,146	$8,255	$4,683	$2,256	$1,470	$2,085	$1,007	$1,227	$17,116	$6,413
Gross Profit	$935	$4,554	$3,226	$5,824	$976	$1,464	$472	$750	$438	$569	$7,651	$2,592
S&GA	$316	$1,666	$2,245	$3,745	$304	$635	$247	$281	$200	$265	$2,115	$1,170
R&D	$185	$807	$369	$733	$143	$207	$74	$83	$43	$53	$1,308	$382
Operating Earnings	$434	$2,081	$612	$ 1,346	$529	$622	$151	$386	$195	$252	$4,228	$1,040
Interest expense	$96	$493	$685	$282	$114	$34	$48	$43	$22	$79	$520	$232
Earnings Before Tax	$360	$2,012	$485	$1,007	$689	$700	$102	$375	$198	$299	$2,589	$846
Income Taxes	$111	$685	$185	$301	$217	$247	$43	$126	$73	$115	$941	$293
Earnings from Continuing Operations	$249	$1,310	$319	$687	$403	$453	$59	$249	$125	$183	$1,648	$544
Net Earnings	$249	$1,310	$319	$687	$403	$440	$59	$249	$125	$162	$4,480	$823
Dividends per Share	$1.76	$3.48	$0.53	$1.10	$0.90	$0.70	$1.12	0.04	$0.00	$0.05	$1.37	$0.93
Shares Outstanding (YE)	79.26	220.38	728.00	285.30	132.69	167.59	115.20	112.77	43.19	73.70	1126.19	300.50
Earnings per share	$3.15	$ 5.83	$ 0.44	$ 2.41	$ 2.98	$ 2.47	$ 1.02	$ 2.16	$2.68	$ 2.20	$ 3.96	$2.62
Net Trade Receivables	$612	$2,787	$2,294	$2,381	$761	$630	$325	$357	$241	$174	$3,591	$1,354
Inventories	$493	$2,810	$2,008	$2,584	$667	$427	$256	$331	$141	$335	$3,129	$1,269
Total Current Assets	$1,415	$8,040	$7,275	$6,372	$1,906	$1,287	$681	$991	$478	$598	$9,236	$3,686
Net Land, Bldg.,&Equip.	$4,060	$8,447	$6,317	$5,991	$4,181	$1,908	$962	$944	$668	$473	$14,131	$4,402
Total Assets	$5,876	$23,830	$14,953	$13,491	$7,291	$3,648	$2,339	$2,765	$1,731	$1,409	$38,536	$10,999
Trade Payables	$316	$1,682	$1,771	$1,559	$264	$235	$150	$278	$100	$117	$1,206	$736
Short-Term Debt	$0	$1,826	$3,360	$3,003	$426	$172	$201	$0	$10	$17	$6,629	$1,565
Current Liabilities	$985	$6,842	$7,261	$5,840	$1,470	$875	$635	$732	$394	$394	$11,610	$3,605
Long-Term Debt	$1,649	$4,051	$4,890	$3,014	$1,796	$409	$688	$597	$420	$647	$4,495	$2,101
Total Liabilities	$3,942	$16,358	$14,707	$11,439	$4,842	$2,087	$1,681	$2,772	$1,300	$1,342	$24,582	$8,111
Preferred Stock	$0	$43	$0	$0	$0	$73	$0	$0	$0	$0	$237	$35
Owners' Equity	$1,934	$7,472	$247	$2,052	$2,449	$1,561	$658	($7)	$431	$67	$13,954	$2,888
Depreciation & Amortization	$351	$1,305	$601	$770	$389	$276	$116	$141	$87	$81	$1,452	$522
Net Capital expenditures	$500	$1,546	$917	$924	$782	$229	$282	$158	$104	$67	$2,240	$725
Number of Employees (YE)	15,950	39,000	60,600	74,200	11,627	11,265	5,713	8,700	5,100	5,544	92,000	31,375
Market Price (high)	$72.94	$102.63	12.13	$32.60	$55.75	$38.88	$43.94	32.00	$58.31	$32.81	$84.44	$49.35
Market Price (low)	$43.50	$74.69	4.65	$16.15	$36.75	$26.00	$14.38	18.69	$15.13	$13.25	$51.69	$27.14
Market Price (YE close)	$44.75	$90.94	5.26	$22.84	$42.50	$30.13	$15.94	$22.38	$21.25	$20.88	$53.06	$32.52
Market Value	$3,547	$20,041	$3,832	$6,516	$5,639	$5,049	$1,836	$2,523	$918	$1,538	$59,758	
Book Equity Value	$1,934	$7,472	$247	$2,052	$2,449	$1,561	$658	($7)	$431	$67	$13,954	
Total Debt	$1,649	$5,877	$8,251	$6,017	$2,222	$581	$890	$597	$430	$664	$11,124	
M/B RATIO	1.83	2.68	15.53	3.17	2.30	3.23	2.79	0.00	2.13	23.06	4.28	
MVA	1.27	1.53	1.24	1.33	1.44	1.96	1.50	1.92	1.28	2.04	2.19	
RETURN ON SALES	8%	11%	3%	7%	12%	19%	5%	13%	14%	17%	10%	
ASSET TURNS	0.77	0.77	1.02	1.15	0.79	0.99	0.84	1.02	0.86	1.21	0.66	
MARKET VALUE/SALES	0.79	1.09	0.25	0.46	1.00	1.36	0.95	0.89	0.64	0.86	2.41	
ROE	13.51	17.32	130	20.59	16.8	27.48	9.1	-360	30.47	649	36.2	
Ke	12.22	12.2	11.45	12.61	13.38	12.99	11.07	12.22	13.76	13.76	12.99	
(ROE- Ke)	1.29	5.12	118.55	7.98	3.42	14.49	-1.97	-372.22	16.71	635.24	23.21	

Normalized 1998 Income Statement and Balance Sheets **Figure 4.3a**

	Eastman	Dow	<—Converted to $—> ICI	Akzo Nobel	Union Carbide	Rohm & Haas	Witco	Solutia	Cytec	Crompton & Knowles	DuPont	Composite
Sales	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of Sales	79.13%	75.31%	79.01%	58.63%	82.75%	60.65%	75.71%	73.54%	69.69%	68.30%	69.11%	71.21%
Gross Profit	20.87%	24.69%	20.99%	41.37%	17.25%	39.35%	24.29%	26.46%	30.31%	31.70%	30.89%	28.79%
S&GA	7.05%	9.03%	14.60%	26.60%	5.37%	17.07%	12.71%	9.91%	13.85%	14.74%	8.54%	12.99%
R&D	4.13%	4.38%	2.40%	5.21%	2.53%	5.56%	3.82%	2.93%	2.97%	2.94%	5.28%	4.24%
Operating Earnings	9.69%	11.28%	3.98%	9.56%	9.35%	16.72%	7.76%	13.62%	13.50%	14.02%	17.07%	11.55%
Interest expense	2.14%	2.67%	4.46%	2.00%	2.01%	0.91%	2.47%	1.52%	1.55%	4.37%	2.10%	2.58%
Earnings Before Tax	8.03%	10.91%	3.16%	7.15%	12.18%	18.82%	5.25%	13.23%	13.70%	16.63%	10.45%	9.39%
Income Taxes	2.48%	3.71%	1.21%	2.14%	3.83%	6.64%	2.20%	4.44%	5.07%	6.43%	3.80%	3.26%
Earnings from Continuing Operations	5.56%	7.10%	2.08%	4.88%	7.12%	12.18%	3.05%	8.78%	8.63%	10.20%	6.65%	6.04%
Net Earnings	5.56%	7.10%	2.08%	4.88%	7.12%	11.83%	3.05%	8.78%	8.63%	9.01%	18.09%	9.14%
Dividends per Share	$1.76	$3.48	$0.53	$1.10	$0.90	$0.70	$1.12	$0.04	$0.00	$0.05	$1.37	$0.93
Shares Outstanding (YE)	79	220	728	285	133	168	115	113	43	74	1126	300
Earnings per share	$3.15	$5.83	$0.44	$2.41	$2.98	$2.47	$1.02	$2.16	$2.68	$2.20	$3.96	$2.62
Net Trade Receivables	10.42%	11.70%	15.34%	17.65%	10.44%	17.27%	13.88%	12.91%	13.94%	12.33%	9.32%	12.31%
Inventories	8.39%	11.79%	13.43%	19.15%	9.15%	11.71%	10.93%	11.97%	8.12%	23.75%	8.12%	11.53%
Total Current Assets	24.08%	33.74%	48.65%	47.23%	26.14%	35.28%	29.10%	35.84%	27.60%	42.43%	23.97%	33.51%
Net Land, Bldg.,&Equip.	69.09%	35.45%	42.25%	44.40%	57.34%	52.30%	41.12%	34.14%	38.57%	33.60%	36.67%	40.02%
Total Assets	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Trade Payables	5.38%	7.06%	11.85%	11.56%	3.62%	6.44%	6.42%	10.05%	5.77%	8.33%	3.13%	6.69%
Short-Term Debt	0.00%	7.66%	22.47%	22.26%	5.84%	4.71%	8.61%	0.00%	0.60%	1.23%	17.20%	14.22%
Current Liabilities	16.76%	28.71%	48.56%	43.28%	20.16%	23.99%	27.13%	26.47%	22.79%	27.99%	30.13%	32.78%
Long-Term Debt	28.06%	17.00%	32.70%	22.34%	24.63%	11.21%	29.42%	21.59%	24.24%	45.91%	11.66%	19.10%
Total Liabilities	67.09%	68.64%	98.35%	84.79%	66.41%	57.21%	71.87%	100.25%	75.10%	95.27%	63.79%	73.74%
Preferred Stock	0.00%	0.18%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.62%	0.32%
Owners' Equity	32.91%	31.36%	1.65%	15.21%	33.59%	42.79%	28.13%	-0.25%	24.90%	4.73%	36.21%	26.26%

4.2 Profitability

"The essence of strategy is to achieve a superior and sustainable long-term financial performance," was the central message during recent strategy lectures at the MIT Sloan Fellows program. "Superior resulting from a leading strategic position, Sustainable based on a positioning that can not be easily imitated and Financial Performance measured in long-term profitability. The firm exists because it creates shareholder value. "To reach and operate in the profit zone is the goal of every company[19]." As such "the goal of financial analysis is to assess the performance of a firm in context of its stated goals and strategies[20]." With these comments in mind we review the following profitability measures for the composite companies.

(Du Pont's results are only shown for the last three years given their recent divestiture of Conoco and the difficulty of reconstructing eight years of history without Conoco.)

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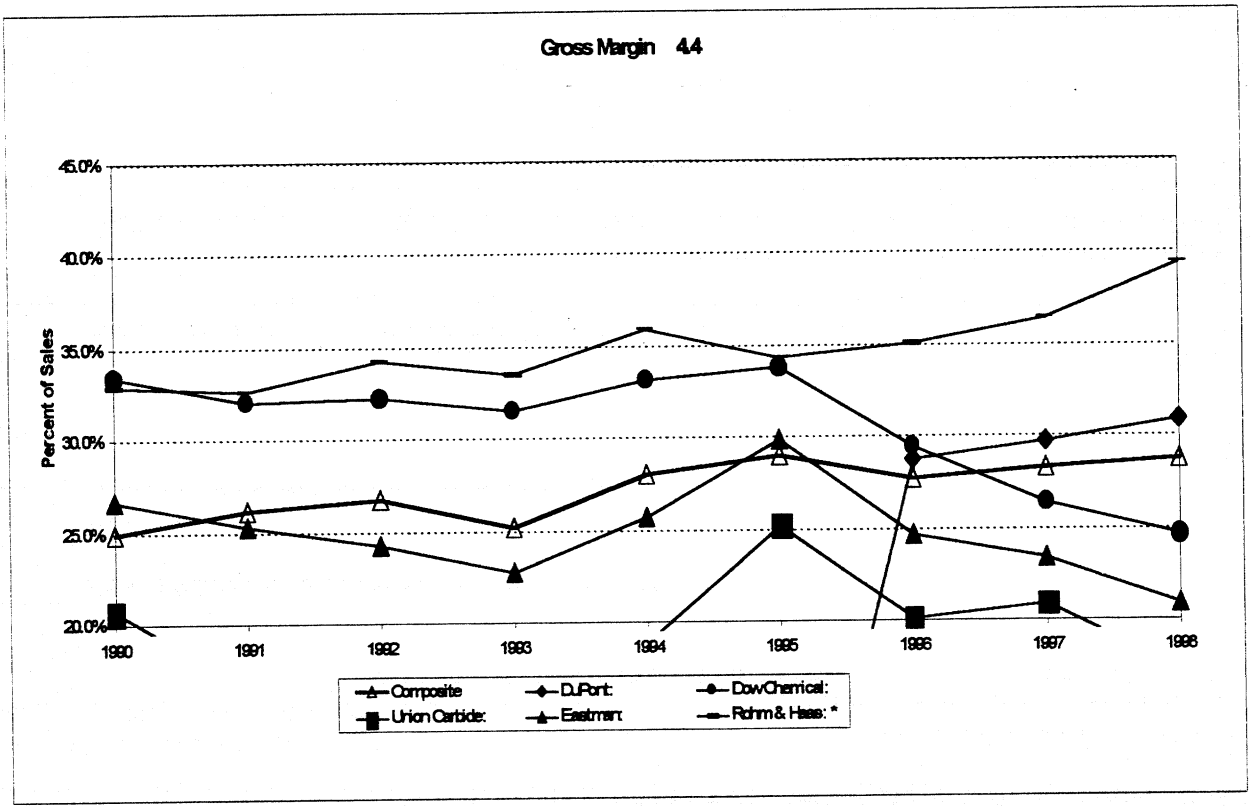
[19] Slywotzky, Adrian J., and Morrison, David J. The Profit Zone. New York: Random House, 1997

[20] Palepu, Bernard, & Healy, Business Analysis and Valuation. Cincinnati: South Western Publishing Co, 1996

4.2.1 Gross Margin

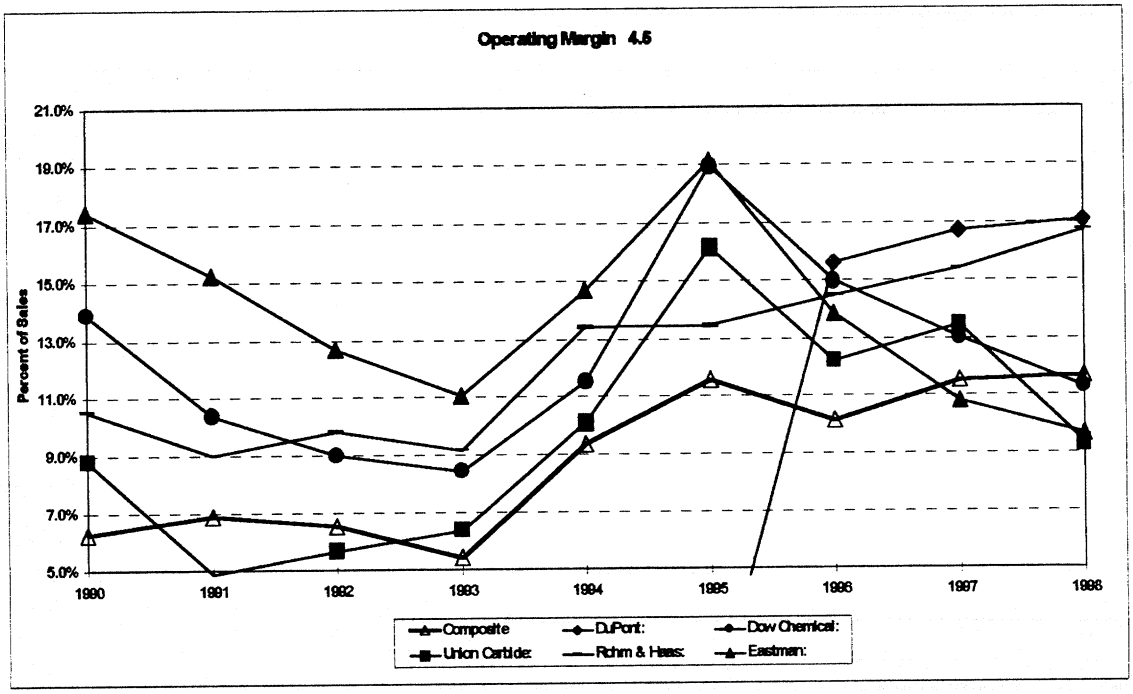
Gross Margin is calculated as the difference between Sales minus Cost of Sales and then divided by Sales. Results are shown in figure 4.4. Some caution must be used in reviewing gross margin comparisons between companies because accounting methodologies vary on how to account for distribution costs. Analyzing gross margin trends, it is observed that Rohm & Haas consistently outperforms all companies with an improving trend. Du Pont's trend is also positive and higher than the rest. Dow's, Union Carbide's and Eastman's gross margins fall below the composite over the last three years showing negative trends. Higher gross profits could be the results of lower asset intensity, lower raw material costs per product produced, or lower manufacturing costs, i.e. improved operational effectiveness.

There is a significant gap between the best in class vs. lowest, i.e. more than 20% difference.



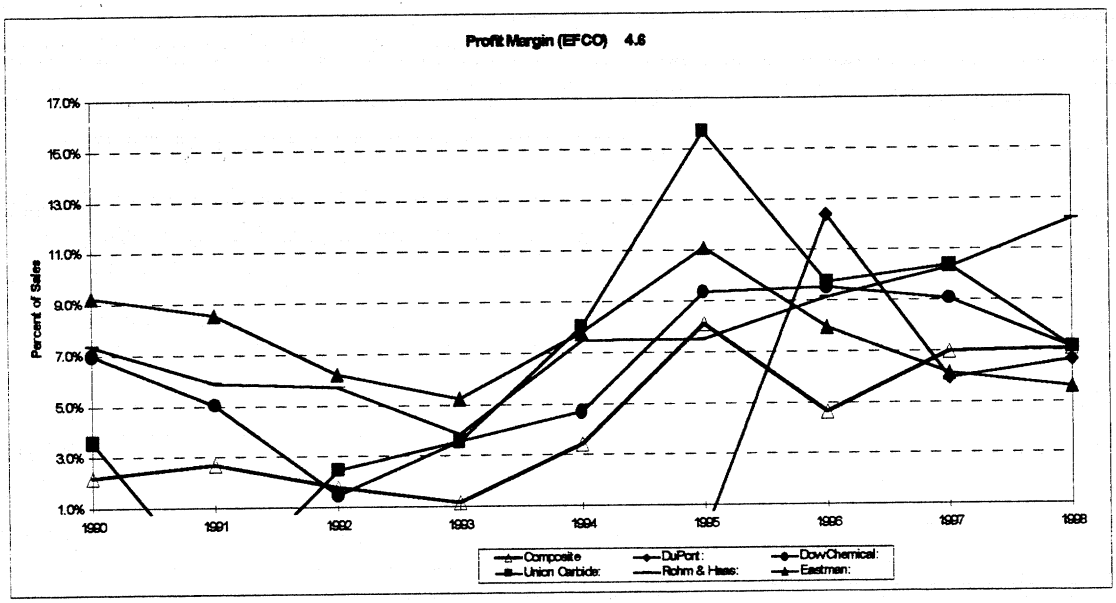
4.2.2 Operating Margin

Operating Margin is calculated as the ratio of Operating Earnings (earnings before interest and taxes) divided by Sales Revenue. Results are shown in figure 4.5. Operating margin for the composite shows significant improvement from 1993 up to date, increasing from slightly above 5% to over 11%. Rohm & Haas and Du Pont lead the group by at least a 6% spread. However what is most impressive is the relentless improvement since 1993 that Rohm and Haas demonstrates. Starting at 11% in 1990, they systematically improve their performance reaching almost 17% by 1998. Dow, Union Carbide, and Eastman peaked and outperformed Du Pont and Rohm and Haas in 1995 and since then are on a negative trend. Specifically reviewing Eastman, we see that they led the group over the earlier part of the decade and since 1995, a year after the spin-off from Kodak has not been able to regain that position. Part of the explanation could be that Eastman in order to pursue its global strategy now had to build its geographic infrastructure and services, which in the past were provided by Kodak. In 1998 Union Carbide and Eastman have the lowest operating margins of the group. The other part of the equation could be that Du Pont and Rohm and Haas manufacture products that are not as strongly impacted by the cyclical nature of the chemical industry or capture higher values.



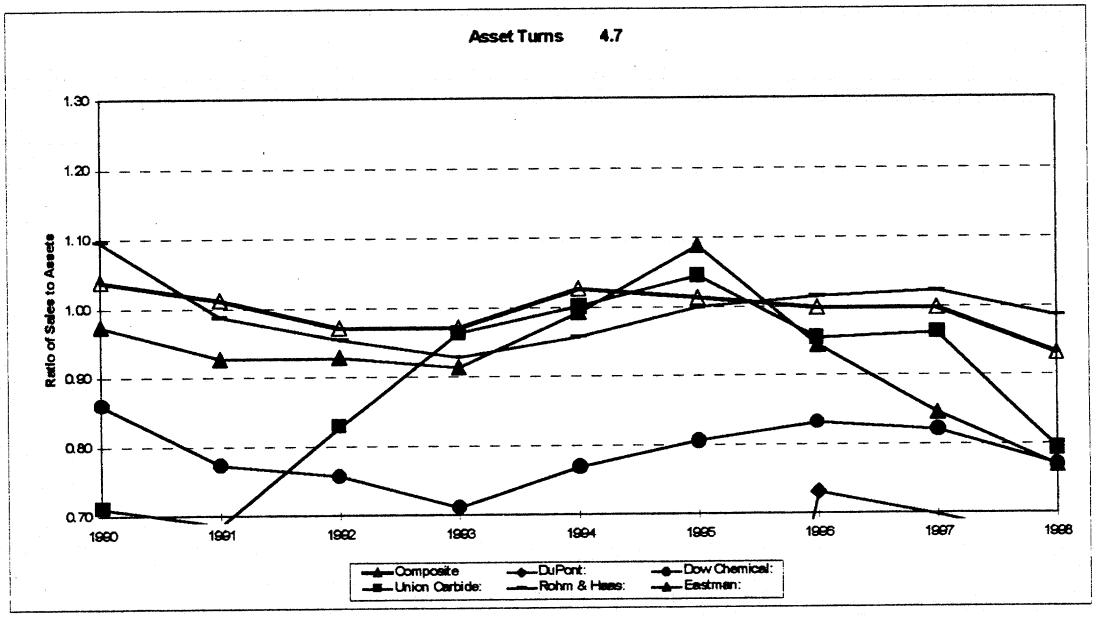
4.2.3 Profit Margin

Profit Margin is calculated as the Earnings from Continuing Operations (earnings after interest and taxes) divided by Sales. These results are pre adjustmented to gains from divestitures and or discontinuing operations. Results clearly show that Rohm and Haas is the company with the highest earnings and follows the same pattern of improvement as shown in the previous figure. The spread in 1998 between the leader and the group is almost 6%. Du Pont, Dow, and Union Carbide all end up close together, close to the average composite results, with Eastman lagging the group. From this perspective one could infer that the market should have a stronger and more positive view of Rohm and Haas vs. the rest of the group.



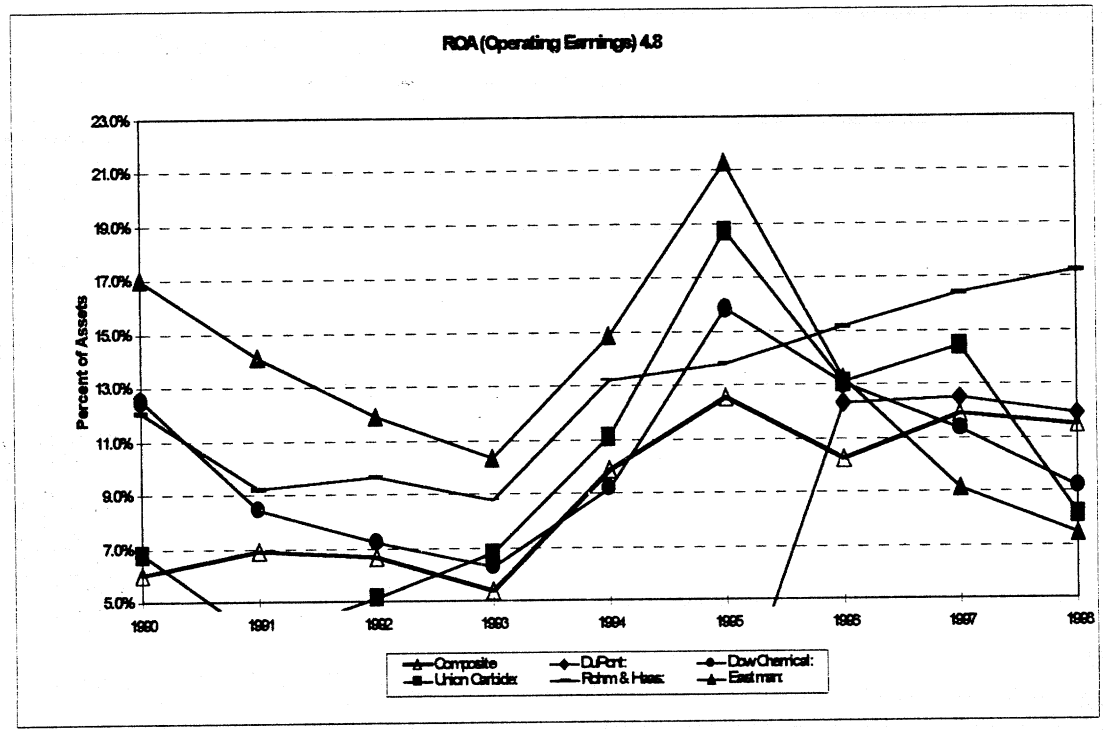
4.3 Capital Effectiveness

Capital Effectiveness or Capital Asset Utilization and Efficiency is a typical and important measure used within the chemical industry. The main reason is that the industry is regarded as an asset intensive industry (mainly when referring to the basic or industrial chemicals segment). Asset turns defined as Sales divided by Average Assets are usually close to 1. The specialty chemicals industry segment would usually be characterized as less asset intensive with asset turns greater than 1. Again though as with any other measure, caution must be exercised when comparing data between companies. Given the multiple acquisitions taking place, companies tend to understate the asset values in Land, Building and Equipment. Significant portion of their market value of assets appears in the "Goodwill" account. Figure 4.7 reflects the data for the companies herein evaluated. It is once again fairly obvious that Rohm and Haas is the least asset intensive company with consistently above average results. This could represent that more revenue is generated through offering customer solutions. It is also a fact that Dow, Union Carbide, and Eastman are significantly more vertically integrated. Backward vertical integration is significantly more asset intensive than downstream integration. Most current strategy views would suggest that reduction in asset intensity is necessary to succeed in the market. Specific examples in this age are Internet business models with very low asset intensity.



4.3.1 Return on Assets

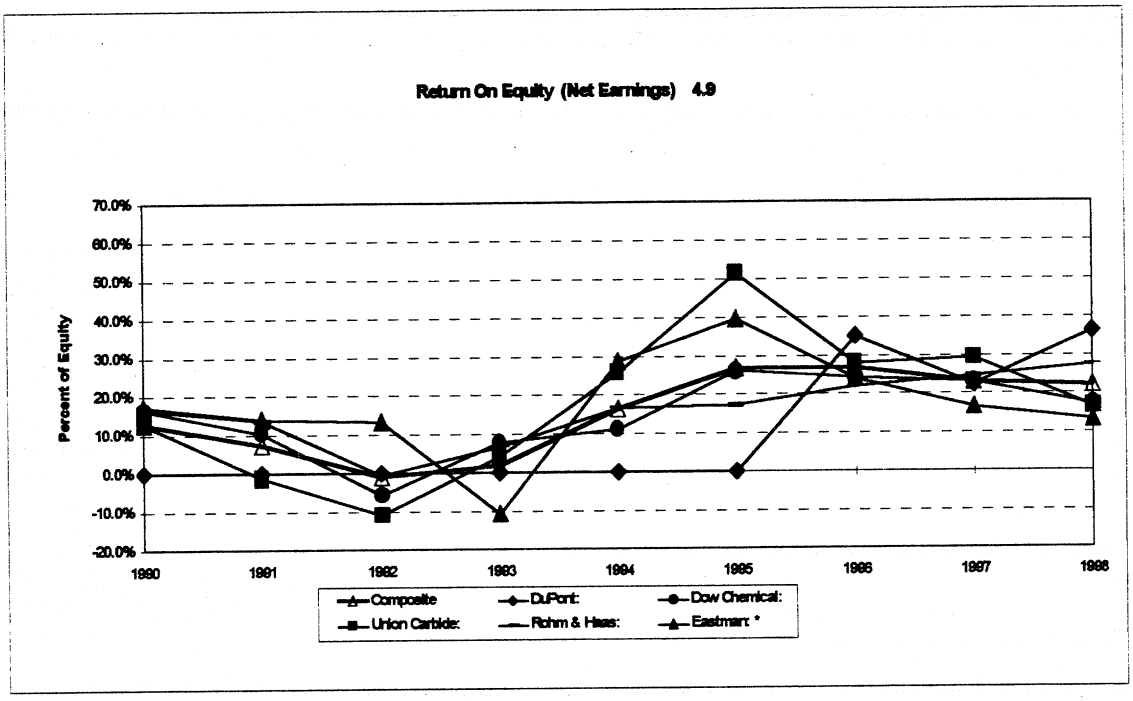
Return on Assets is calculated as the ratio of Operating Earnings divided by Average Assets less investments in subsidiaries. Results are seen in figure 4.8. "Return on Assets or ROA establishes how much profit a company is able to generate for each dollar of asset invested[21]." The data for the composite shows a relatively positive trend since 1993 improving from about 5% to over 11% in 1998. Rohm and Haas continues to lead the group followed by Du Pont, Dow, Union Carbide and Eastman. The spread between Rohm and Haas and Eastman is about 10%. Rohm and Haas's trend is positive (almost a straight line since 1994 to 1998, improving from 13% to 17% over that time frame) and Dow's, Union Carbide's and Eastman's quite negative. Du Pont's ROA is slightly above the average of the composite and its slope is relatively flat to slightly negative.



[21] Palepu, Bernard, & Healy, Business Analysis and Valuation. Cincinnati: South Western Publishing Co, 1996

4.3.2 Return on Equity

"Return on equity ROE is a comprehensive indicator of the firm's performance because it provides and indication of how well managers are employing the funds invested by the firm's shareholders to generate returns. On average over longer periods of time, large public companies in the U.S. generate ROE's in the range of 11 to 13%[22]." (This is reflected by three of the companies). ROE is calculated by subtracting Preferred Dividends from Net Earnings and then dividing by Average Shareholder Equity. Results are shown in figure 4.9. The data for the composite shows a relative improvement since 1993 and flat over the last two years. Du Pont clearly outperforms the group (remember the additional earnings below earnings from operations), followed by Rohm and Haas. The rest of the group falls below the average of the composite and the slope over the last two years is slightly negative. Eastman lags the group on this measure as well. Based on the data, one could infer that Du Pont should have the highest market valuation, followed



by Rohm and Haas, Dow, Union Carbide and Eastman.

[22] Palepu, Bernard, & Healy, Business Analysis and Valuation. Cincinnati: South Western Publishing Co, 1996

4.4 Free Cash Flow

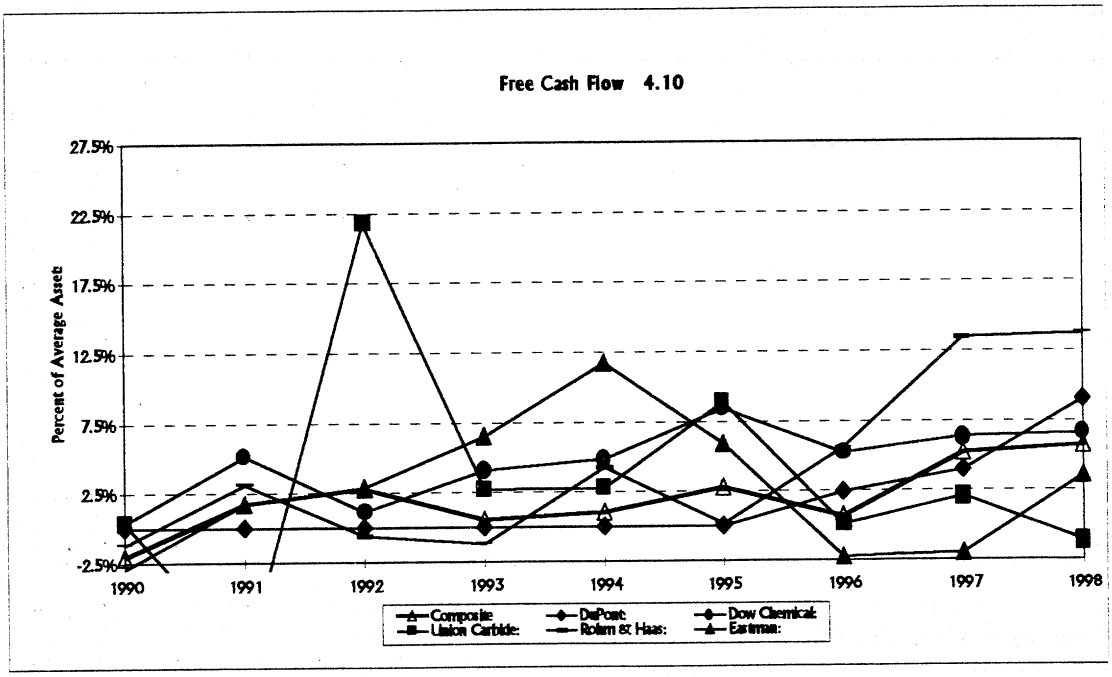
While the previously presented measures are very important, they mainly reflect trends and past performance. If one is to understand future performance, analysts will evaluate a firm's free cash flow generation. Some analysts calculate free cash flow, which is cash from operations minus cash used by investing activities, debt, and dividends. If positive, the amount will indicate ability to retire debt, increase dividends or perhaps repurchase shares. Most of the eleven composite firms did state as one of their objectives the desire to create positive free cash flows in order to buy back shares. Furthermore free cash flow is important in order to assess corporate ratings. "For a corporate bond to qualify for an AAA rating from Standards and Poor's, the ratio of cash flow generated by operations to total debt must be at least 100%, that is 1 to 1[23]." By understanding current free cash flows and projecting them into the future, analysts are able to assess the market value of a company.

In a recent paper presented by Tuomo Vuolteenho, entitled "What Drives Firm Level Stock Returns" the author cites that changes in cash flow expectations and changes in discount rates drive valuation. However he goes on to say that variance in free cash flow news has twice the impact that of expected return news. The main reason being is that the investor discounts market returns in general and specific news has a higher impact on immediate valuation. Furthermore he also states that news for small caps vs. larger market capitalization stocks have higher volatility.

In this case, the data for free cash flow is presented as free cash flow percent of average assets. Results are shown in figure 4.10. While the chemical industry is often characterized as an asset intensive industry with low returns, on the average it still generates positive free cash flows. Furthermore the data also shows the improvement over the last four years from about 1.5% to close to 5.5% by the composite. Rohm and Haas continues to demonstrate its strong performance by having the best results. Their positive trend began in 1994 with a steep slope and slightly flat over the last year. Du Pont, Dow, is above the composite. Eastman 1998 results are slightly below the average of the composite, recuperating from a negative trend. The main explanation offered is the

[23] Anthony, Hawkins and Merchant, Accounting Text and Cases Boston: Irwin McGraw-Hill, 1998

completion of major investments by the company requiring large capital investments started in 1995.



4.5 Value Creation

" We often find that managers do not recognize the importance of economic profitability as a yardstick for measuring performance of every individual unit or the firm. Economic profitability is only created when the businesses of the firm and the firm as a whole, enjoy profitability levels which exceed that of their respective cost of capital[24]." In other words the spread defined as ROE - cost of equity, is positive. Economic profitability then seems to be captured by various shareholder value capturing proxy measures such as Market to Book ratios (M/B), Market Value Created (MVC), Market to Sales ratios, Price to Earnings ratio (P/E), and Total Return to Shareholders. Both the Delta Model and Profit Zone model utilize some of the above mentioned measures, also given that they are helpful in evaluating companies with upward earning trends[25].

[24] Hax and Majluf, The Strategy Concept and Process. New Jersey, Prentice Hall .1996
[25] Hook, Jeffrey C, Security analysis on Wall Street, New York, John Wiley & Sons, Inc. 1998

4.5.1 Cost of Equity (ke) and spread (ROE-ke)

Utilizing the Capital Asset Pricing Model (CAPM), the average cost of equity capital for the composite of the 11 chemical companies is 12.98, with a variability of 11% to 14%. (Cost of equity values for each company over the last three years, 1996-1998 is presented at the bottom of figures 4.1, 4.2, and 4.3.) Based on these results and the CAPM we determine that investors expect at least a 13% return on their invested equity capital in the chemical industry sector. Quite often this is also referred to as discount rate, meaning that abnormal earnings are being created if returns are above the expected or projected discount rate[26]. Therefore the spread is positive if ROE is greater than 13%. Data earlier depicted in tables 4.1, 4.2, and 4.3, shows that in general the spread for most companies has been positive over the last three years.

4.5.2 Market to Book Ratios (M/B)

"Market to Book ratio compares the value shareholders place in the business based upon their assessment of the expected future cash flows relative to the past resources that have been committed to the business. What investors obviously look for is a multiplier effect that was created because of the strategy and execution that delivered a greater value than shareholder's original investments[27]." Furthermore the Delta Model states that empirical data shows that the M/B ratio for System Lock -in companies is on the average twice as large as Best Product and that Total Customer Solutions average M/B ratio is 20% higher than Best Product firms. Figure 4.11 shows the results for our group. This figure also includes the M/B ratios for 1999 (as of January 1, 2000 assuming that 1999 shareholder equity remained constant based on 1998 values). Analyzing the results we find that over the last four years Du Pont consistently has a greater Market to Book value vs. the four other companies, although the relative ratio between Du Pont and the rest is not as high as it used to be in 1996. The market obviously was not in strong approval of Du Pont's strategy and performance through 1998. Dow, Union Carbide, Rohm and Haas and Eastman follow in order, each and every year. What seems surprising is that while Rohm

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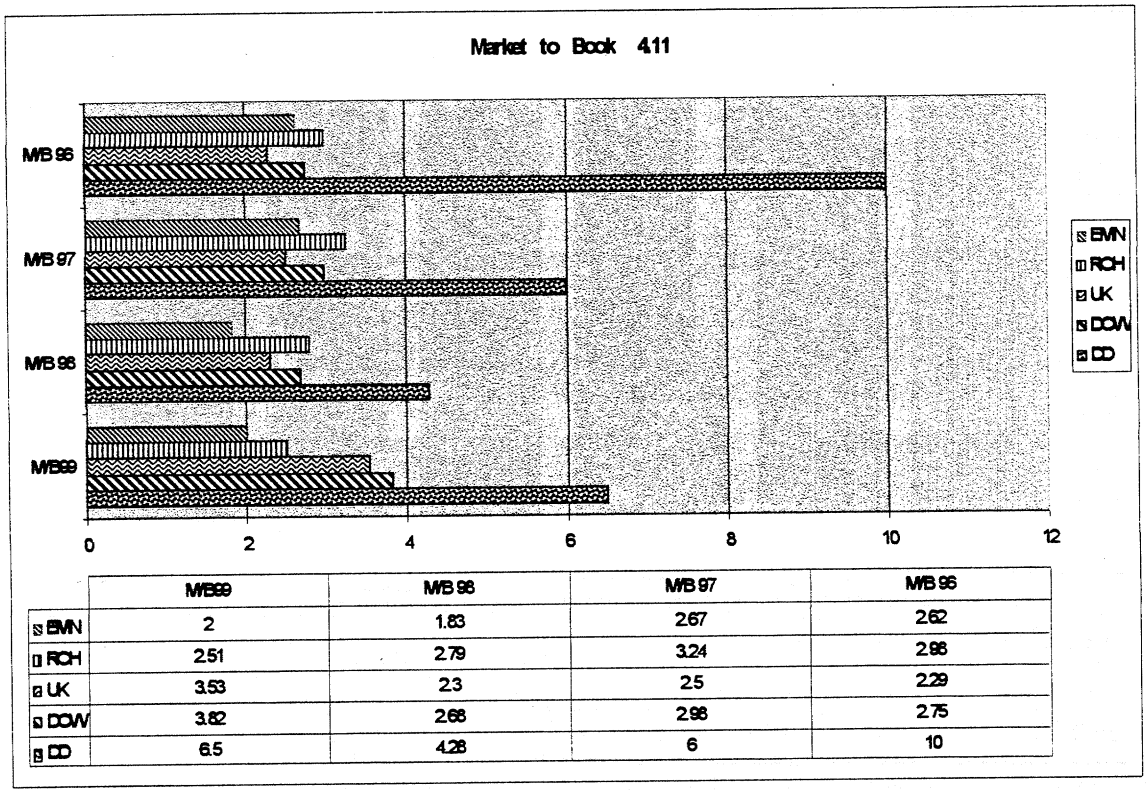
[26] Palepu, Bernard, & Healy, Business Analysis and Valuation. Cincinnati: South Western Publishing Co, 1996

and Haas consistently outperforms the group in most previous financial measures, based on this ratio Du Pont has a higher value. Part of the explanation could be that Book Value fails to write up increases in tangible assets[28](Rohm and Haas's recent acquisition and asset valuation). Another explanation is that Du Pont's assets are already fairly depreciated. In 1999 a positive trend is seen for all companies but not as strong as seen in the Du Pont case. Union Carbide seems to have a stronger recovery vs. Dow, Rohm and Haas and Eastman, and it is most likely associated with the Dow merger.

As a point of reference, current M/B ratios for the pharmaceutical industry average about 17X, for the Chemical Industry about 2.8X with Du Pont leading the way with a M/B ratio of about 5.6X, or twice as high as the rest of the composite.



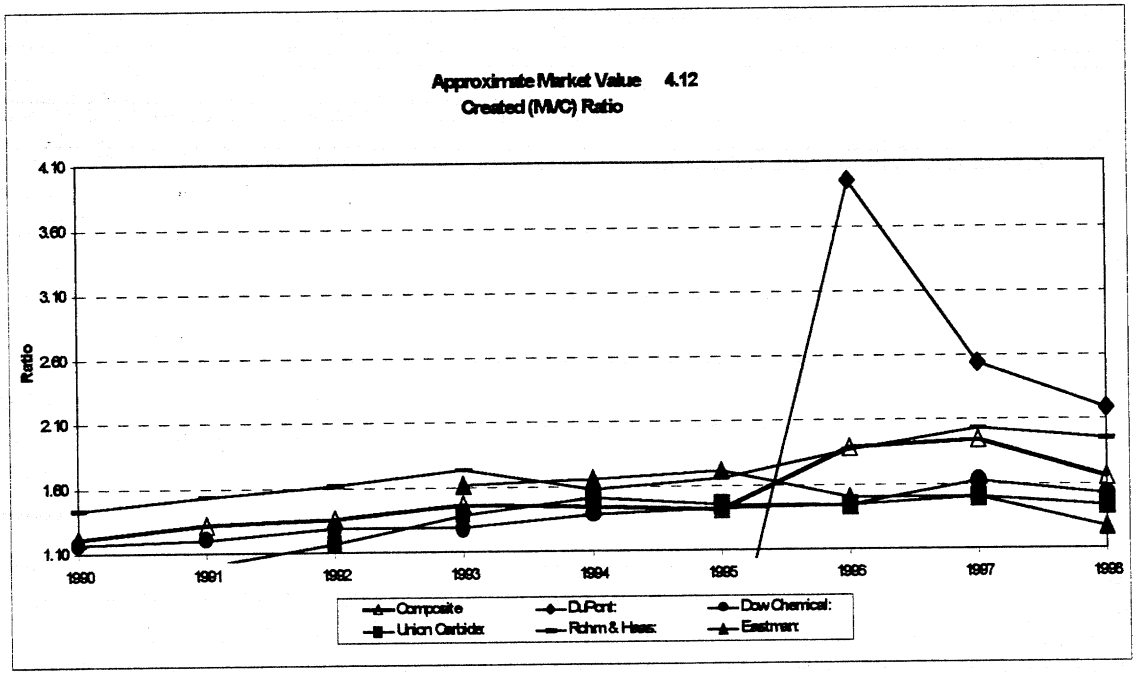
	MB99	MB 98	MB 97	MB 96
EMN	2	1.83	2.67	2.62
RCH	2.51	2.79	3.24	2.96
UK	3.53	2.3	2.5	2.29
DOW	3.82	2.68	2.98	2.75
DD	6.5	4.28	6	10

[27] Hax, Arnoldo C., and Wilde, Dean L. II, The Delta Model: Discovering New Sources of Profitability. Copyright 1999

[28] Hook, Jeffrey C, Security analysis on Wall Street, New York, John Wiley & Sons, Inc. 1998

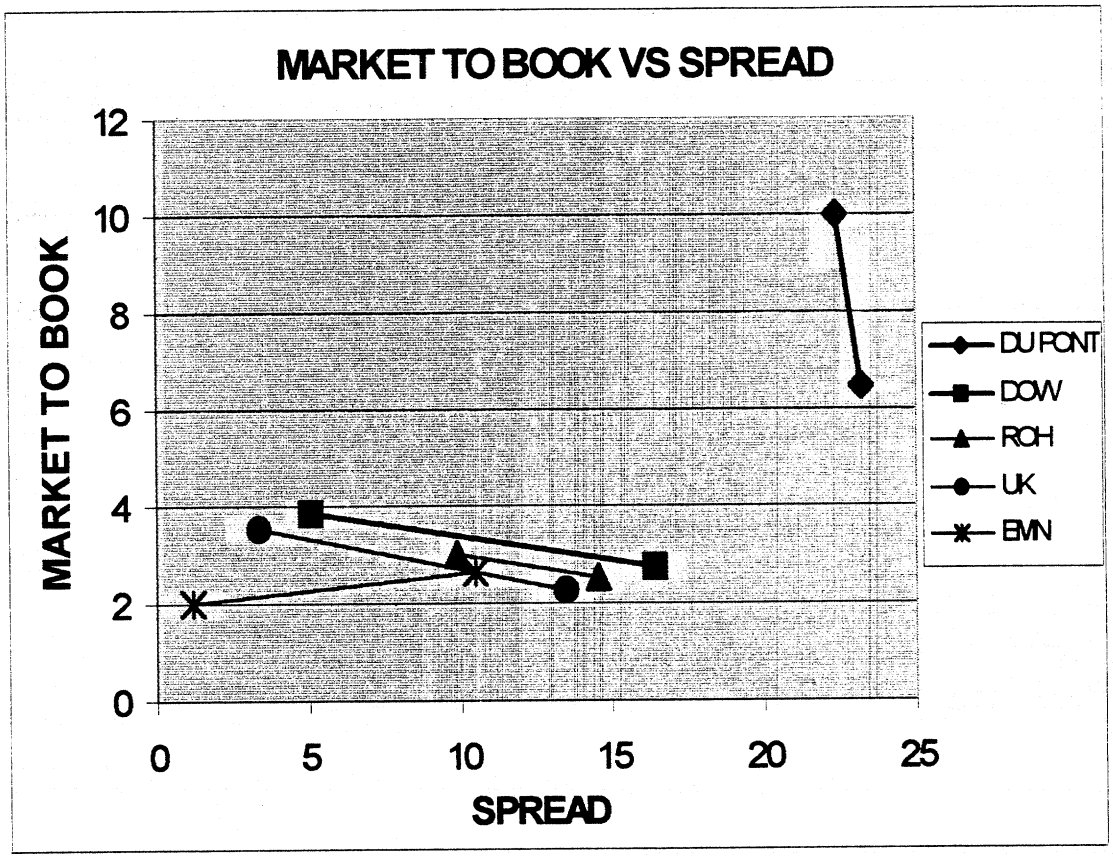
4.5.3 Market Value Created (MVC)

Market Value Created (MVC) is defined as the current market value of equity minus the firm's debt, minus the book value of shareholder equity. This measure is widely used in the chemical industry to analyze management's performance in creating shareholder value. According to the Delta Model, Systems Lock-In strategic postures on the average produce an MVC of 4X vs. Best Product companies and Total Customer Solutions produce on the average a MVC of about 1.5X vs. Best Products. Figure 4.12 shows the MVC results for our group of chemical companies. Data analyzed is through 1998 given that 1999 results have not yet published. The data shows Du Pont outperforming the rest of the companies, in 1996 by 2.0X and yet leveling off during the later years to about 1.5X when compared to the average composite. Rohm and Haas is a close second with higher consistency of results, i.e. not as volatile as the rest of the group's results. Dow, Union Carbide, and Eastman since 1996 consistently under-perform the composite.



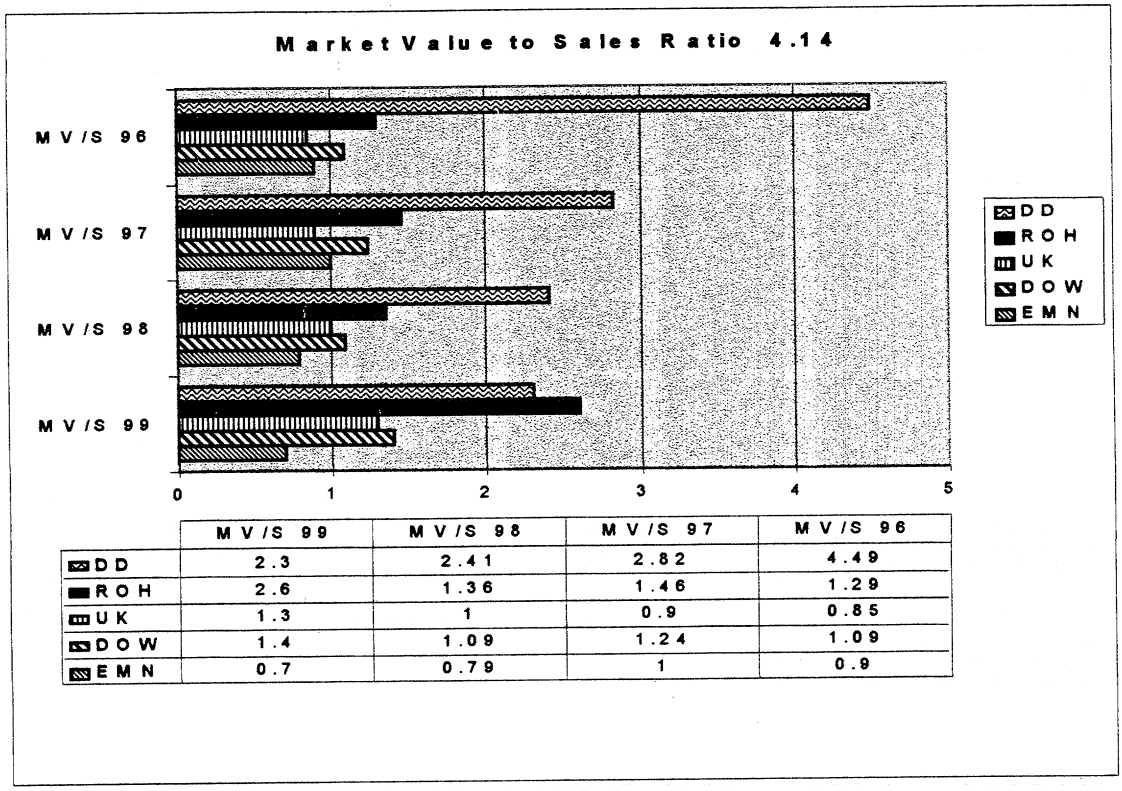
4.5.4 Market to Book Value vs. ROE - Ke

In order to understand the performance of a company vs. its competitor's it is often suggested to analyze data over various years and not only as snap shots of the health of a firm at a particular point in time. Figure 4.13 depicts the relationship of M/B ratios and spread ROE-Ke. The numerical data for all firms can be found in tables 4.1, 4.2, and 4.3. The surprising results of this graph are that the Market to Book value of most companies does not significantly change despite the large changes in spreads. The exception is Du Pont who had a strong downturn in 1996 where it went from 10 M/B to about 4 M/B in 1998, and in 1999 reverted the trend to end up at a 6.5 M/B ratio.



4.5.5 Market Value to Sales Ratios (M/S)

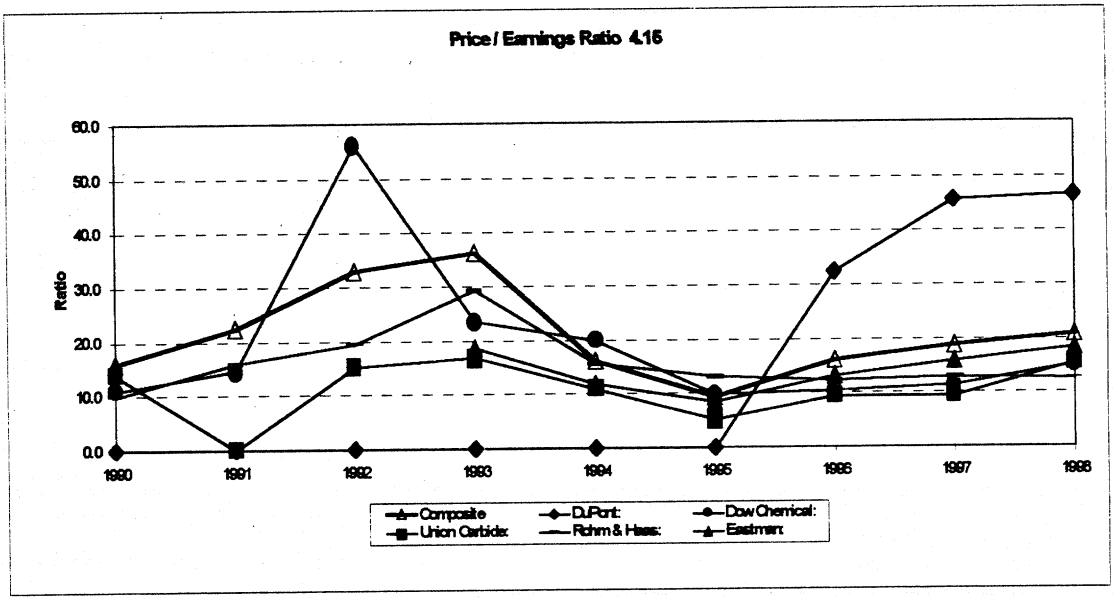
Another measure utilized in determining shareholder value creation is Market Value to Sales Ratio. This ratio is calculated by multiplying the current outstanding shares with the current share price and then dividing by the firm's sales. Empirical data in the steel industry shows that the stronger firms create greater shareholder by a 4X ratio over their competitors. Figure 4.14 shows Du Pont as having an almost 5X advantage during 1996, being reduced to about 2.5X in 1998, and outperformed by Rohm and Haas in 1999. Hence the market truly seems to be rewarding Rohm and Haas's strategic posture. Likewise it appears that the market positively values the merger of Dow with Union Carbide. Eastman continues to remain below the 1.0 ratio, which is considered to be in a value outflow phase vs. value stability or value inflow.



	MV/S 99	MV/S 98	MV/S 97	MV/S 96
DD	2.3	2.41	2.82	4.49
ROH	2.6	1.36	1.46	1.29
UK	1.3	1	0.9	0.85
DOW	1.4	1.09	1.24	1.09
EMN	0.7	0.79	1	0.9

4.5.6 Price to Earnings Ratio (P/E)

Finally, another way that investors measure the relative strength of a company is based on Price to Earnings Ratios. "Wall Street synthesize the k and g variables of the discount model into one statistic, the P/E ratio. The P/E ratio is a function of two perceptions: What is the company's future growth rate and how much should this stock return relative to other investments. Changes in the perception of a stock's growth or risk characteristics alter the P/E ratio[29]." Of course P/E ratios tend to be different for various industries but within the composite sample, the long-term or cycle average trends around 20 as seen in figure 4.15 (data through 1998). A significant difference between Du Pont and the rest of the industry exist for the last three years, where Du Pont has an average of about 40-50 P/E ratio and the rest remain around 10-20. However reviewing early 2000 we see a different perspective with Du Pont with a P/E of about 22, Rohm & Haas with a P/E of 20, Union Carbide with a P/E of 30, Dow of 19 and Eastman's P/E ratio of 30.

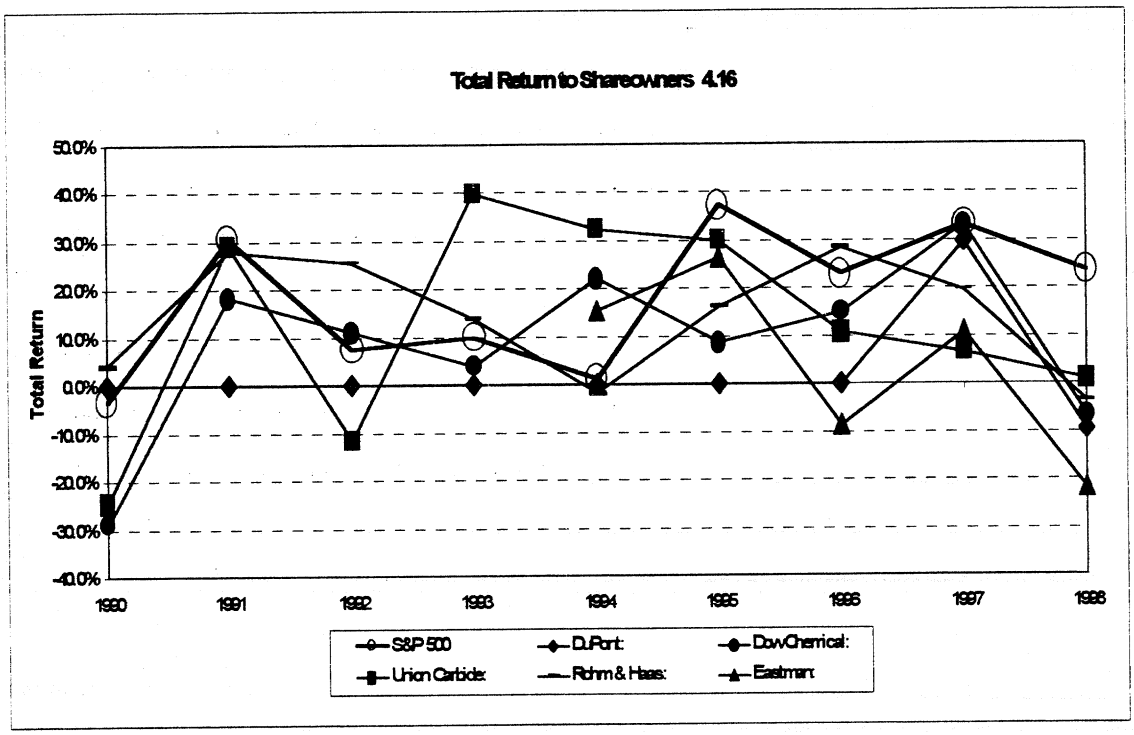


[29] Hook, Jeffrey C, Security analysis on Wall Street, New York, John Wiley & Sons, Inc. 1998

4.5.7 Total Return to Shareowners vs. the Standard & Poors 500 (S&P 500)

So far the data presented reflects financial returns only within the chemical industry composite and smaller group sample. However it is obvious that investors have significant different choices where to invest their capital. Very frequently, in order to assess the overall health of a particular industry, comparisons will be drawn between the composite of that industry and the return of the Standard and Poor's 500 leading companies. Figure 4.16 reflects the comparison of the composite sample and the S&P over the last eight years, where Total Return to Shareowners equals Percent Change in Year End Market Price plus Dividend Yield. This figure shows that since 1995 the group did not outperform the S&P. As a matter of fact the gap in 1998 is the largest percent difference between the two composites throughout the eight-year history.

These results could emphasize that most chemical companies did measure up during 1997 and specifically during 1998. It will interesting to see the trend for 1999.



4.6 Summary and Conclusions

Recent lessons in Strategy, Accounting, Business Analysis through Financial Statements and Finance would underscore that a company's overall health or performance is not determined based on one measure alone. In order to develop a complete understanding of a firm or industry, one has to evaluate the firm or industry from various perspectives. While significant other measures have been gathered, it is believed that sufficient data has been presented to help the reader understand the differences in performance within eleven chemical companies and specifically amongst the top five of the group.

Results on most measures show a difference in performance where most often Rohm & Haas, Du Pont, Dow Chemical and to some extent Union Carbide outperformed the rest of the composite. Based on operational and management's performance it is then no surprise that the market awards those companies higher valuations, hence creating greater shareholder value.

The goal of most benchmarking measures is to try to understand the differences in performance. Furthermore it allows the firm to understand how the market values the firms strategic posture and changes in strategic posture. We clearly have seen a fairly strong transformation of one company, Rohm and Haas and indeed well received by the market. If Rohm and Haas is pursuing a Total Customer Solutions strategy by horizontal expansion, the market is reacting positively to that strategy. We have also seen that the merger between Dow and Union Carbide has been positively valued. The merger will create a company with huge economies of scale, strong vertical, and horizontal integration. This could be an example were size as well as amount of shares outstanding in the market of the company matters. In most cases, large institutional investors hold these companies as part of their portfolio. The case with Du Pont is not as clear. In earlier years the company appears to significantly outperform the composite. Based on recent P/E ratios, M/S measures it no longer appears as strong. That is also seen at the operational effectiveness level.

From the large institutional investor perspective it is very difficult to take a relative position with smaller companies due to the potential impact on stock values. Hence smaller companies may show lower M/B or M/S values given the reluctance of these investors to position themselves in these companies.

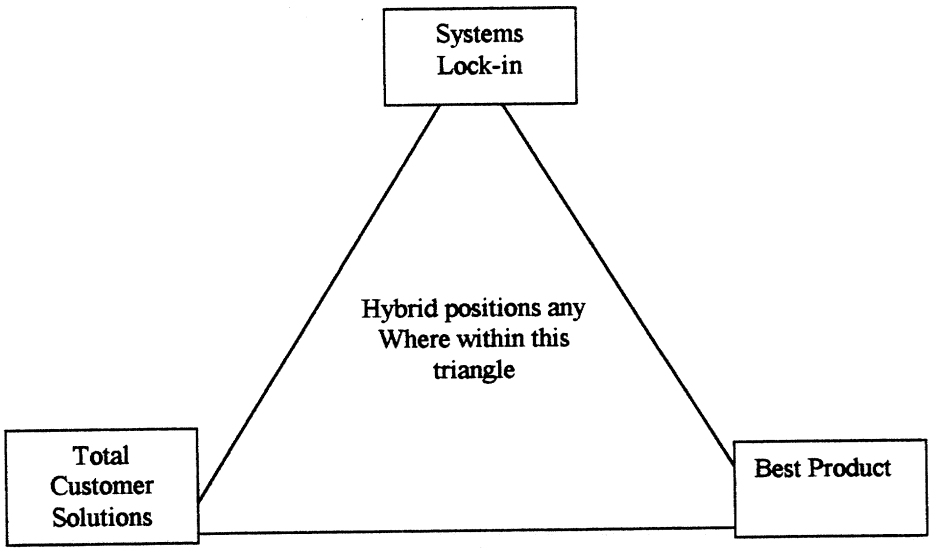
We also saw how mergers are not valued equally. The markets negative reaction to the Crompton & Knowles and Witco merger is not perceived as value creating. Finally we can see that although operational excellence is important, future growth prospects is also important to market valuation. From that perspective we see Solutia and Eastman currently disadvantaged.

CHAPTER FIVE SHAREHOLDER VALUE BUSINESS MODELS

The Delta Model is a model that allows a businessperson to understand the strategic posture of some companies and how they create shareholder value. Its conclusions are based on empirical data, yet with some variability around each strategic posture. As the review in chapter two states, firms create value in three ways: choosing to position their firms as a Best Product, Total Customer Solutions, or Systems Lock-in firm. The model also states that some firms have hybrids of either two of the three positions, or at times firms are in transition stages, hence non-definable within the model. This chapter based on previous financial analysis and further qualitative analysis positions the group of five firms within the Delta Model. In addition to that model, this chapter will also position the firms within the "Profit Zone" model. The Profit Zone model, based on financial and also qualitative assessments determines if companies are in the "value inflow," "value stability" or "value outflow" mode. The main reason for utilizing both of these models is to determine any correlation that may exist and validate the strategic concepts presented in this paper. Specifically speaking, it is interesting to follow the business transformations of companies and how they migrate across strategic postures as well as value zones.

5.1 The Delta Model

Figure 5.1 presents the three strategic choices and hybrid positions anywhere within the triangle available to firms.



The author based on qualitative data, mission, and vision of the firms directionally determined the posture of each firm in chapter three. Based on the quantitative analysis performed in chapter four such as Market to Book and Market Value Created and Market to Sales ratios, we can now determine the data correlation of the group of chemical companies to the empirical data of the Delta Model. The author realizes that the group of chemical companies is a small sample and may not statistically be meaningful in correlating the information, nevertheless it may allow us to directionally validate the model.

Public comments from companies that include such as customer focus or customer solutions focus, customer loyalty, customer retention, customer satisfaction, enhanced customer relationships, customer intimacy are literately and or directionally interpreted as companies wanting to strategically position themselves as a Total Customer Solutions company. Process excellence, low cost, strict value chain differentiation as well as comments about economies of scale, in other words inward public statements are directionally interpreted as desiring to primarily position the firm as a Best Product firm. The forming of significant alliances, seeking to develop technology standards and driving for technological innovation is interpreted as companies seeking Systems Lock-In positions.

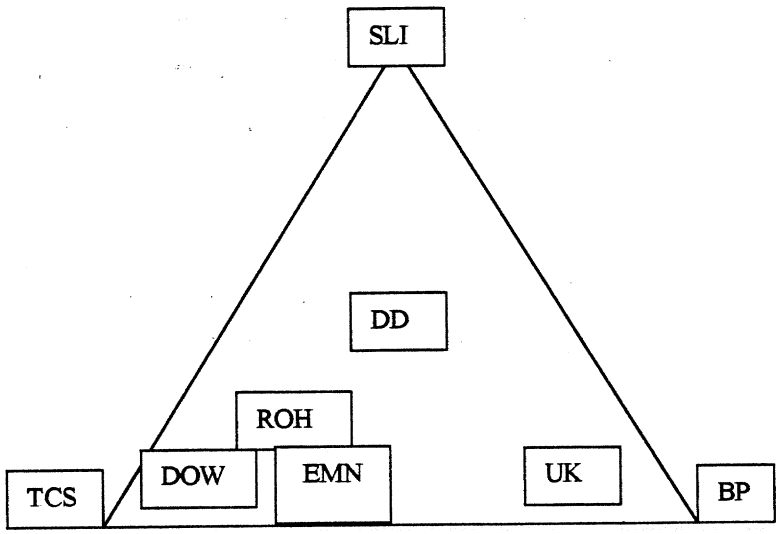
It is worthwhile to comment that the composite of the companies exhibit to some extent all three characteristics. It is also clear that directionally some exhibit certain characteristics over others. Following is the author's final determination of the groups companies' directional strategic posture.

1. Best Product: It is of public knowledge that Union Carbide has over the last eight years continuously focused on "process excellence" and driving cost out of their system. Hence a qualitative judgement is made that of the composite sample Union Carbide most closely represents a Best Product position company.

2. Total Customer Solutions: All companies publicly state their proactive customer focus. Reviewing the composite sample's 1998 annual reports, all companies discuss the importance of customers, customer focus initiatives and to some extent customer satisfaction. Directionally Rohm & Haas, Dow Chemical and Eastman seem to have focused their strategy on delivering customer solutions (based on official company purpose, vision, and industry practice).

3. Systems Lock-in: From my perspective this is the least likely characteristic that any chemical company has. However based on number of patents grants, numbers of joint ventures and alliances created, focusing on technological innovation and their public statement, Du Pont is chosen directionally as the one company that most likely pursues a Systems Lock-in like strategy. Some question if Du Pont should at all remain part of the composite, given its intention to become a Life Sciences company. Recent analysis however shows that despite the intended changes most financial brokerage houses still consider Du Pont to be part of the Major Chemicals-Diversified market segment. It is likely that specific Du Pont business units may achieve Systems Lock-in positions in niche markets but their profile is considered in the context of the firm, and it is difficult to state that Du Pont as the firm has reached or will reach a Systems Lock-in position.

Figure 5.2 presents the Delta Triangle and the companies positioned according to their strategic posture.



From the quantitative perspective, utilizing the Delta Model empirical data, one should expect that Total Customer Solution companies should have on average 1.5X MVC and M/B of 1.2X vs. Best Product, and System Lock-in companies on average 4X MVC and M/B of 2X vs. Best Product.

Figures 4.11 and 4.12 already presented present the results on MVC and M/B ratios. Applying the empirical Delta Model data to these firms we see that there is relative agreement between the data herein presented and the empirical data of the Delta Model. For instance we see that Rohm & Haas's MVC (a TCS company) is not quite 1.5X , yet its M/B ratio is greater than 1.2X when compared to Union Carbide (a BP company). Du Pont's MVC (a hybrid SLI company) is far from 4X however M/B ratio is almost 2X when compared to Union Carbide.

Analyzing these specific statistics over the last three years, we find that companies value creating metrics seem to be converging towards each other, i.e. Du Pont's 4X M/B ratio over Union Carbide has become only a 2X advantage at the end of 1999. Likewise MVC comparisons specifically utilizing statistics from 1996-1998 show similar patterns. This is an important issue because this could suggest a convergence trend of these four companies vs. a divergence. Yet when we analyze the the rest of the eleven companies, we do see a divergence, i.e. their value creating metrics seem to be loosing ground when compared to these four companies. This could suggest that the strategic posture of the Rohm and Haas, Du Pont, Dow and Union Carbide create larger shareholder value vs. the rest of the composite.

Eastman Chemical, eventhough the company is transitioning into a TCS company, its quantitative Market Value Creating data does not correlate to the averages of the above mentioned companies. When trying to position the rest of the eleven companies within the Delta triangle we have the same problem from the quantitative perspective, i.e. the M/B or MVC data does not correlate with the average empirical Delta Model data.

Without a further in-depth analysis into corporate strategy of each company it would be difficult to perfectly assess each company's position within the Delta Model. Having said that, markets determine the value of companies' corporate strategic postures, and from the data gathered it can be inferred that Eastman's, Solutia's, CK Witco's, Cytec's, Akzo Nobel's, ICI's current strategies are not recognized as value creating. It is also possible to infer that some of these companies are in a process of transformation and the market does not yet recognize their full value creation potential.

5.2 The Profit Zone Model

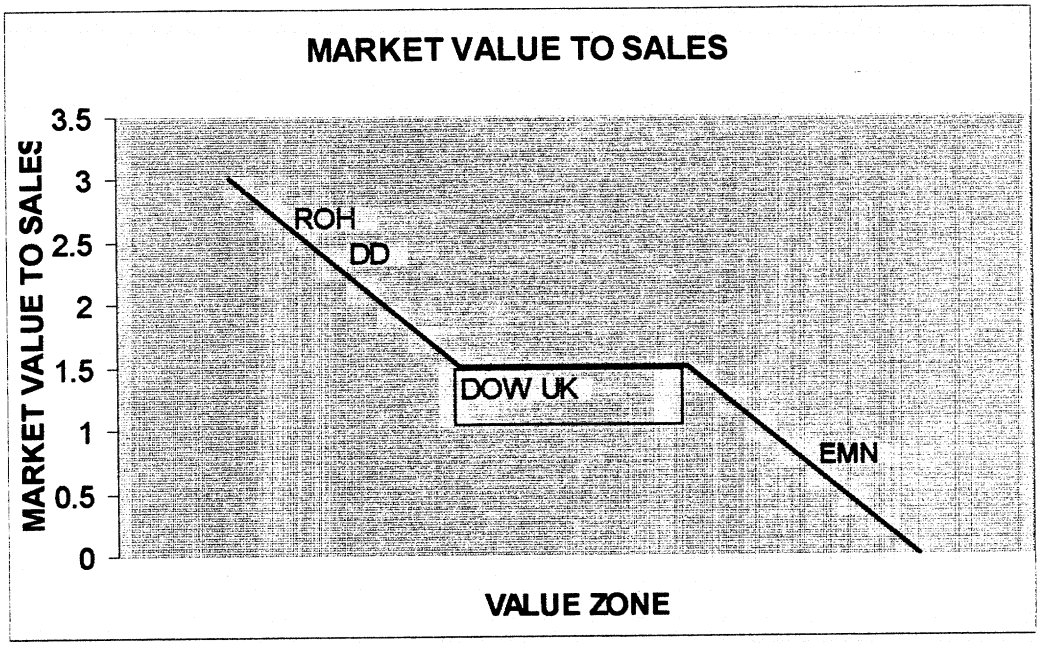
The authors of this concept (Adrian J.Slywotzky and David J. Morrison) begin by stating that profit centric business designs create value for shareholders[30]. Furthermore they state that Return on Sales, Profit Growth, Asset Efficiency and Strategic Control Index are the four metrics often used by investors to determine the value creation potential of these business designs. "These four metrics are excellent proxies for the quantitative and qualitative judgements investors make every day and their predictive power is quite high." Strong results reflected by this set of metrics are then reflected by higher Market Value to Sales ratios.

Two components of this metrics have already been covered, Return on Sales and Asset Efficiency (Turns). Profit growth data is gathered from financial sites such as value line, which basically anticipates continued future profit growth for the enterprise. It is only Strategic Control Index that requires further explanation. "Strategic control points protect the profit stream that business design has created against corrosive effects of competition and customer power." Customer power growth over the last decade has significantly deteriorated the ability by suppliers to create profits. Therefore firms have to evaluate based on their industry how value will be captured by their business proposition. The elements listed as strategic control points are in a sense fairly compatible with the Delta Model and the continuum from Low Cost-Best Product through Total Customer Solutions and ending up with Systems Lock-in. Some of the elements are: Commodity with cost parity, one year product lead, two year product lead, brand patents or copyrights, owning the customer relationship, string of super dominant positions (could be read as alliances or joint ventures), managing the value chain and owning the standard. Empirical data of the model states that if the Market Value to Sales ratio is greater than 1.5 the firm is creating value inflow, if between 1.5 and 1.0 the firm is in a position of stable value creation performance and if below 1.0, then there is value outflow.

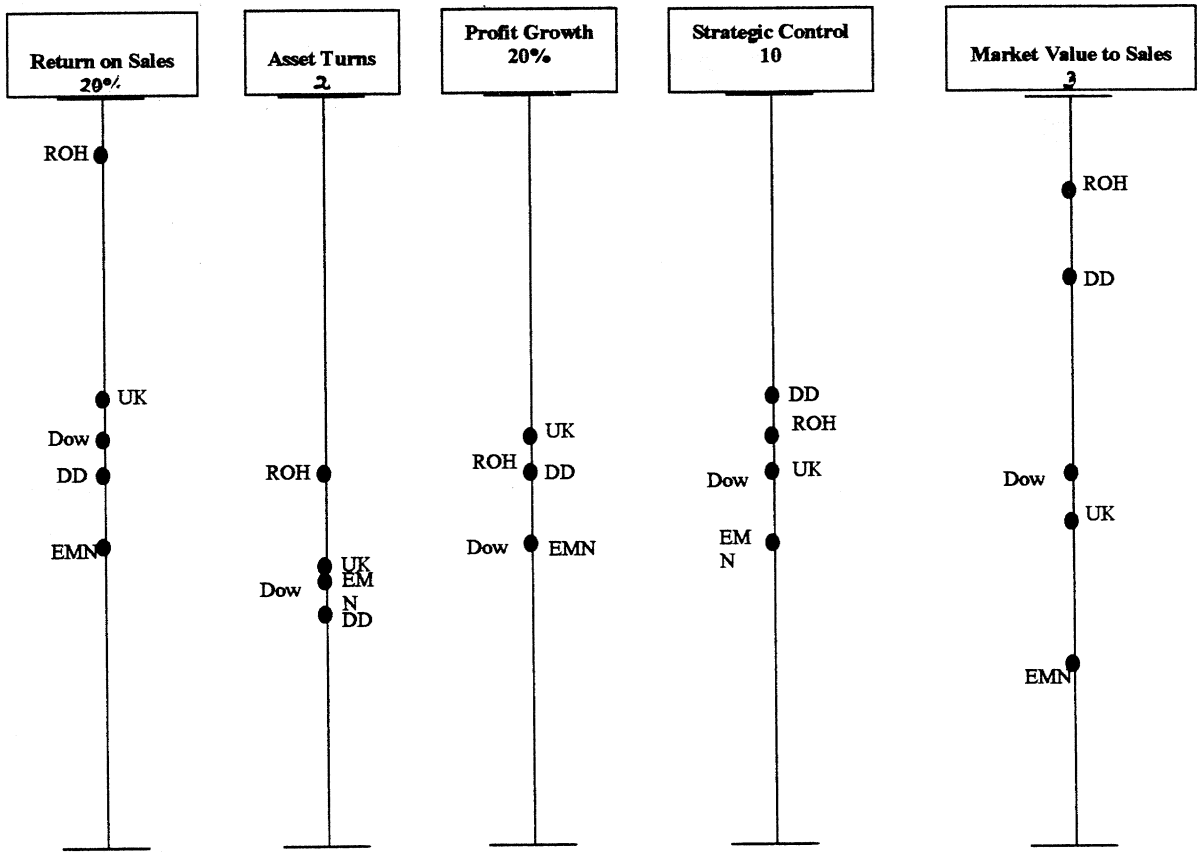
The book goes on to describe at least 22 different profit models, but all of them are fundamentally based on having a deep understanding of the customer. As such one has to crack the code on customer priorities, which are so important to them that they will pay a

[30] Slywotzky, Adrian J., and Morrison, David J. The Profit Zone. New York: Random House, 1997

premium for them. One has to understand the "Total Customer Economics Equation." And it is only through that understanding that one can add and or create value for the customer and of course for the firm's shareholder. Given that our key interest here is to understand shareholder value creation, the first step in utilizing this concept is to analyze the composite of the sample in relation to value creation performance. Figure 4.14 shows the results of Market Value to Sales for the years 1996 through 1999. Analyzing the data we find that Du Pont clearly outperforms the overall composite by at least a 2X ratio and likewise is the only company to remain above the 1.5 MV/S ratio through 1998. In 1999 both Rohm and Haas and Du Pont have a ratio greater than 1.5 meaning that both companies are in the value inflow phase. Only Dow and Union Carbide remain within the 1.0-1.5 ratio, or value "stability" phase. The rest of the companies are either close to 1.0 or below 1.0. Figure 5.3 reflects the above mentioned data and demonstrates which companies are in the value inflow, stability or outflow mode.



Decomposing the four components of the M/S metric as we find that Return on Sales in 1998 varies from 3% to 19%, with Rohm and Haas and Union Carbide leading the composite. Du Pont's results are 10%. Analyzing Asset Turns we find Rohm and Haas leading the group as well with a 0.99 ratio, and about 20% higher than the next best firm. Evaluating profit growth over the next five years as stated in Schwab's Equity Report card, the results show profit growth to vary between 8% and 13% for the composite sample. Du Pont's and Rohm and Haas's growth is projected at 10% over the next five years. Last we come to the Strategic Control Index component. Given the vast possibilities that exist, deep corporate analysis would have to be undertaken to understand those strategic control indexes. A qualitative analysis would appear to indicate, that brands customer relationships; technology, industry, and size are the significant differentiators. Figure 5.4 show the results of the above mentioned data. As previously discussed, Rohm and Haas and Du Pont outperform the rest of the companies and hence their higher shareholder value creation.



5.3 Conclusion and Summary

While it is very difficult to assess the specific strategic positions of companies within the Delta Model, we can directionally determine that different corporate strategic choices create distinct sources of profitability for a business. One can also determine that company's business designs create value inflow, remain stable, or consume value. The data also shows that Du Pont, Dow, Rohm & Haas and Union Carbide are outperforming the composite in shareholder value creation. During 1999, Du Pont redefined itself as a science company, Dow will merge with Union Carbide creating the largest or second largest chemical company and Rohm & Haas made a significant acquisition that positions it as one of the largest specialty chemical companies. Some underlying elements that are driving the shareholder value creation are economies of scale or company size, technology differentiation, specialization, horizontal expansion and or vertical integration, customer targeting, and process excellence.

It is also notable that qualitatively and even perhaps quantitatively both the Delta Model and the Profit Zone model depict companies that are creating value and those that are not. Furthermore it can be stated that Customer Solutions companies create larger shareholder value when compared to Best Product strategic positions.

Management has to proactively deal with the issue of value outflow because investors have choices and value outflow results show that investors have a lack of confidence in those companies' current strategic posture. Likewise companies continually seek to reinvent their business models in order to stay in the value inflow mode and shareholders reward those efforts.

From Eastman's perspective utilizing the Profit Zone model, one could infer that because of the lack of profit growth, low financial returns, and significant strategic control points in their business designs, the firm is in a value outflow mode (M/S ratio below of 1.0).

One significant issue that has not been dealt with thus far and probably warrants further study, is the current trend of higher valuations in certain market segments. Clearly technology driven companies seem to be creating unprecedented wealth. Hence the following questions could be asked:

- What is the impact of such wealth creation on asset intensive industries?
- Can asset intensive companies create wealth based on knowledge intensive models and if yes, how?
- Given the above question, does the Delta Model indeed direct companies to strive for becoming knowledge intensive companies? (Deep knowledge of customers, understanding the future standards and seeking alliances)
- Should another specific metric be used, perhaps P/E ratios where both growth and risk are incorporated and help define new standards?

In order to gain further insight into the state and changes of the chemical industry, the similarities and differences of performance within the composite sample of chemical companies, interviews with Eastman Chemical Company executives and business leaders were conducted. The main purpose of such interviews was to understand from their perspective what creates shareholder value and how could the similarities as well as differences in market valuation be explained, understood or interpreted.

PART TWO FIELD WORK

Part two of this thesis primarily explores the concepts and data discussed in part one with industry leaders, Chemical Week magazine, and internet-chemical related companies. The main purpose of the field interviews is to derive the validity behind the theory and empirical data of the Delta Model and the Profit Zone model, the concepts, measures and main factors that seem to influence shareholder value creation. For this purpose, a 10-page questionnaire was developed which is attached as an appendix to this thesis. The questions are broken down by functional/process responsibility starting with Executive Team or leadership insights, business strategy, technology and IT influence, customer interface and strategy execution at a customer level.

CHAPTER SIX EASTMAN CHEMICAL COMPANY INTERVIEWS

6.1 Introduction. Over thirty interviews conducted at Eastman, involved members of the executive team, presidents in charge of the chemicals and polymers groups respectively, general business managers and sales vice presidents, business managers and corporate strategy members. Even though the questionnaire dealt with multiple subjects, the results of the interviews evolved towards five areas. These are seen as critical in shareholder value creation.

In order to create shareholder value the firm must:

- Have a clear and compelling vision and strategy (story)
- Has to demonstrate financial and strategic discipline and deliver on the financials and vision of the firm (credibility)
- See business innovation and strategy as essential in order to create, maintain and increase shareholder value (value)
- Have a story of growth (growth)
- And finally, the vision and story has to be carried out by motivated people (talent)

Therefore what follows is a mosaic of these five elements intertwined with results presented in the previous sections of this thesis.

6.2 Vision and strategy

"It is the CEO's and executive team's job to create a vision of the future and deliver results" (on that vision). The vision has to be clear, understandable, and believable by all of the firm's stakeholders, and it must be compelling in the sense that it creates the momentum, motivation, alignment, and passion to become real. As such, the articulated vision by Du Pont, Dow and Rohm and Haas as well as the execution of that vision seem to stand out amongst the sample composite. "Du Pont is transforming itself into a life sciences company, and is joint venturing most of its asset intensive businesses to create a more focused company and hence greater shareholder value." Such vision is similar to the one articulated by Hoechst, a large German conglomerate as well as seen by the Monsanto-Solutia spin off. "Dow stated it will drive towards becoming a more specialized company, but understands that size, vertical and horizontal integration matter." Therefore its strategy to merge with Union Carbide. Rohm and Haas stated its vision of becoming a premier specialties Chemicals Company and has/is acquiring companies that could allow the company to achieve that vision." When asked about the validity of strategically positioning a company' vision and purpose within the context of the Delta Model, the following companies that perhaps may fit the criteria were cited. "GE plastics behaves as a Total Customer Solutions company, so does Nalco who recently was bought by Suez - Lyonnaise. GE plastics admit to not being the leaders in R&D but they are a leader when it comes to solving customer problems." A story was told that when a customer of theirs was not able to use GE's product, the sales representative personally brought in his competitor and together at the customers plant they solved the customer's problem. "Nalco offers you a total and complete package, that allows a firm to focus on manufacturing and not worry about water treatment." Rohm & Haas's activities in the field confirm that part of their implicit strategy is to become a solutions company. The interviews also confirm that Du Pont and Dow see technological innovation, alliances, joint ventures, and patents as primary sources of strategic control, as well as maintaining a focus on providing customer solutions.

On the other hand Union Carbide has over the last eight years been "the leader" in cost management and process excellence, driving cost out of their value chain. Hence implicitly it could be said that the company is pursuing a Low Cost / Best Product

strategy. Eastman's overall vision is to transform its current asset intensive and product centric businesses into a customer centric specialty chemical company. Several examples even in highly commodity businesses were shared and how by refocusing on the overall customer needs and customer economic value chain, commodity products become value creating and solve significant customer problems.

Finally, corporate strategy members after reviewing the concepts of the Delta Model they also agreed on its usefulness. "The vision has to be articulated by the executive team and it has to be compelling enough to align all of the resources of the firm towards that vision." The posture of the firm and its resource allocation will be significantly different depending on what strategic choice the firm does make. They also directionally believe that different strategic postures create higher or lower shareholder values.

6.2 Financial and strategic discipline (credibility)

"Although many analysts are content to extrapolate a company's historical sales into the future, enterprising practitioners examine a company's business plan to determine what drives revenues in the long term. The credibility of a plan rests on management matching corporate advantages and resources against likely competitor moves[31]." Credibility then becomes an intrinsic component of equity valuation, which translates into shareholder value creation. While this statement comes from a recent security analysis and valuation book, Eastman's management team continuously articulated these words. "The math and the English must match or we have a discontinuous situation." Clearly, Eastman's year 2000 management focus is on delivering the forecasted earnings expectations, since for the last two years that has not been the case. "A Company, business or business unit manager has to have a deep understanding of value, a passion to economically win, where all leaders aggressively and intelligently play their hand in order to create shareholder value." "In order to attain investor credibility the company has to deliver primarily on two fronts, earnings stability (earnings above the cost of capital), and growth. Over the last two years we have failed to do so."

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[31] Hook, Jeffrey C, Security analysis on Wall Street, New York, John Wiley & Sons, Inc. 1998

Reviewing the companies that stand out in the composite sample, Du Pont, Dow and Union Carbide are known for delivering on these expectations over longer periods of time. Du Pont continues to value up its strategy by attempting to move away from cyclical businesses. Dow and Union Carbide through process excellence, strong horizontal, as well as vertical positions and financial hedging, have delivered on both vision and financial performance and value performance. Rohm & Haas is currently being rewarded for executing a vision that was articulated over the last two years. Indeed the quantitative and qualitative elements seem to match investor expectations.
Critical questions for most chemical companies before them remain. How will value be created in the future, and is the past success a guarantee for future value creation?

6.3 Business Innovation and Value Drivers.

"Business innovation and business strategies are the continuous topics in boardrooms, executive teams, business books, and every day business life. Much of it seems new, much of it is new, much of it is repackaged, reformulated, bundled, unbundled, and with the latest Internet era, a whole new glossary needed to understand what is actually being said." Yet all of the above, ultimately have to create value or else they will become obsolete, the program of the month or year, or another fancy business strategy that ultimately does not get executed and consumes value. There is no doubt that the world we are currently living in is experiencing a deep transformation. Based on these facts, Eastman executives feel that one the most critical factors in creating shareholder value lies in business innovation. Issues such as understanding how and where value is created, who are key strategic customers, how will the internet impact their business, having a complete and total understanding of the value chain, and defining what the future of the chemical industry looks like are certainly perceived as drivers of value. And these need to be embedded in current business strategies and plans. Therefore this next section exposes some of the key drivers of value as seen by the company.

6.3.1 Process Excellence

Process Excellence is stated as a "buying the right to participate in the game." Chemical companies have to deliver their value proposition effectively and efficiently on various

ways if they are to remain in business. In an environment that is becoming more global this has not been easy. Process excellence is not only measured in manufacturing, but also in human resource processes, capital-spending processes, technology development processes, customer targeting and retention processes. "Customer power has indeed become so strong that one must have the appropriate costs to compete, and we must continuously find ways to cost-effectively deliver our products to our customers." Chemical companies seem to be taking three paths. The first one as demonstrated by the Dow-Union Carbide merger or BASF, is the emphasis on becoming a large integrated product or technology driven platform enterprise. Huge economies of scale, both vertically integrated and horizontally integrated, with larger resources available for technological innovation, create strategic control points and take duplicative costs out. The second model is one of becoming a more specialized company were service and solutions are the norm such as Rohm & Haas, Nalco or H.B. Fuller. In this model process excellence will take on a different form as different skills are required to satisfy specific customers. Third, there are companies that are somewhat in the middle providing both large industrial commodities as well as specialty products. Two examples of the composite cited were Eastman and Solutia. Outside opinions believe that it is very difficult to manage two distinct cultures, two types of process disciplines, and two distinct business models within one enterprise.

"Regardless of the current business models, efficiency in the value chain is a source of value creation, a source of continuous process innovation and a prerequisite to stay in the game."

6.3.2 Business Innovation Process

"This topic is the most pivotal subject that a company faces today. We should invest as much in business innovation as we do in R&D or perhaps it all should become one process, one way of looking at innovation. "Furthermore" the speed, at which things are changing, especially in light of the Internet and e-commerce era, has to be captured and incorporated in the way we develop and execute our strategy.

"Solving customer problems or creating alliances and joint ventures to enhance market position are not new to the chemical industry. Those however were mainly focused on the

transaction experience between supplier and customers. Today business innovation has to be centered on the value proposition and the creation of shareholder value. "Unless you continually reinvent your business proposition you will soon realize you have an obsolete model. "We continually get bombarded with information and options, but which ones are the critical ones, which ones will make or brake our business, that is the key to business innovation."

In the past Eastman based it's strategy in developing innovative solutions but then mostly competed on product economics alone. The value creation model was to continuously improve product performance and then find market applications. This model also did not define how much of the resources would be applied to which businesses. In order to drive a focused effort on business innovation recent corporate strategy aligned businesses along three dimensions: Generate Cash, Maintain Position, and Aggressive Growth. Generate Cash does not mean harvest the business, but it means finding alternative ways of competing and creating value without significant capital expenditures or resource consumption and generate cash to fund business growth. Maintain Position can be interpreted as continue to expend resources maintaining current market share, or current customer market share. However resource allocation will be carefully scrutinized. Aggressive Growth businesses are businesses that Eastman will base its growth on. Significant resources are invested in determining all of the ways these businesses can grow. It usually means that they have, are developing, and will develop unique ways of serving their customers. These are the businesses that become the engine of growth. "Just demonstrating strong financial results is not good enough. A clear example of strong financial results within the industry and lack of growth strategy is Solutia, and look what the stock market is doing to them, a MV/S of 0.5." When discussing business innovation within the composite, Du Pont, Dow and Rohm & Haas are seen as the current leaders. In a recent Research-Technology Management review (Sept/Oct 1999) Thomas O' Brien and Terry Fadem, discuss how Du Pont engages multiple disciplines to define and develop new business opportunities. "In times of rapid market, business and technological change, large science-based companies must create their own futures by developing profitable new growth as soon as a market appears viable. Visualization of these new business possibilities, however, depends on foresight. This requires the

company to develop processes for continually applying market and technical knowledge in a constant search for opportunities that intersect with its capabilities. Du Pont's recent experiences in developing new business ventures have made extensive use of this approach. The key ingredient has been the use of multidiscipline, multi-experience-based new business venture teams." Processes such as these allow companies to stay at the forefront of innovation. A major issue still lingers and it is best described in the words of Du Pont's previous CEO, John A. Krol :" Looking forward, Krol points to "the value creation challenge," "the research challenge," and the "sustainability challenge," three interrelated issues that are intrinsically part of business innovation . " Hence the question; can the global chemical industry operate on a sustainable basis and be able to create value in the future?" These issues can and will only be addressed by an aggressive focus on business innovation.

Business innovation takes various forms. "Take a look at GE Plastics, they are continuously looking at new ways of doing business, at the same time they continuously look over their shoulder and see what their competitors are up to. Even though they may be the market leader, they look at their competitors and outside industries for example on business innovation." However the key to their innovation is how to better serve their customers. "GE has created a culture of continuos business innovation. They always are looking for ways of renewing their business offering and how they can differentiate themselves from their competitors." Mergers and acquisitions can also be some of the most valuable sources of business innovation. "Regardless of how a firm operates, there is little doubt that those companies that do not renew their business value proposition, will become obsolete."

6.3.3 Customer Focus

"Eastman's management vision is to create a customer centric company. There are 12 Customer Focused renewal initiatives that over the next two years should transform the organization and culture." Discussing the culture and perhaps change in culture that has taken place over the last decade the consensus is that Eastman was very customer oriented in the past. "Pre spin-off era, based on our TQM practices, we can say that while many of our business designs where product centric, our customer focus is what created

value for our company. Since 1990 Eastman has undergone several changes. In 1991 a new organization model segmented by markets was implemented. Significant strategy processes were redesigned. During 1992-93, the organization was extremely focused on winning the Malcolm Baldridge award, which we won. Then came the spin-off from Kodak that required immense resources to accomplish. In 1994, as a brand new self-standing company, we now had to build a global infrastructure, specifically there where our offices were part of Kodak. This was also essential in order to support our globalization strategy. In 1996 we felt that a geography component was needed to manage the global resources, and so we arrive at a new millennium, where we have had to deal with many different issues, and perhaps we now realize we took our eye of maintaining our customer centric focus." "There are those that argue that we never truly developed a customer centric focused culture, but in reality we never really went beyond a customer transactional relationship. We had some Total Quality Partnerships with strategic customers, but we do not know if they really created value."
Today, customer focus and customer interface clearly take on a different meaning. "We used to treat all our customers alike, employing vast amount of resources across to equally serve each one of them. When we analyzed our profitability, we realized that close to 90% of our business was based on 11% of our customers. This was true across all the regions. We had to find a new way of segmenting them." "The key question that is difficult to answer is the issue of value creation and value capture." There are significant concerns that the industry as a whole suffers immense pressure to reduce costs, that customer's power is becoming increasingly dominant and this in a sense creates a dichotomy. " We want to sell solutions to our customers, yet we need the lowest price from our suppliers. Many of our suppliers are our customers, so we have to find a way to make this concept work." In order to accomplish our goals we have to redefine the value chain, the players in the value chain and who our key strategic customers are."

"To be Customer Solutions oriented, in the sense that we will understand the value creation potential across the entire value chain, expand the customer economics and create value, our people understand how their individual contribution is aligned with that purpose, will require significant new skills. It will require looking at information from a

different perspective." To address some of these needs, the company is embarking on a renewed way of serving customers and such is placing some of the most experienced employees directly in touch with its customers. In addition to that effort, which could be considered a "front office" issue, the company has now reorganized its "back office" structure as well. "From now on, customers will be able to experience what we call a "one touch contact." Specifically what this means is that several key value chain activities, such as order entry, order planning, logistics and other functional activities are housed in the same physical location, oriented to serve a set of specific customers with maximum effectiveness. This also allows the company to more effectively share customer specific information.

When discussing how a customer centric organization creates shareholder value, four reasons were most frequently mentioned:

1. Understanding our customers allows us to refocus our processes on how to satisfy their needs by understanding their key buying criteria. As such the information becomes a primary source for process innovation.
2. Customers are also a source of product innovation, both in the context of new products as well as new and different product applications.
3. Having a deep knowledge of our customers allows us to understand their value chain, therefore where value is captured, and how we might create value for our enterprise.
4. Enables us to better understand our growth prospects as well as other opportunities for growth.
5. Facing unprecedented technological change, having a deep understanding of our customers should give us a better opportunity to interpret the forces of change as well as the direction of change. Furthermore they are good sources for competitive information.

The progress in information technology allows this to happen at a much rapid pace than before. "Coupled to those issues, technological change, specifically referring to the advances in IT, we have to find new ways of blurring the lines between the customer's fence and ours."

Clearly most companies are utilizing the progress in IT to develop a competitive edge when developing customer relationships. "We realize that some of our most important competitors are seriously investing in Customer Relationship Management (CRM) software. Du Pont and Dow have made significant commitments in developing state of the art CRM capabilities."

But when questioned as to who might be the one company that stands out as a customer centric company within the composite sample, the answer is not clear. In essence, the feeling is that most companies are fairly customer oriented, are motivated by providing customer solutions, but most likely there is not one company at a firm level that would fit the "pure" definition of the Delta Model. "There are specific examples of business units that fit the description, even companies outside the composite such as GE, H.B. Fuller, Nalco that fit the criteria, but it is difficult to unequivocally state that anyone chemical company within the composite vastly exceeds the others in customer orientation."

"We believe that unlocking the key to value creation, real sustainable value creation, is based on creating and managing the company from a customer centric perspective. Understanding how current change and future change will impact our company will become visible if we understand our customers. We also realize that this will require deep executive commitment, especially in enhancing customer alliances and partnerships. While this initiative will take us close to two years to implement, it is one of the ways to unlock our strategy for growth."

6.3.4 Technological Innovation

Currently there seems to be a diverging trend in the chemical industry when it comes to pure research and development. There are those companies that continue to base their strategy of creating value through pure research, such as the life sciences. The second group's focus is on product development, application technology, and only some pure research. "Shareholders for the most part are no longer willing to fund long term research investments." Examples of the first are companies such as Du Pont and possibly Dow. Most others within the composite are focusing on product innovation and product

application improvements vs. radical innovation." "This trend is actually based on the fact that in the past, companies used to invent a new products and try to find applications for the products. Today most often we start with a customer need in mind or a need within a segment of customers and then drive the R&D process to meet those needs. "We probably should increase our investment in business innovation vs. pure R&D."
On this key issue many executives in the industry do not necessarily find a common ground. "Customers do not often know or can specifically articulate and define where technology is headed. Therefore in the chemical industry, it is the industry that must define the future technology platforms that will have some application in the market, if not, what sources of strategic control points in the future will we have?" When discussing the potential of joint customer and firm technology and research innovation, from a legal aspect "this issue becomes somewhat difficult to address. Key questions are, who owns the development, the idea, the process innovation, and as a firm are you allowed to take it as a market solution or is it strictly for the use of that particular firm?" "Nevertheless, we see the need and value of joint innovation, and need to find ways of managing such process."

Finally one issue that has not been discussed in depth in this paper but is at the core of business innovation and change is the impact of the Internet within the chemical industry. Given its possible vast implications, it will be discussed in a subsequent chapter.

6.4 A story of growth

"Growth is a key component within the equation of shareholder value creation. And it is not only growth that matters, but within the chemical industry, spread and lower earnings cyclicality matter. But let's go to the first issue. Take two businesses, the same businesses, one has 8% growth and a 1% spread (ROIC – Ke), the second one has the same growth but a 4% spread. The first one will most likely have a P/E ratio of 12, while the second one ratio of 14. Now take a second scenario, a business with 15% growth and 1% spread, and the second one with the same growth and 4% spread. Now the business with the 1% spread could have a P/E ratio of 24-26, but the one with 4% spread will most

likely have a ratio of 30%. In both scenarios both higher growth and spread will definitely be given higher P/E ratios, hence creating higher shareholder value. Solutia is a company that is currently being punished for lack of a growth strategy."

At the beginning of this chapter we talked about having a story, but words are not enough. "You can articulate a growth strategy but it will only be valued when backed by results."

There seems to be mounting pressure when it comes to issues of growth. The industry is in a constant state of flux, companies pursuing joint ventures and acquisitions to position themselves in a more competitive fashion. The main reason is the pursuit of growth, value-adding growth. It is clear that the market will immediately discount lack of growth. "That is the main reason why Union Carbide shareholders and management agreed to merge with Dow, i.e. their growth story was running out of options." Growth also matters because of the other multiple effects on the company. "Without growth it is difficult to retain talented employees, growth driven customers, and quite frankly lack of growth narrows your ability to invest in R&D, global expansion, etc."

"We are finally making progress when it comes to growing by acquisitions. We clearly need to do more of them, specifically when it comes to pursuing horizontal integration into different products and platforms. What often keeps us from being complete solutions company is the lack of horizontal product breath. In businesses where we have stated our desire to pursue aggressive growth, alliances, acquisitions and joint ventures are part of our strategy." Growth is also important from the perspective of maintaining our customers and shareholders. "Large funds holders when evaluating rotation strategies, i.e. movements within the fund from technology to cyclical or basic material sectors, usually do not invest in smaller companies. The main reason for not investing in smaller companies is the potential huge price volatility that could be created by the large funds as they move capital. Therefore as told by an analyst, large companies such as Dow or Du Pont create an average of +5% in shareholder value when compared to the smaller companies based on size alone." A recent example speaks to this case as well. Reviewing the Quicken.com web site, while comparing the eleven stocks of the composite, only Dow and Du Pont shows significant numbers of stock price inquiries requesting updates in quotes. The other chemical company's stocks did not show any inquiries.

6.5 Human Resources and Motivation

Human resources are seen as one of the most critical sources of value creation. The link between being able to retain, motivate strong talent and a firm seems to be based on various factors, such as growth, profitability, company culture, empowerment as well as seen as a firm that is operating on the leading edge. "We could have the best processes in the world yet if we were not involved in leading edge practices such as our Internet efforts, we would have a difficult time recruiting talent. We continue to focus on growing our pool of talented professionals and employees, because it is through our employees that we will be able to implement our strategies." Over the last two years Eastman has seen an outflow of talent and morale is perceived to be low in many areas. "In the past the perception was one of lifetime employment. Today, we focus on employability, creating accountability across the organization. Before we regain our employee's confidence we must demonstrate financial accountability and performance. Only then we will be able to revert the trend and create a positive net inflow of talent." "We realize we have some problems in some areas, those we need to address. Likewise though, we have many employees who through this reorganization feel that businesses are better equipped to be competitive and that finally personal accountability will matter. We have put teams of people together with the right expertise and capabilities to succeed, and that is very motivating."

When asked about the trend on employee migration within the overall chemical industry, the answer is "employees if they leave the chemical industry, a majority of them are leaving the industry for other industries. Young talented departing employees cite as one of their main reasons for leaving the lack of professional growth in the chemical sector, when compared to other emerging industries."

6.6 Conclusion

The information gathered during this stage of the analysis directionally confirms the validity and usefulness of the concepts embedded in the Delta Model. First that the strategic positioning of a firm, either as a Best Product, Customer Solutions or Systems Lock-in, is a responsibility of the CEO and his/her executive team. Second, that these

positions create distinct sources of shareholder value as discussed in the financial analysis of the composite. Third, that there are different ways to achieve these positions and that the adaptive processes of the Delta Model play a key role in allowing a firm to achieve these positions. Furthermore that some companies maintain hybrid positions while valuing up their strategy. Fourth, it is through renewed efforts in business innovation that a firm is able to address a change in posture and formulate a growth strategy. Such changes either positively or negatively impact shareholder value creation.

Eastman clearly realizes that it needs to strengthen its current financial performance. Both in context of the Delta Model and Profit Zone Model, the company is not creating as strong a shareholder value as the leaders of the composite, and is in a stage of value outflow.

There are additional issues that will impact Eastman's position in the future and they are related to the latest developments in the Internet arena. The next chapter of this thesis discusses potential impacts of the Internet on the chemical industry and actions Eastman is taking to position the company as a leader in this space.

CHAPTER 7 THE IMPACT OF THE INTERNET ON THE CHEMICAL INDUSTRY

In August of 1999, Chemical Week published a supplement periodical to its regular weekly report entitled "Internet Focus, Separating the Hype from Reality." The word "Hype" seemed appropriate at that time given the immense success of ecommerce retail stores, and the chemical industry is essentially not a "retail space." The retail space is primarily based on one business model where the customer, the consumer, from the comfort of his home, office, purchases a specific item and it will be delivered to his/her home. The chemical industry to a large extent is an industry where the final consumer is two to three steps removed and hence "e-commerce" will not impact the industry, or will it? And if it could or will, then the key question becomes "how will it impact the industry?" A second question immediately becomes "will it fundamentally and radically change our business? Our customer's business? If the answer is yes, how does my firm participate? If the answer is no then I need not worry." The last question could be "if it will impact the industry in a significant way, is there a first mover advantage, if so how important is it?"

While the answers to the above questions are not yet quite clear, the industry is beginning to create significant information and data that could directionally answer those questions. To understand the current trend in the Internet arena and its potential impact, this chapter is divided into the following sections:

- Data and reasons why the internet will have a strong impact on the industry
- Emerging internet-chemical industry models
- The positive and negative impacts of those models on shareholder value creation
- Eastman Chemical Company and its strategy to become leader in this space
- Conclusion

It is important to state that data information and strategies in this area are very fluid at this time and therefore difficult to specifically quantify. Furthermore this paper does not intend to describe the opportunities in-depth, but present sufficient data to allow the reader to see its strategic importance.

7.1 Reasons why the Internet will have an impact on the chemical industry

Recent reports by Salomon Smith Barney states that the fundamental reasons the Internet will affect chemical companies are Process Efficiency, Inventory Management, and Procurement Costs improvements. These are actually currently quantifiable cost savings and in a sense will be the major drivers.

Referring to Process Efficiency, the report states that significant reductions in order processing costs will be realized. "The short-term impact will be less paperwork and more productivity. The short-term (two- to three-year) impact of the Internet will be on the back-office functions, such as simplified order entry, order tracking, invoicing, and accounts payable. The Internet will serve to eliminate duplicate paperwork for customers and suppliers, which would result in fewer monthly bills and payments. Automation of such functions would reduce SG&A costs. We estimate the total benefits could be as high as 10% savings on the SG&A line. In the United States, for a $400 billion chemical industry with 10% average SG&A costs, the impact could be $4 billion of savings." The worlds chemical industry is over 1.5 trillion dollars, hence the stronger possibilities of a world wide drive to lower internal costs. This trend also goes in line with the recent trends or needs to lower internal costs.

When it comes to Inventory Management practices, the industry usually carries about 12-14% of revenue in inventories, which translates into about $55 billion dollars. Current quantifiable just in time inventory practices coupled to supplier managed inventory practices present the firm with inventory reduction possibilities of about 10-20%. One of the main reasons why these practices may accelerate is due to ease of transmitting and receiving data and customer information. The industry has not been very successful at forecasting demand and supply. By being intimately connected to the customer it has the opportunity to better project customer needs and at the same time removes some inherent cyclicality in the current business models. Hence as stated in the report, the U.S. industry could save about $11 billion dollars at a cost of capital of about 10%, net savings of $1 billion dollars. Taking this further into the Delta Model, it could be clear that this is a way to blur the lines between the firm and the customer, specifically in a customer centric strategy.

Raw Materials usually represents around two thirds cost of goods sold within the industry. Taking an average cost of sales of 70% of $400 billion, one can quickly realise that a final percent reduction in raw material procurement represents about $2.8 billion dollars. Current estimates state that most raw material savings will come in spot transactions, although it is believed that the efficiencies generated will eventually spread to a significant portion of all transactions.

Chemical Market Reporter in its October 1999 issue states another reason why the Internet will impact the industry. "The pace of consolidation is accelerating in the chemical industry, and new strategies are needed for effective competition. This is particularly true for small to medium sized companies that must find ways to compete against increasing scale and criticism. As an ubiquitous, easy-to-use standard networking platform, the Internet will help to equalize the advantages often achieved by larger companies." While this may be a trend, it is difficult at this time to quantify the number of companies that are becoming involved in defining an Internet strategy. Andersen Consulting states that only 5 large companies were seriously working on an e-commerce platform or strategy last year, today there are at least 45 companies focusing on e-commerce with another 155 companies involved in cross industry applications that also include the chemical industry. This trend is not unique to the U.S. industry and is already reflected on a geographical basis.

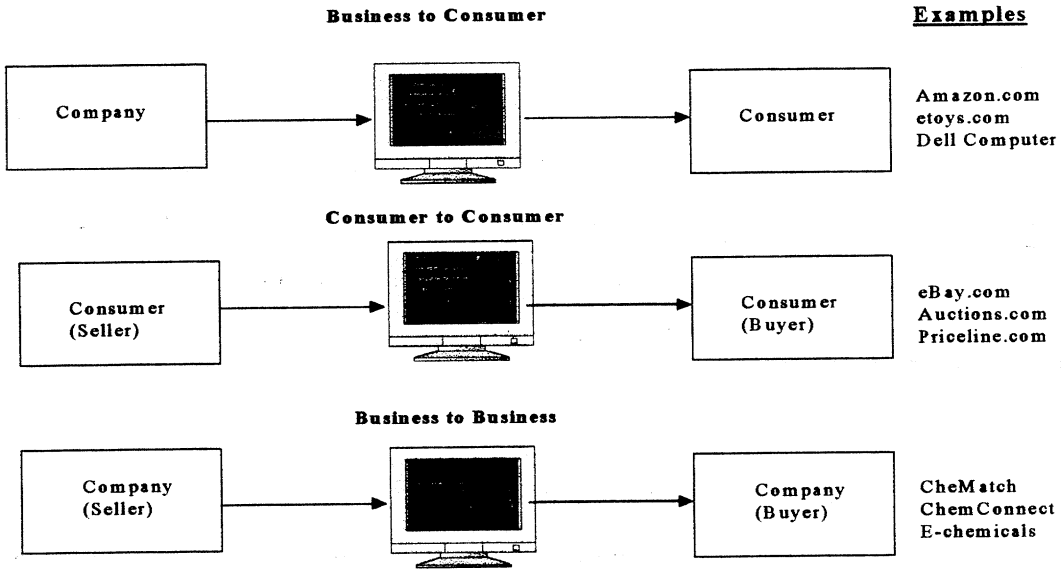
Finally, a fundamental reason why chemical companies are intrinsically becoming involved is due to the potential shareholder value creation. "There is a definite first mover advantage, that will no longer be there when everyone else catches up" states Salomon Smith Barney. The unusually high valuations of Chemdex or Freemarkets and Webmethods, strongly suggest that shareholder value can be created in this space. By not participating in this emerging trend, traditional businesses that do not enter it will not have a chance to capture the value later on. Forrester's research shows that 1998 e-sales where already over $4.5 billion dollars, expected to reach $300 billion by 2003 (six months ago the forecast was $178 billion for the year 2003). "If we as an industry do not get involved and participate in this space, someone else will utilize our assets and create value for themselves. We owe it to our shareholders to explore whatever business models available to us to create shareholder value, as well as understand what can destroy

shareholder value." "Certainly this is forcing companies and managers that traditionally focused on producing and selling molecules to evaluate a whole new set of business models that are focused more on knowledge based, marketing and services[32]."

Based on the above information, it appears that the "gates have been opened" and the "train has left the station." Whether it is consulting, banking, producer or customer driven, or by the rush to create shareholder value in an emerging industrial revolution, or by the fear of being left behind is not yet quite clear. Whoever is driving it or whatever the reason, the fact appears that it is real and here to stay.

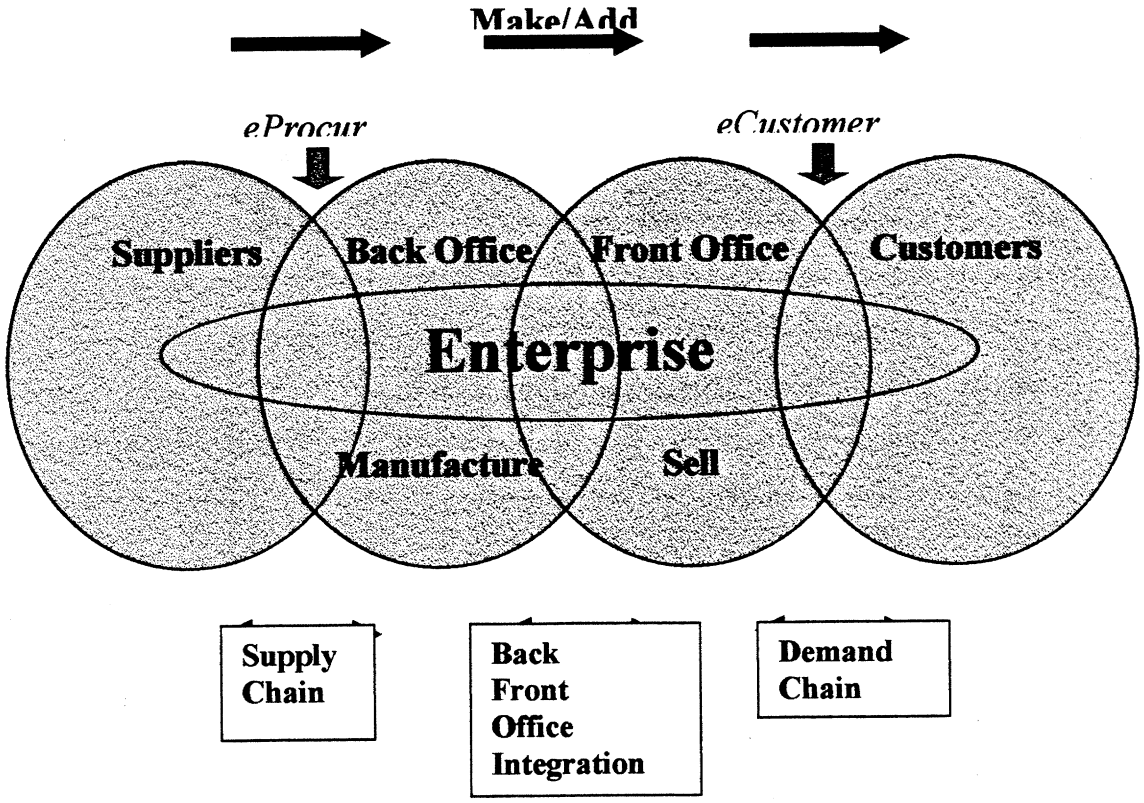
7.2 Emerging Internet Business Models

Salomon Smith Barney portrays current e-commerce models as follows:



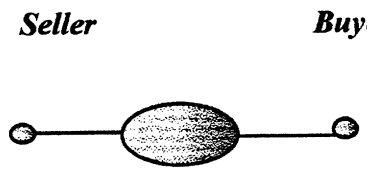
[32] "Internet Focus." Chemical Week, 18 August. 1999: 18

The Yankee Group had another way of defining E-Business as shown in this diagram.

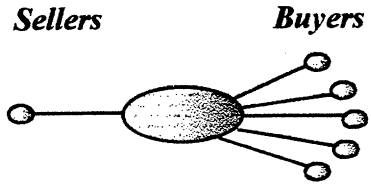


From this model we can infer that several activities are considered targets e-business models. There are opportunities on the procurement, manufacturing, selling sides. Likewise there are entire value chain opportunities that could link multiple participants within the value chain. Examples are connecting customers all the way to procurement These are the opportunities that exist within the firm.

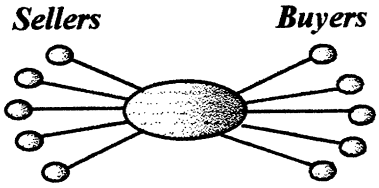
Adrian Slywotzky in his book Profit patterns as well as the profit zone describes some of these models. The first one is the traditional business model where system to system commerce takes place, integrating the supply chain.



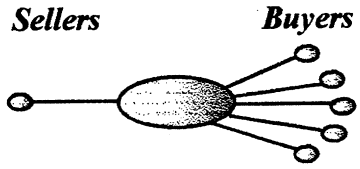
The next one is where the seller offers its unique products or services to its many customers through its web-site.



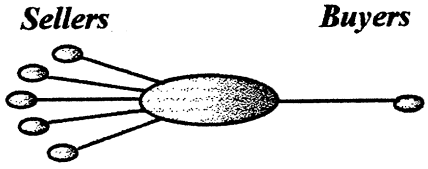
The third model is based on micro markets or communities where someone brings buyers and sellers together and provides a one stop shop for their needs.



The fourth model is where buyers compete on real time for a bid from a single supplier or vice verse, i.e. the auction space.



And the fifth model is where an intermediary creates a product catalog for a single buyer.



Obviously as time evolves as well as technology evolves, one might see different business models emerge. It is clear that there are multiple modalities and each one of them serving different purposes with different strategic implications. Most consultants as well as activity within the industry is in Business to Business (B2B) models as well as working with content aggregators and intermediaries. Of the three major companies who are leading these efforts, Eastman Chemical Company, Du Pont, and Dow Chemical have also initiated their direct "electronic store front services" i.e. directly allowing customers to interface with the company via the Internet. As such some companies are creating communities between two companies called "extra-nets" In these communities supplier and customer have a secure space where significant "sensitive data, corporate information and collaboration can exist without physically being present."

7.3 The positive and negative impacts of the emerging e-Commerce models on shareholder value creation.

From Organizational Change literature one learns that structures are enabling as well as constraining, and that any change that takes place will enable different things and yet still constrain some others. Likewise, along those terms one can think of the emerging e-Commerce Business models as enabling as well as constraining.

Going back to the report from Salomon Smith Barney as well as numerous articles in the literature the largest possible negative impact is that the new models could tend to further commoditize the chemical industry. If lowering procurement costs is an option for the chemical industry, the firm's customers could expect the same benefit. The report believes that if total current spot purchases are equivalent to 5% of the total, e-commerce could drive that to about 15%. There are also the trends of thought that believe that instead of removing cyclicality, the opposite will occur, specially in times of over supply, i.e. the amplitude of the cycle will be stronger. Furthermore there are those that believe that the rises and drops in prices will occur dramatically faster, given the ubiquitous nature of pricing information. There are those that believe that customers could become faceless and nameless (especially in the auction space) and hence the product centric business models will be furthermore accentuated. Undoubtedly there are possible other negative reasons that will require careful navigation through uncharted waters.

Nevertheless, there are multiple positive aspects of such developments, and given the force of the current, one might want to develop a deep understanding of the enabling possibilities. The areas this paper focuses on are the impact on Total Customer Solutions, Business Innovation, and Learning-Growth-Experimentation practices.

7.3.1 Reviewing the Total Customer Solutions concept of the Delta Model, where the business model is in developing a total understanding of the customer, driven by enhancing the customer economics, because of the enabling e-commerce technology, the firm has much greater possibilities of accomplishing such goals. The possibilities to create collaborative teams to work on solving problems, enhancing product innovation and understanding the value chain economics are certainly there without expending significant resources, i.e. virtual product development teams. Data can be safely exchanged, supplier assisted inventories easily monitored, information made available on an as needed, or self serve basis. "We now have a unique possibility to completely blur the fence line between the customer and ourselves, creating a competitor lock-out scenario." "We now have a unique way of addressing technical customer problems that we did not have before." Given that many customers have not yet stepped into this space, those companies that have a true advantage and knowledge can generate significant improvements in the overall value chain economics. E-commerce will allow Sales and Marketing Representatives to spend the right quality time with their customers where routine information is managed electronically. Finally, the firm can communicate and serve small niche customers in remote areas without significant expenses.

7.3.2 Business Innovation is another area that can benefit from the emerging trends. Adrian Slywotzky in a recent Fast Company's issue described the evolution of business innovation. In the 1990's the question was "what business are you in?" followed by "what is your business model?" The question today is "how digital is your company?"
He goes on to say that "the question derives from Nicholas Negroponte's insight that the fundamental distinction in the new economy is between atoms and bits: What work do you do that involves atoms - whether paper and pencil, people, or other tangible assets? And what work do you do that involves bits - whether email, e-commerce, e-communication, or e-manufacturing? But this is not a question only about the e-hype of

the moment. Neither is it about launching a Web site, nor is it about e-commerce. It is not, in short, a matter of embracing technology just for technology's sake."
However it is about redefining what issues are fundamental to your business in the new economy and what are ways to most effectively manage them. The article goes on to describe the incredible and cumbersome work that it took in the past to find information about the firm's strategic customers and the hit and miss of information mismatch. Today, in the digital age, the firm is able to instantly analyze the customer's behaviors and patterns.
Forced by the new and emerging trends, business managers have a unique opportunity to revisit their business models from different angles. Do they have the right segmentation? Do they have the right service offering that will drive Total Customer Solutions? What information is proprietary to the firm alone about the customer (vs. the distributor, competitor) or is needed to better serve the customer? And can this information be made available or gained in an electronic way? Recently Jack Welsh directed his business managers to revisit their strategies with the mindset of creating competitive e-business strategies to their traditional businesses (destroy your own business). Certainly this will drive a new generation of business thinking. Likewise, the digital world can allow business managers to concentrate on the essential, value creating issues that are the essence of their business and decentralize activities or decisions that are best made elsewhere.

7.33 Learning-Growth-Experimentation. These are essential elements of any successful business strategy. As a matter of fact they are at the heart of the Delta Model. Today, with a computer and access to the Internet (Intranet, Extranet) business people have an open window to the world. It could actually be said that one has information overload and not enough time to read it all. Nevertheless, the opportunity to learn about customers, competitors, complementors, geographies, political environments, etc has never been so great as well as instantaneous. Companies are finding out about suppliers that never new existed before. Likewise they can learn about technologies or centers of excellence that were unknown. The possibility to enhance learning because of the Internet is enormous. A recent example is of a company that is creating an extensive catalog on plastic material

applications for the automotive industry that allows molders to solve technical problems as they come up, real time, just by simply having the catalog on line available to operators. To learn about one's customers as well as competitors financial conditions has never been easier. An earlier article describes how smaller companies see this as leveling the playing field and as a means to allow them access to markets and growth. Finally, the results of experimentation will be essential. Earlier business models strictly concentrated on how to defeat a competitor, "strategy as war." New and emerging business models, driven by e-commerce are defining new ways to create shareholder value. They are based on building meaningful and strategic relationships/alliances where the outcomes are not clear and the synergies of the alliance yet to be determined. Many of these models are based on specific capabilities and are fostered/managed via electronic means. These sense and response models based on adaptive processes mainly succeed because of the opportunity to experiment and learn how they can meet customer needs.

7.4 Eastman Chemical Company and its strategy to become a leader in this space.

Eastman's current and future involvement in Internet activities is currently guided by the following foundational principles:

- Singularly focused on creating customer centric solutions
- Aggressive investment in technologies/capabilities that bring real value to customers
- Build "eBrand" - attracts customers, suppliers & technology partners
- Leverage intellectual capital, industry knowledge, network of contacts, credibility,
- Partnerships are required - we cannot do it alone
- "Outside-in" approach to development vs. "inside-out" - externally focused
- Hold a portfolio of options!
- Experimentation, experimentation, experimentation!
- Speed is fundamental to success!
- Lead the industry

With these principles in mind, Eastman is approaching its strategic involvement in four specific areas:

1) Building direct customer access to Eastman via www.eastman.com. Eastman.com allows current and new customers to directly interface with the company in various

ways, starting from the inquiry phase, technical aspects of Eastman products to direct transactional opportunities. The objective is to make it easy to conduct business with Eastman.

2) Developing its Integrated Direct Channel, which allows corporate networks to process electronic data without the human interface. The objective here is to reduce transaction inefficiencies and lower transactional costs.
3) Participate in digital ventures that could create industry solution standards, improve integrated direct channel technology, or improve Eastman's direct electronic interface with its customers. This particular involvement deals with continuously scanning the horizon for emerging trends and application technologies in order to maximize Eastman's position in that space.
4) At the base of the above three areas is the creation of a web-enabled Eastman culture. This area specifically deals with how to transform business practices and processes into digital or electronic processes.

Eastman managers state that several Key Strategic Customers (KCP's) are currently participating in developing these new business models. "Driven by creating customer solutions, we see numerous opportunities to achieve enhanced customer service and loyalty via electronic means."

When asked how many of the 28 eight Business Unit Managers are on board and how if any are these processes being incorporated into or part of business strategies, the answer is that significant awareness has been and is being created. "We continuously strive to help managers understand the potential impact of the emerging trends, and of course we have several businesses that are very involved in our processes via their Key Customers." "We also still have significant skepticism around." Indeed given the current reduction in labor force and resources across the company this is one of the units that increased in resources. "Many people feel this is another fad and that we have license to do whatever we want, and that is not the case. Our main vision is to create value for Eastman driven by creating solutions for our customers."" Likewise though, this is another world and it is not business as usual. New and emerging trends appear every day, new competitive models threaten our businesses in ways that we today cannot yet understand and if we are

not involved in trying to assess their potential impact, followers may not have a chance to catch up."

Interestingly the involvement in these ventures is also forcing the transformation of corporate strategy processes. In the past, it could take several months up to years to decide Eastman's involvement, partnering, or in the creation of a strategic alliance. "Now these companies realize that speed is a competitive advantage and we are being asked to make significant decisions in 30 days or less." "This is forcing our team members to be more nimble, to take decisions in non traditional ways, and perhaps we always took to long to make decisions."

Finally when reviewing the e-initiative with the CEO he stated" Our current costs by being involved have more than paid for themselves. As a matter of fact, a Board of Directors member approached me to sell our position in some of these ventures. My reply was that we are in them to learn. To see how these will impact our current business models, and how we can improve them. Two years ago I was not so sure about the direction of some of these initiatives, but now it is clear that they are part of our reality. Our main purpose is to understand how we can incorporate them into our business models, how to stir the creativity in our business managers and participate in the change." "Yes, we are concerned about the possible negative impacts, such as the further commoditization of some products. But the market will continue to drive out inefficiencies in the system. It is our job to build the most effective processes in order to deliver products and solutions to our customers. In the process, we believe that by our e-initiatives, we can enhance shareholder value creation."

7.5 Conclusion

Reviewing the center page of Chemical Week's February 2nd magazine is a clear indication that most chemical companies are now directly involved in building their e-business models. Over 100+ companies have corporate web-sites that offer various capabilities ranging from corporate information to allowing direct electronic interface with its customers.

Furthermore there are currently two broad emerging e-business models. The first one called "vertical models" driven by domain expertise, i.e. create a business design based

on the business expertise within a certain market, market segment, or sets of customers. The second model called "horizontal models" based on functional expertise, such procurement, logistics, and asset management. The momentum on e-business transactions along both models is clearly increasing. A recent poll shows that American business people spent over 21 hours surfing the web during the month of January. The main areas visited were: Company Corporate Information (60%), Financial Information (30%) and Travel (10%). Clearly corporate cultures are changing and the way people conduct business is also possibly changing. The fundamental advantage will be if all of this activity allows a company to better serve its strategic customers. Furthermore it forces managers to revisit their current business models, their strategies for creating value, and an unprecedented opportunity to fundamentally redesign their business approach. If well managed, it can allow for ubiquitous information that creates a more effective decision making process, where information is available to key decision-makers, regardless of their physical location. It can also allow for further decentralization and empowerment of the workforce.

E-initiatives also allow firms to experiment, learn, and possibly create unprecedented or unlikely alliances that indeed will create lasting customer solutions. E-business has the possibility of "blurring" the barriers between suppliers and customers like no other means.

Likewise as previously discussed, there are some negative implications such as e-business becoming another fad, commoditizing businesses that otherwise were specialties. But more importantly, that the potential e-business ventures not be efficiently translated/migrated into the corporate culture and business plans, and or customers not follow the same trends which could create a significant disconnect.

Regardless of the outcome the current business learning curve will certainly ramp up.

CHAPTER 8 PATH FORWARD AND RECOMMENDATIONS

In 1994 the U.S Chemical Industry, at the request of the White House office of Science and Technology Policy began a study on the factors affecting competitiveness in a rapidly changing business environment. Therefore they set out to develop a vision for the 21 Century. A complete version of that document can be found in the Technology Vision 2020: The U.S. Chemical Industry report. The work mainly focused on R&D capabilities directly linking it to growth and competitive advantage. The report identified five major "strategic thrusts" the industry is or will face and these are called Industry Challenges. These challenges call for increasing:

- Globalization of markets,
- Societal demands for higher environmental performance,
- Financial market demands for increased profitability and capital productivity,
- Higher customer expectations, and
- Changing work force requirements.

The manifesto that came out of that forum stated the following:

"We believe the chemical industry in the United States must confront these new market pressures head-on. With the goal of creating a technology "roadmap" for the chemical industry to follow, we examined the technical disciplines of new chemical science and engineering technology, supply chain technology, information systems, and manufacturing and operations. From our assessment of the industry's needs in these areas, we determined that the chemical industry must accomplish five broad goals over the next 25 years. It must:

- improve operations, with a focus on better management of the supply chain;
- improve efficiency in the use of raw materials, the reuse of recycled materials, and the generation and use of energy;
- continue to play a leadership role in balancing environmental and economic considerations;
- aggressively commit to longer term investment in R&D; and

- balance investments in technology by leveraging the capabilities of government, academe, and the chemical industry as a whole through targeted collaborative efforts in R&D.

The report then proposes a roadmap and a broad-action plan for achieving those goals. At a firm level in the year 2000, those stated challenges still hold, with two additional ones

- Significant activity in Mergers and Acquisitions changing the competitive landscape
- Continuous business innovation primarily driven by the advent of the internet

With the previous seven chapters in mind and a vision for the chemical industry that directionally projects a future strategic course, the next task of this thesis is to propose at a firm level Corporate Strategy. Such strategy would state a vision, which should define the firm's strategic posture, a mission that incorporates current and future scope of offerings, including the challenges ahead in developing those offering capabilities. The result of such should be the firm' strategic agenda which incorporates major strategic thrusts. It is also obvious that such task is not a "one person" task, hence my reluctance to engage in such work alone. "Not one person holds the answer but collectively, based on our diverse expertise, background and experience, we can create a product that could serve the firm as a possible guiding document."

After many weeks of dialog with my advisor we agreed that what could be appropriate is to directionally attempt to propose a future methodology for developing or revisiting Eastman's future corporate strategy. Given that the concepts of the Delta Model are "relatively new" I personally feel compelled to directionally discuss the model in context of a possible future Eastman Corporate Strategy revision. I sincerely hope that the readers of this thesis will clearly understand that I do not feel I have such broad knowledge of the firm as to attempt such task on my own. Nevertheless I see it as a unique opportunity to learn and apply something profound in a "safe" academic environment which is after all what attending MIT is all about.

Defining the Strategic Positioning or Vision

Based on the Delta Model, firms have three distinct choices for competing or creating shareholder value: Best Product, Total Customer Solutions or Systems Lock-In. From our previous discussions we know that firms continuously reinvent their business models, their business propositions as well as the visions of their companies. Eastman's current strategic position or vision of **"To Be the World's Preferred Chemical Company"** can be interpreted in many different ways and may not create or elicit a clear picture in people's minds. Based on recent interviews, many employees actually question such vision and often ask "what kind of company will we be when we grow up?" The above vision has at times been understood as meaning "To Be our Customer's preferred Chemical Company around the world " and also "To Be Investor's World Preferred Chemical Company". In a recent class with Peter Senge and Wanda Olikowski our class had an experiential opportunity to understand the importance of vision. The significant lesson of such experience was that vision is actionable if we can hold the image of the vision clearly in our minds. Such vision has to be something meaningful to every one that is involved with it. The Delta Model's imperative is to directly square the firm's strategic posture within one of the three above mentioned choices, hence the vision could contain words such as "Best Product, Total Customer Solutions or Systems Lock-In (could use another word such as industry standard)." As such a potential vision or strategic posture could be (and please remember that there are countless ways to state such posture):
" To Be the World's Preferred Total Customer Solutions Chemical Company."
The company could then articulate in very specific ways the various dimensions of the Delta Model and align the company's resources with such vision.

For example:

- **Focus**: The overall focus of the firm and its resources is centered on the firm, its customers, and its suppliers, i.e. the entire value chain. The centrality of such effort is to create or propose unprecedented solutions for the firm's customers, which can only be achieved by having a complete knowledge of the entire value chain, from suppliers to our customer's customers.

- **Value Proposition**: By having such deep understanding of our customers, the value proposition then becomes how do we enhance our customer's economics and as such create and capture greater value for the firm. Our value becomes and is intrinsically embedded in solving customer problems, allowing them to focus their resources on their core competencies. Recent e-commerce workshops clearly demonstrate that if we do not remove inefficiencies within the system, someone else will because they will indeed create greater customer value.

- **The Scope**: In this case the scope of such strategic posture is largely corporate driven vs. seen from a particular business unit. While I understand that certain business units are highly product centric or technology platform centric, I still believe that by proposing an overall Corporate Total Customer Solutions scope, we encourage even product driven units (functional and business) to think how to solve customer problems.

- **Manufacturing Role**: As our firm changes from a product centric to customer centric culture, we clearly must also identify the role of manufacturing. Therefore wherever possible, customization becomes the norm vs. mass production. Removing inefficiencies within the system, improving operational effectiveness should be fundamental drivers, specifically when they are customer focused. An additional customer centric role that manufacturing could play is by understanding the customer's processes, their core competencies and indeed assist or manage for those customers certain functions or areas where we would consider to have stronger expertise.

  Likewise we clearly have seen that asset intensity is an issue for the industry as well as for Eastman. Hence a careful transition between asset intensive business designs and knowledge or solutions based designs will have to be developed. Haeckel in his Adaptive Enterprises book proposes intermediate steps where firms create market solutions applicable to various customers and ultimately create the offering customized by a last resource module.

- **Technology Role**: Seen as a major industry strategic thrust on shareholder value creation, Eastman since its inception developed five major technology platforms, acetyls, olefin, organic chemicals, polyesters and epoxy-butyne. As a Total Customer Solutions company, the role of technology should be interpreted as understanding or anticipating what customer's technology needs are and will be. Hence technology developments/improvements efforts should be energized or discovered with customers in mind or even jointly involving customers. "Shareholders are no longer willing to wait for "frontier and exploratory technologies" that take too long to create value." Hence it would appear that significant portion of technology innovation is expected in product or material applications, which would infer the need to be close to our customers.

- **IT Role:** IT clearly plays a critical role in helping the firm link to customers in various ways. I often have spoken of an "information pipeline" that allows each and every employee to understand the various aspects of how Eastman is creating value for its customers. I believe the main challenge before us is to transform the organization into a web enabled enterprise, where information about our customers is ubiquitous. The second challenge and actual necessity is to embark on this journey together with our key customers. It will not help us to have the most advanced IT technology processes or hardware/software if our customers can't benefit from our improved standards. A final vision of this dimension is that "the information pipeline" is ubiquitous across the entire value chain, from our suppliers to our customer and hence each contributor or player is able to work on their respective value delivery propositions.

- **Sales Role:** Given our vision of being the preferred Solutions Company, we need to understand our customers from a total systems point of view. Typical sales organizational initiatives centered on volume, i.e. tank cars, rail cars, full containers. The focus of a customer centric organization would be on determining how our products, services or solutions create value for our customers. Instead of remaining at a transactional level, our salespeople would have to understand the underlying

customer economics, the total opportunities available to Eastman. Then we need to understand what skills, knowledge, resource or assets it will take to interact with the customer. The value proposition for both parties has to be clear.

- **Complementor Role:** To become a Total Solutions Company will require forging partnerships both from a vertical as well as horizontal perspective. "No one can go alone" down the solutions pathway. Hence what is important to directionally understand is how these partnerships or complementors create greater value. Coupled to our IT capabilities with strong complimenting alliances our goal should be to create an unmatchable customer-supplier experience. Managing various alliances does become the imperative as well as the challenge

- **Geographic Role:** Eastman's businesses continue to become more global. Recent acquisitions have brought in additional assets located outside the US. Some of the main challenges from a Total Customer Solutions perspective could be to provide the same level of service, experience, and activity scope to international subsidiaries of our key customers. We also should leverage our current geographic infrastructure on identifying possible international alliances that could enhance our total solutions capabilities. This could mean buying and selling locally to satisfy our key customer's needs. From a strategic perspective we should clearly identify strategic geographic areas and develop specific growth strategies for those areas.

There are many more functions or issues that would need to be evaluated as part of a comprehensive strategic agenda.

Continuing with this exercise, the next step is to revisit the firm's Mission, which should incorporate the proposed transformation of the company.
Here is the current vision and mission for Eastman as stated in Eastman's Strategic Intent document:

To Be the World's preferred Chemical Company (vision)

By

Creating Superior Value (mission)

For

Customers, Employees, Investors, Suppliers and Publics

Driven By

Quality Policy, The Eastman Way, Responsible Care

Focusing on

Exceeding Customers expectations

While achieving our Major Improvement Opportunities (strategic thrusts)

Aggressive Global Growth, Process Cycle Time Reduction, Resource Effectiveness

Here is what the future vision and mission of the firm might say:

To Be the World's preferred Total Customer Solutions Chemical Company (vision)

By

Creating Superior Value (mission)

For

Customers, Employees, Investors, Suppliers and Publics (stakeholders)

Driven By

Quality Policy, The Eastman Way, Responsible Care (culture)

Focusing on

Exceeding Customers expectations (focus)

The Strategic Thrusts that will create superior value are:

Having a complete understanding of our targeted customers, our capabilities, and our suppliers, i.e. the value chain, and our commitment of removing inefficiencies out of the process. Through this knowledge and in conjunction with strategic alliances and partnerships designed to either broaden our horizontal or vertical capabilities, we will effectively deliver custom solutions to our strategic customers focused on enhancing their economics. These solutions will be technical, logistical, transactional, IT, manufacturing, geographic, health and safety, materials development and or material application in

nature. Our technological innovation will include customers and alliances, focused on delivering future custom and market solutions. Our value proposition is to be the industry's leader in developing these solutions where our customers as well as our enterprise benefit from the value of such capabilities. Based on renewed business innovation principles, we will participate in the new economy, fully utilizing our domain knowledge, our solutions knowledge, our customer relationships and our suppliers partnerships, creating where appropriate, renewed sustainable business models. Because of our solutions capabilities we will continuously maintain direct and intimate contact with our customers. This will allow us to retain strategic customers as well as attract new customers. Our benchmark of success will be our customer's success as well as our stakeholders enhanced value. The synergies of these relationships between our suppliers, customers, and alliances will result in Eastman's superior long-term growth.

Our challenges will be to:

- Segment our customers in such a way that we can uniquely create value by serving them from a Total Solutions point of view
- Better understand the value chain needs and economics
- Continue to pursue operational excellence
- Remove possible current inefficiencies out of processes fast enough
- Demonstrate our capabilities on delivering customer solutions
- Capture part of the "customer solutions" value of for our firm's owners
- Capture the value of the "old economy" and incorporate it into the "new economy"
- Understand the potential of new emerging business models and the transformation of our company as well of our customers along these new models
- Define the parameters of renewed business innovation principles
- Participate in value creating acquisitions that enhance our capabilities of delivering customer solutions
- Create the right partnerships and alliances and manage complex relationships
- Not allow competitive new economy models to disintermediate our current customer relationships
- Encourage the change in mindset from being product centric to customer centric

- Discern what portion of our transactions should be bits and what atoms, i.e. the transformation of the firm to a web enabled enterprise where appropriate, as well as growing current firm's core competencies
- Implement the solutions concept on a world wide basis
- Experiment. Defining how, when, benefits of and magnitude of experimentation. Without scalable experimentation it could be difficult to understand available opportunities
- Develop the right metrics that measure value creation, customer economics growth, knowledge management revenue and solutions revenues

It is worthwhile to mention that many of the original words in the company's strategic intent document are very powerful words. Notice that I only added three words to the vision, and then left everything intact until revisiting the firms strategic thrust. While the change in words is subtle, from my perspective they more clearly describe the strategic positioning of the firm. The focus of the strategic intent document of exceeding customer expectations is now squarely aligned with the vision of becoming a solutions company. I am convinced that in the new economy, customer relationships, customer intimacy and knowledge of customer economics will continue to be key business drivers, hence the specificity of the strategic thrusts. Adrian Slywotzky, in his latest book Profit Patterns when discussing Customer Solutions, he refers to that subject as the single most powerful mindset. He goes on to say "that we are all trained to be product centric thinkers. The magic was in the product. We built entire systems to manufacture the product efficiently and distribute efficiently. The magnitude of the abyss between the product world and the solutions world is huge in many industries. Just as suppliers have been trained to be product centric on the supply side, customers have been trained to be product centric on the demand side. The mindset on both sides of the equation seems to have conspired to do what was the least valuable for seller and buyer alike. Mindset obstacles notwithstanding, the solutions pattern will be triggered repeatedly in the next few years because its economic effects are powerful and customers will focus on the few things they do best."

The challenges are numerous, the vision is a stretch, but based on our culture and the immensely capable people in our company I am certain that it is achievable.

The next step in this process is to translate the vision, mission, and strategic thrusts into strategy and action.

There are various ways of approaching such task. A complete model for approaching and developing it is shown in figure 8.1 called the Firm's ten tasks. Keep in mind that the firm has already chosen how it will compete, i.e. the Delta Model Strategic Positioning.

Hax and Majluf extensively discuss the corporate model of figure 8.1 in "The Strategy Concept and Process" book. Given that this is a significant task, I briefly review the model vs. developing or proposing a complete corporate strategy.

With the firm as the central focus the first step is to go through a corporate environmental scan review as shown in Figure 8.1. In a sense this is applying Porter's five forces analysis at a corporate level. The output of such analysis would yield the identification of major opportunities and threats. Next the process calls for an internal assessment of the firm's vision, mission, segmentation, etc, i.e. the firm's internal core capabilities. The purpose of such process is to determine the firm's weaknesses and strengths.

Putting those two steps together we get the strategic thrusts of the corporation, (which I already defined as part of the new strategic intent document). These are the opportunities and threats, the strengths and weakness of the firm and how the firm will move forward. In addition to the ones I mentioned, Eastman further defined as part of its focus business opportunities into three main categories: Aggressive Growth, Maintain Strategic Position, and Run for Cash-flow generation. These are clear classifications that denote the amount of resources that will utilized by the corporation or a particular business unit.

The next step in the process calls for defining (aligning) the primary action oriented issues (strategic thrusts) in order to achieve a long-term sustainable competitive advantage. This strategic agenda should include:

- Formulation and implementation of strategic programs addressing each strategic thrust including specific planning challenges, assignment of responsibilities at the corporate, business, and functional levels.
- Relevant measurements of performance. Identification of appropriate indicators to monitor the operational and strategic results associated with each thrust.

An example of one strategic thrust previously discussed is the development of new economy business models by each business. Corporate defines the scope or parameters of reach. Business units develop potential plans and models. Functional units define ways to contribute based on value chain activities. Prescribed metrics could be: the removal of inefficiencies from the process, numbers of unique solutions created, number of alliances with complementors or partners, business growth, customer economics share captured, value creation for the company, etc.

Most often execution of strategy is not the problem, what seems to be the problem is the alignment of key adaptive process to the chosen strategy. But before developing the strategic agenda for the adaptive process we must finally define what do we mean by value proposition.

Defining the Unique Customer Value Proposition: "What do we mean by unique? Unique Value Proposition is the unique component(s) of the firm's offering to the customer that impacts their profitability in a significant way and is not easily replicable by competitors, at least for some period of time. It also is defined as a simple, clear, internal statement of: its target customers, key benefits (desirable end-results, solutions) offered to them, the price that is asked, a particular choice the firm has made on how to serve a particular customer.

How does one define value? "Value" in business markets is the worth in monetary terms (dollars per unit) of the technical, economic, service and social benefits a customer company receives in exchange for the price it pays for a market offering.

A "proposition" is a specific set of experiences offered to a customer or potential customer in return for buying into a relationship with an organization. Any proposition offered which has perceived customer value is a Value Proposition.
I believe that Eastman has various ways of creating value, ranging from technical product application solutions, to possibly accepting customer's undesired by- products and recycling them back into the chemical streams. The critical match-up is to understand what customers value and how can Eastman deliver those needs with the full understanding of how it will impact the customer's economic equation. Likewise critically important is to understand how Eastman will capture some of that value.

Based on the Delta Model the strategic agenda for the adaptive processes could be as follows:
Customer Segmentation or Customer Targeting as previously discussed in chapter two, is probably one of the most critical steps in strategy design. In this context the literature states that competitive advantage is ultimately created at the segment level. Eastman's initial segmentation process defined segments as a group of customers that value similar things, have similar product/service needs. They were homogenous with respect to key buying criteria, buying process and competitive environment. Recent efforts to better understand how we should interact with our customers created a different segmentation. The main criterion now is to segment customers based on perceived value: Solution Driven, Influencers, Logistics Intensive, and Product driven. This lead to the creation of three distinct channels: The first one is defined as Custom Corporate, Custom Direct, and Custom Market Development. The second channel is defined as Standard Direct, Inside Sales and Self Service, with the third one Sales through Distributors. Key Customers are managed within the first channel.
From the Total Customer Solutions perspective I believe that this is still the right segmentation. My only concerns are that it should be carefully applied ensuring that the new segmentation is indeed systematically applied across all businesses and regions. In addition I could offer other possible forms of segmentation. Depending on our renewed understanding of the entire value chain and its economic value an additional segmentation criteria of customers could arise, for example, customers with whom we

have a complete link from suppliers to customer's customers. This could be accomplished via an extra-net environment. Also new economy business models are currently creating new forms of segmentation, i.e. access to customers via vertical nets, horizontal nets, etc. As time goes on it probably is worthwhile to experiment with various models and segmentations to truly uncover how Eastman could create greater value.

Operational effectiveness: Addressing operational effectiveness from the Total Customer Solutions perspective, Eastman will need to understand how our processes improve our customer's economics and or remove inefficiencies out of the system. Operational effectiveness could mean matching skill sets of people to solving particular customer problems. Haeckel in his Adaptive Processes book discusses various ways of developing a sense and respond organization that could include modular capabilities to deliver customer solutions. But fundamentally he argues that a sense and respond company focused on its customers stands ready to bring the capabilities of the firm together needed to meet the customers problems or requests. We could organize certain groups based on their core capabilities and use their skills in modular forms. Equally important is to understand which capabilities we will own because they are value creating and which ones we will outsource. Outsourcing can create a problem, which is with how many outsourcing units can the modular units work with? One could also substitute alliances or partners for outsourcing and hence with how many alliances could these modules work? "It is often the case that management has a deep desire to change to organization to a customer centric organization but the company does not change in any fundamental way." Hence changing the operations area could be a difficult area given that it involves most of the resources and functional operations of the firm.

Innovation: The role of innovation from the Total Customer Solutions perspective has already been discussed. At this step we would mainly want to ensure that Innovation which takes on various forms, process, technology and business innovation be aligned with the corporate strategic posture.

Developing the remaining functional strategies: It is obvious that a firm has many enabling functions that allow the firm to create and deliver its value proposition. Areas such as Finance, Human Resources, Legal, Corporate Communications play a critical role in an enterprise. The next step in the process would be to ensure that each function, based on the model in figure 8.1 develop its own supporting strategy to the overall corporate strategy. As an example, today we see the area in finance enhancing business unit manager's capabilities on understanding the various financial options they have to solve their problems. Clearly there is a customer solutions component in their strategy as well. An example where the finance area enhanced the value proposition has been in the case of bridging our international customer's financial needs with contacts and resources we developed in the industry. On the HR side a critical issue is the development of business leaders. Our employees will need to understand how their jobs contribute to the overall success of the enterprise. That creates a responsibility in management to help employees find and define such value. New business models will require new skill sets, new training, new perspectives, and I believe it is HR's role to define the strategic agenda for ensuring that these resources will be available to the firm in order to execute its plans.

The development of relevant metrics: The rewards of successful business designs are not only measured in financial terms, although they are probably the most important metrics. A Company should develop metrics that allows it to understand the health of its customer relationships, the economic growth of its customers and the relative growth of the firm in relationship to that customer. Another relevant metric could be to measure how many market value or customer value chains we have analyzed and understood. Are they available in a way that they could be shared across businesses and the knowledge leveraged across the firm? Can we see and capture value by removing the inefficiencies in the chain? It is important to state that too many measures can be quite confusing, and measures at an aggregate level not strong enough to help a businessperson understand that he or she may have a problem. Hence it is important to have the right amount of measures but also that these metrics be granular metrics. For example at an aggregate business key strategic customers could be growing, but one may not realize that two of your lead innovators are not growing, or that a particular geographic location of your

corporate accounts is loosing corporate account sales to a competitor. A more specific example is the analysis I conducted in chapter four. Most managers that have seen the financial benchmarking of Eastman vs. the composite have seen the charts on an aggregate fashion. Basically those charts show top quartile, average and Eastman's relative position. They serve a purpose as such but by decomposing those charts into specific players, I learned how Rohm and Haas by redefining its strategy created higher market value. I was also able to see how each company moves along each measure and may be able to match specific actions a firm may have taken and the relative impact of such action. Hence defining and developing the right amount of measures and granularity is important.

Experimentation and Feedback: Finally any strategic process requires certain amount of experimentation and continuous feedback. It is stated that most future wealth will not be created by natural resources, countries, or hard assets, but by knowledge intensive business designs. Most current strategy processes are not well suited for experimentation, feedback, and back to experimentation. I would even go one step further as to say that in some instances we even do not think along multiple business options. Is that because of our previous product centric and inward centric approach to business or that the nature of our business is largely product transaction business vs. highly specialized? Do we have the right flexibility to experiment, learn and reapply what we have learned at Internet speeds? (Perhaps that is somewhat exaggerated but speed in decision making could be an issue). I believe that experimentation is a core competence we need in order to survive in the new economy.

In reference to feedback systems I do believe that we have strong feedback mechanisms, especially when it comes to customer feedback. From a context of a Total Customer Solutions perspective these will serve us well.

Conclusion:

It is obvious that an overall corporate strategy process is extremely time consuming, a task for many people who hold various forms of expertise. As stated originally this chapter is offered as a possible way of thinking how we might address future corporate

strategy from a customer centric view and as such should be viewed as a "working" or evolving document. This chapter could be reviewed in context of Eastman's current strategy process and its merit assessed based on such context. From my perspective the main benefits of utilizing this process are:

- The initial definition of the firms strategic posture
- The use of both the five force analysis methodology and the resource view of the enterprise.
- Clearly articulating strategic thrusts that permeate the organization and further clarify the importance of each linking them to specific people, organizations, and or functions.
- It aligns the adaptive process to strategy; i.e. ensures consistency of strategy and action.
- It requires that supporting functions also elaborate a strategy in order to support the corporate strategic thrusts as well as businesses plans.
- It calls for metrics that are not only financial in nature but also help the company understand the overall health of suppliers, customers and the enterprise as well.
- It calls for the right granularity of metrics.
- It calls for continuous experimentation and feedback, creating a sense and respond organization. Judgement, flexibility, and agility become the norm.
- These particular steps inject strategy with the energy to make them alive and iterative vs. sitting on a shelf and collecting dust.

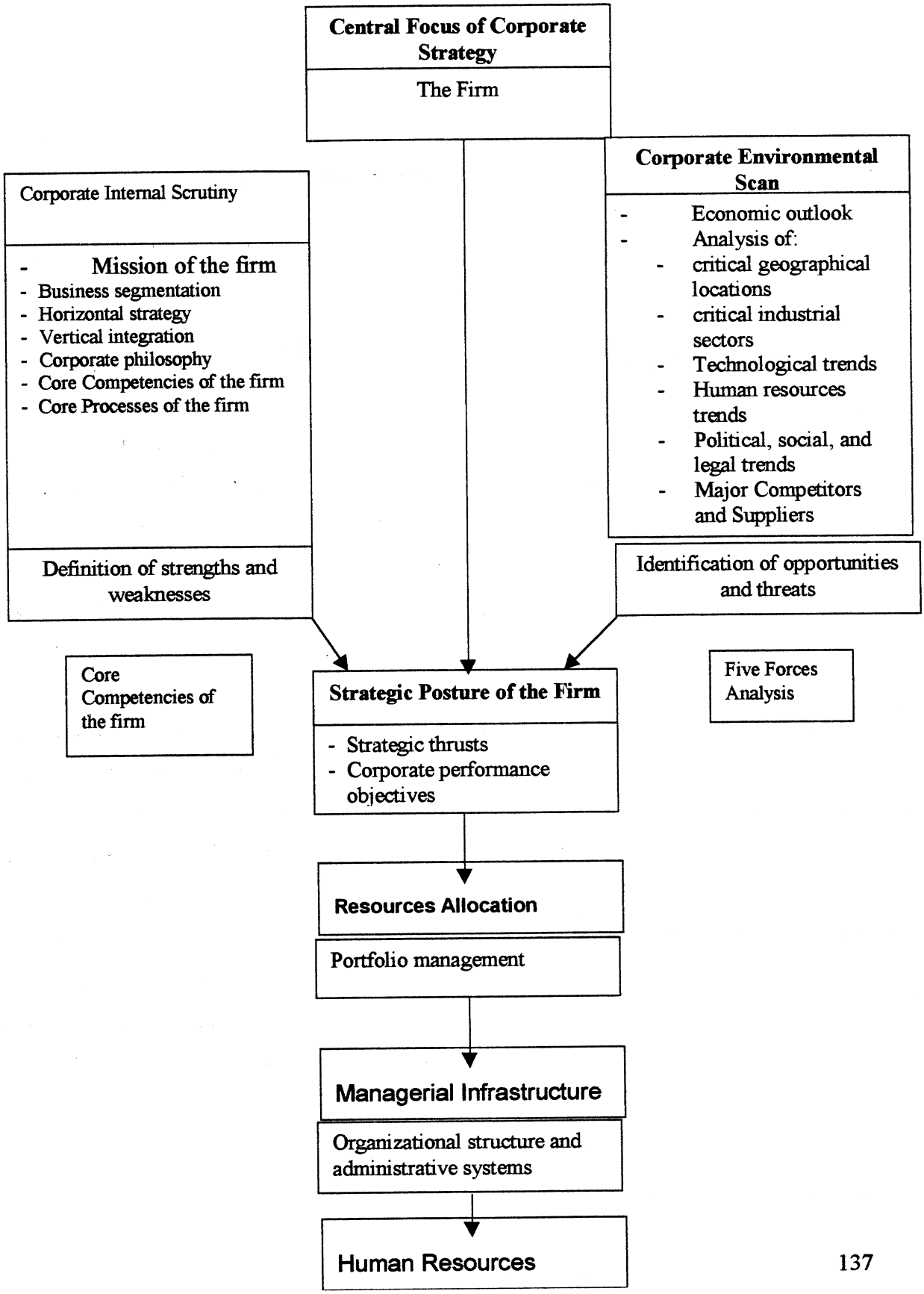
Strategy is a dynamic process. Such continuous evolving change leads me to the conclude that most new economy business models think in terms of "flow" vs. "stock." I would define "flow" as the ability of a corporation or business to continuously be prepared to refine its path vs. structural rigidity, which I would define as "stock." As such corporations have to continuously test the validity of their models and if they are not in a value inflow mode, then it may well warrant to revisit the strategy, the model, the value proposition and or the strategic posture of the firm.

This leads me to my final thoughts of this thesis, which acknowledges that strategy is composed of processes, of frameworks. However from my perspective what is equally important is the richness of ideas that fill those frameworks. As such I would like to conclude my thesis with a personal model, one that defines my actions, my thinking, and my energy. The concept evolved in my mind throughout the year and finally during a class with Professor Meyers, I was able to more clearly articulate what was in mind.

VALUE CREATION = ENGINE (PROCESSES, STRUCTURES) + **FUEL** (HUMAN CAPITAL, CREATIVITY, INNOVATION, DIGNITY AND SELF WORTH)

Both sides of the equation are totally dependent. But more importantly while a firm could have the best processes, the best means for developing strategy and measuring progress, if they do not have the fuel to run such exquisite engines, then the model falls apart. There is no value creation. Likewise we see brilliant people with incredible innovative ideas not really making it, perhaps because of the lack of a suitable structure. Since the first seven chapters of this thesis mainly dealt with the processes, structure and metrics and not really with the "fuel" side of the equation I feet that this thesis would be incomplete without offering some personal perspectives on the Human Capital side of the equation.

DEFINITION OF THE CORPORATE STRATEGY Figure 8.1



CHAPTER 9 HUMAN CAPITAL

"What do you need to be the best? Concentration. Discipline. A dream"
Florence Griffith Joyner

"Business people go down with their businesses because the like the old way so well they cannot bring themselves to change.....Seldom does the cobbler take up with a new fangled way of soling shoes and seldom does the artisan willingly take up with new methods in his trade" Henry Ford

"Aun Aprendo" Goya

So what do these three quotes have to do when it comes to better understanding Human Capital, the fuel that creates value? The first quote deals with Florence's perception of value. The value of being the best. Is that the only reality of value? Is that also someone else's possible measure of value? Either way, the understanding or perception of value starts with a dream, a vision. So the journey of a human being (enterprise) starts with a dream, with a vision. Concentration and discipline probably carry with them certain strategies, certain processes, and certain structures. You can't wish concentration and you cannot achieve concentration without a disciplined process that teaches you how to concentrate. Many of them could be mental processes, but at some point, physical structures come also into play. But let's go back to the dream.

Athletes often talk about performing within the "zone." Their motions become effortless, the energy they expand seems minimal, and barriers seemed removed. They are oblivious to the outside, their focus squarely placed on their vision, their dreams, and their goals. Being in the zone means no self-doubt, no prejudgment of ideas. It means that all your thoughts are in terms of flow vs. stock (they are in continuous motion vs. only thinking about the score). They seem to be able to change perception into a new reality based on the possibilities they see, and so what is it that they see? How do they actually hold that vision? There are many answers to those questions but fundamentally it is my opinion that they believe. They believe in their vision, they believe in their capabilities, in their

team's capabilities, they believe that the unreachable is reachable, and we are witnesses of the results of such beliefs. Through their belief they are able to hold on to the vision, to the dream and perhaps convince us that they are possible. At the end, the dream indeed becomes real. How are those concepts different in the business world? Should they be?

What does the second quote from Henry Ford have to do with human capital? What are those peoples' dreams? Have they reached their goals and yet in a certain sense, the rules of the game changed? And so while they delighted in their ways, the world around them changed? Why is it that people do not recognize change? Why is it that people are reluctant to change even if they realized or are receptive of change? Well, another way to ask questions but from a different perspective is, what role do the current structures play in allowing people to recognize change? Are those structures enabling business innovation and the opportunity to dream, or are they highly restrictive? Do we at times create our own barriers because we are afraid of risk? Of failing? And how would we recognize such barriers? And how do they deter us from achieving our full potential? Throughout the year we heard how deep running cultures, or hierarchical enterprises and other enterprises full of adjectives really do not change, or adapt to change. I guess we saw examples of such enterprises, but I refuse to believe that things have to be that way. I fundamentally believe that most people are quite receptive to new ideas, to change given the right circumstances, the right enabling structures and with an understanding of the reasons for taking on new directions. People can move mountains for issues that really matter to them and so the challenge is to find a way to match their personal goals to the enterprise's goal (I clearly realize it is not always possible). We are witnesses of a new economy, of largely significant different business models. Current predictions state that by the year 2003, 60 to 70% of current professional jobs will no longer exist in the way we are familiar with them. Perhaps that is an exaggeration but certainly a good portion of jobs is already changing and another will also change. So what does that mean? Does it mean that unless we understand the current that is creating these changes and how it may change the nature of our jobs, we could have the wrong perspectives and business visions?

Could it also mean that we have become the generation that will capture the value of the old economy and preserve the value creating things of such economy? And that we need to and will understand the new economy and be the glue that finds a way to hold the old and the new? Is that actually possible? Whatever our perspectives, that quote states a significant fact. Businesses do fail. And perhaps they fail because the human capital has failed to see how it needs to create value.

The last quote is probably one of my favorite ones that I recently came across. The picture associated with it was one of Goya's last pictures (Goya was 80 years old). It showed an old man, with a large beard, leaning on his walking stick, and the title of it "Aun Aprendo." "I still learn."" I am still capable of learning" I am still in the process of learning." With deep respect for Goya, I rejoice in such attitude, such mindset, such humbleness, and such presence of mind. What it tells me is that the desire to keep dreaming, to keep learning, to see things from a different perspective, to enter the zone is within us. I realize that people's circumstances are quite different and much, much of the suffering that has taken place in this world does not create equal environments for developing such attitudes. As human beings we must address the difficult living conditions some people live in. But in many circumstances we have a choice. What is important is what we do with the choices we have. We can continue to learn. We can continue to make a difference in the world we live in. We can influence the lives of people that come in contact with us. At times even if we do not know, as managers we influence the lives of hundreds of people. We can choose to learn how things are changing.

Human capital can create or destroy value, just as having or not having the right processes can. Real value lies in combining the skills and talents of people within the enterprise, sprinkled with the spirit of success and with the well-tuned processes of the enterprise. Based on concentration and discipline deliver the dream, to be the best. **To follow dreams or visions and make them a reality requires intense work, dedication, and a passion to create a better world. Such opportunity is there for the taking, we can choose to pursue it or not. Reaching for it or not, is finally our choice.**

Appendix

- **Questionnaire utilized during Thesis Interview Process**

- **A Brief discussion on Building Total Customer Relationships**

Creating Shareholder Value through Total Customer Solutions

Interview questionnaire:

LEADERSHIP

- What is the role of a CEO in creating shareholder value
- What typical business model for creating shareholder value exist in the chemical industry and which one in particular would you perceive to be the most successful one
- Of the above mentioned models is anyone superior and a more sustainable business model
- What are the critical elements of that model and the critical means to succeed within that business model
- Do you believe that a part of a CEO's role or Executive Team's role is to create superior and sustainable Customer Relationships and if so how do you measure the value added by such activities by the CEO and or Executive Team.
- Does size of a chemical company in the future matter or is it the business model that will create shareholder value. (discuss Dow Union Carbide acquisition, Rohm and Haas growth model vs. Solutia)
- What would you consider to be Eastman's strategic current direction and in the future.
- Is there room for a potentially different successful business model. "One where bonding with customers, integrating both value chains to reduce duplication of work, rather than focusing on product economics and thriving improving the customer economics. Where instead of manufacturing products and selling them, you put together a bundle of services aimed at solving a wide array of customer needs. A collaborative healthy and thriving relationship vs a competitive one, an individual

value proposition tailor made for each strategic customer aimed at enhancing the customer's cost, revenue or profit position."[33]

- If the above is possible do you believe that as customers realize the value of such relationships and they will be willing to also allow you to create shareholder value for your company, ie share in the overall economics improvement of the value chain.
- How would you react to the following statement by Adrian Slywotzky in his latest book profit patterns: Customer Solutions he refers to it as **the single most powerful mindset**[34]. He goes on to say that we are all trained to be product centric thinkers. The magic was in the product. We built entire systems to manufacture the product efficiently and distribute efficiently. The magnitude of the abyss between the product world and the solutions world is huge in many industries. **Just as suppliers have been trained to be product centric on the supply side, customers have been trained to be product centric on the demand side.** The mindset on both sides of the equation seems to have conspired to do what was the **least valuable** for seller and buyer alike. Mindset obstacles notwithstanding, the **solutions pattern** will be triggered repeatedly in the next few years because its **economic effects are powerful** and customers will focus on the few things they do best.
- Would you characterize the business models in the chemical industry cyclical or non cyclical or both and why. Eastman's strategic intent goals aim at moving away from cyclicality, how do you plan to achieve those. Would you say that chemical companies can successfully create non cyclical businesses and if so what critical characteristics would they possess.
- Shareholder value as measured by Market to Book ratios or Market Value created or Market value to Sales seem to be frequent measures that are used to characterize successful enterprises. Do you agree with those measures, are there any others that may also be necessary to characterize successful chemical industries.
- Reviewing the performance of the PAC 10 chemical companies over the last four years along the above mentioned measures, we find that Du Pont, Rohm & Haas,

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[33] Arnoldo C Hax and Dean L. Wilde II, The Delta Model, Discovering New Sources of Profitability, copyright 1999

[34] Slywotzky, Adrian;Morrison, David J, Profit Patterns, Random House,1999

Dow and Akzo Nobel, seem to outperform Eastman. Why do you believe that is the case.

- Do you perceive that size, i.e. vertical or horizontal integration (vertical - back or forward in the value chain, horizontal - across business lines, bundling products and services, broader range of products) play a significant role in creating differentiated shareholder value
- In this knowledge intensive era and low unemployment, it is argued that a measure of a healthy company is the concept called "net flow of talent" and that no organization or strategic plan can succeed without having the spirit of success embedded in its culture and organization. Do you agree with that and how would you characterize the current state of the chemical industry, Eastman now and in the future; one of net talent inflow or outflow.
- It would seem that a low cost strategy no longer commands premiums in the market given that it has become a norm for doing business. Furthermore these models have also created a convergence of strategies vs. unique different business models. Do you agree with that perception and if so how can a future model be different. If not please share with me a current model that you believe does fit part one of this question
- What kind of corporate culture are you creating, would like to create, low cost, best product or customer focused and possibly customer solutions focused.
- Arnoldo Hax in his latest book states that falling into the cost cutting mentality is a trap, it can prevent you from thinking about how to achieve leadership and from establishing a strategic position which gives sustainable competitive advantage that ultimately leads to superior financial performance. How would you react to that and how would you counteract such statement. Furthermore how should one think of growth and superior financial performance. Eastman recently announced further cost cutting measures. Would you say that such focus is necessary in order to compete in the chemical industry, and on the other hand how do you think of prospective growth models. What are the examples of successful growth models in the chemical industry.
- How do you build in flexibility and responsiveness in today's uncertain environments. How do you sense change and know it is time to change

- What would be your reaction on how the internet will impact the chemical industry, Eastman and Eastman's customers. Can it be a vehicle that would further commoditize the industry and create further profitability pressures on the industry or a space where Eastman can enhance its shareholder value creation.

TECHNOLOGY

- What is the current role of technology in creating shareholder value in the chemical industry and at Eastman
- What are the critical milestones in an R&D division and how would you measure success
- It seems that a typical model that has been rewarded in the past by the market is a company with a continuous stream of product innovation that stays ahead of the competition. In other words the company continuously maintains a two year lead in product innovation in the market and captures the value through patents and trade marks. Do you agree with that assessment and if yes is it sustainable and if not what other models are possible.
- What happens to companies that do not have that technical competence and sell mature products. Would they have to differentiate their offering based on cost, i.e. best product position.
- How would you react to a business model where every dollar that is spent in R&D has to be sponsored by a specific person in sales. That salesperson would tie that specific R&D project to a current customer need or customer order, or a future customer need coupled to future customer order.
- Will the internet impact the current approach to technical innovation and if yes how
- Do you believe in the possibility of creating virtual technology teams, supplier-customer, connected by an internet domain and both removing unnecessary or duplicative technology work out of the value chain to enhance the overall supplier-customer economic value chain. Do you believe that joint development of new products both at the client premises, in a virtual world or within other spaces can take place.

- There is a line of thought that believes focusing only on the customer is not all beneficial, given that customers not always know what they want and sometimes what they articulate not to want indeed becomes a standard in the near term. What is your reaction to that line of thought and if indeed that is so, how do you balance between total customer response and yet market creativity and innovation
- Arnoldo Hax in his latest book the Delta Model, Discovering New Sources of Profitability argues that a Total Customer Solutions Company looks to its customers as sources of innovation. Furthermore a deep and trusting relationship is established that leads to the development of proprietary technology and essentially locks out competition. What is your reaction to that statement Do you agree with that statement and can there be such levels of trust.
- Du Pont recently redefined itself as the company of "miracles of science." Eastman in the past defined itself as a company that brought " the chemistry of new ideas" to the market. Looking at both companies from that perspective one could interpret that both companies are technology and innovation driven. Financial evaluations of both companies though reflect that Du Pont's shareholder value creation to be stronger than Eastman's. What are your thoughts about that assumption and how do you react to the market financial rewards towards both companies

INFORMATION

- How do you view the role of the chief information officer and the IT organization in creating shareholder value.
- What are the current main initiatives driving the IT organization
- What is your view of the potential impact the internet has, will have in the ways you conduct business
- Who do you see to be your main "customers"
- Bob Dorsey in an interview with Information week. (734): 46-62. 1999 May 17 stated "that Eastman was moving in a new direction, SAP/R3 , adding new functionalities, improving our points of contact with customers in order to provide them with better information." How specifically do you plan to interface with Eastman's strategic customers in this new Internet era.
- Given the abundance of information capabilities and means of delivering such information to the front lines, from the IT perspective how has the role of the Technical Sales Representative / Account Manager changed and how do you expect it to change
- How do you capture customer information
- How do share customer information across the functional organizations within Eastman
- It is also said that we have entered the "knowledge intensive era" and that those companies that know how to capture information/ knowledge and have an ubiquitous way of sharing and transferring that information across the organization or value chain will create greater shareholder value. What is your reaction to that statement. If you agree how is Eastman capturing knowledge and transferring across their world wide organization.
- Stephan H. Haeckel in his latest book, Adaptive Enterprise, creating and leading sense and response organizations argues that we are entering an era where the speed of change is dramatic, that companies may not be able to manage their enterprises based on long term strategic plans, however manage them more based on a sense and respond modality. By sense and respond he means create a modular adaptive functionality ready to respond to current customer needs in a customized fashion.

Whether that is the case or not it would appear that role of information is becoming highly strategic. Do you believe that is the case within Eastman and the chemical industry and if a sense and respond organization was created would information be at the center of all functionality. Would Eastman be prepared to manage such wealth of information

- How do you learn / share that information across the organization
- Customer centricity in the post-Y2K era. How do you measure the performance, success of the IT organization and what metrics do you use
- Is IT a strategic player in developing business strategy at Eastman or is the role of IT more of a service organization. How does IT link to the business organizations
- It is of public knowledge that Eastman has made several investments in internet start up companies. What is the purpose of such investments and how would they be linked to current or future business strategy.
- Jack Welsh recently mandated a ebusiness initiative to every business manager, ie create a ebusiness strategy that could destroy your business model or current value proposition. What is your reaction to those actions and do you see that as a possible initiative at Eastman or within the chemical industry.
- It is argued and stated that the Internet will tend to place additional pressure on pricing and perhaps further commoditize the industry. Furthermore it is said that it is creating a level playing field given that without the Internet, lack of information in the market may have benefited the producer. What is your reaction to those statements and if they are true, how does Eastman plan to create greater value vs decreasing shareholder value.
- Would you consider Eastman to be a leader in the Internet space and if so why and how do you define sustainable leadership in this space. With low switching costs is there a significant first mover advantage, and if there is a significant first mover advantage, how is that reflected in value creation.
- How do you plan to measure customer loyalty, customer retention, and the fact that the internet echemicals auction space creates and environment for low switching costs between suppliers, and possibly a sense of anonymity.
- Does the IT organization directly or indirectly interacts with key strategic customers.

TECHNICAL SALES

- What is the role of technical sales within Eastman
- How does technical sales participate in the role of creating shareholder value
- What where the main learning from the customer interface redesign work and are all Business Organizations implementing the recommendations or outcome of that work.
- How would you describe success within the Sales Organization
- What are the critical elements of achieving that success and how do you measure success. Is a Customer share measure such as percentage of a customer's set of needs that a single vendor can satisfy part of your measures
- Recently Eastman implemented a process to serve Key Customers and create Key Customer plans. What is the main objective of that process and how many people, functions are involved. How will you measure success and do how do you rank or determine who is a key customer.
- If any of these Key Customers are global or have global operations how do you capture, share knowledge, learnings and key customer objectives across your organizations
- How do you capture customer's feedback and is that feedback utilized by a wide array of functions and people across the organization
- On a scale of 1-10, 1 low knowledge, 10 total knowledge, how well do you know your key strategic customer's current needs and future needs.
- Given the latest technological revolution through e-commerce, business to business, how do you see it impacting the role of technical sales. Do you perceive that customer's desires and needs are changing because of it. How would this potentially impact customer relationships and ways of interacting with your strategic customers. Do you see this technology change a threat or a different way to interact with customers or value adding, if so a)b)or c) how and why .
- Do you perceive that e-commerce will specifically accelerate the commoditization of products or allow for a different business model, if one or the other why?
- What is the current role of distributors and do you feel that they will be affected by the technology, or companies such as chemconnect or echemicals. Would acquiring, partnering or creating a strategic alliance with a distributor enhance a total customer

solutions model whereby a company could integrate in to downstream services and value added distribution

- The Literature describes today as essential to reduce complexity of contact for the customer, that customers want one stop shop, a single point of customer sales and service in the relationship. Do you find that to be true and if so how do you organize to deliver such need. If this is the case as well, how does the role of the TSR or Account Manager change
- It is widely understood that customer relationships are crucial, however from a customer solutions point of view, the economics of those relationship and structural alternatives of those relationships have not been included in traditionally strategy frameworks. Do you believe that understanding and collaboratively developing the overall customer economics model as described in Adrian Slywotzky's Profit Zone is essential in better understanding your customer and the value proposition alternatives.
- Do you believe that currently chemical companies have a strong understanding of the integrated value chain economics.
- What are the main metrics used to measure performance within the Sales Organization.
- It is argued that forecasting models will become increasingly more difficult to depend upon given the fluid and constant change of customer needs. Is that the case in the chemical industry and what is the impact of changing customer needs. How do you address, manage those changes.
- Furthermore it would be argued that because of so much change, being as close as possible to customers is essential in capturing, sensing those changes and that this could then become a time for customized responses vs planned responses. Do you agree with that assessment.
- Do you believe that the chemical companies will have different channels to bring product to market or offer customer solutions and if so how do they differ or will differ one from another. Could this be another model of strategy convergence between chemical companies.
- Do you believe that it is feasible to create an individual value proposition for each strategic customer and if so, what would be the measures of success.

- Do you believe that an effective way of creating accountability and line responsibility would be to also assign P&L responsibility within sales.
- Would solution based selling be a customized solution for a key strategic customer or a customized solution to a segment of customers that face similar problems or both and if so how do you differentiate the value proposition.
- There is a line of thought that believes focusing only on the customer is not all beneficial, given that customers not always know what they want and sometimes what they articulate not to want indeed becomes a standard in the near term. What is your reaction to that line of thought and if indeed that is so, how do you balance between total customer response and yet market creativity and innovation
- Do you believe that a customer centric chemical company can create greater shareholder value vs a product/manufacturing driven company (note that superior manufacturing capabilities/efficiencies are a premise for doing business). If yes or no, can you give me examples of companies you are thinking off.
- From your perspective what would be the reason that companies such as Du Pont, Rohm and Haas, Akzo Nobel and Union Carbide, have a greater M/B ratio vs Eastman.
- Eastman's recent reorganization as publicly stated was to become more customer focused, and words such agility, speed, accountability were used to describe the new organization. In the context of those words how is the sales organization changing.
- Likewise, who from your perspective would be the chemical company that you would consider an example of a "customer centric company."
- Is your assessment that Eastman's functional organizations are customer focused or inwards focused, if the earlier one how do they interact with customers and what drives them to be customer focused.

BUSINESS MANAGEMENT / BUSINESS STRATEGY

- Many of the above questions obviously deal with business strategy, corporate direction and could be reviewed with Business Organization (BO) and Business Unit (BU) Managers.
- What typical business model for creating shareholder value exist in the chemical industry and which one in particular would you perceive to be the most successful one
- Of the above mentioned models is anyone superior and a more sustainable business model
- Specifically though would you characterize your BO strategy to be; low cost / best product, customer solutions centric, both or none of the above mentioned.
- In either one of those choices, how does your organization create shareholder value and what metrics do you utilize to validate shareholder value creation.
- If your business strategy is a customer solutions strategy, what resources do you require and utilize vs if you had a low cost, high volume product driven strategy. Likewise what would be the characteristics in the chemical industry of such choice
- What would you consider to be the current strategic direction of your Business Organization and in the future.
- Is there room for a potentially different successful business model. "One where bonding with customers, integrating both value chains to reduce duplication of work, rather than focusing on product economics and thriving improving the customer economics. Where instead of manufacturing products and selling them, you put together a bundle of services aimed at solving a wide array of customer needs. A collaborative healthy and thriving relationship vs a competitive one, an individual value proposition tailor made for each strategic customer aimed at enhancing the customer's cost, revenue or profit position."[35]
- If the above is possible do you believe that as customers realize the value of such relationships and they will be willing to also allow you to create shareholder value for your company, ie share in the overall economics improvement of the value chain.

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[35] Arnoldo C Hax and Dean L. Wilde II, The Delta Model, Discovering New Sources of Profitability, copyright 1999

- How would you react to the following statement by Adrian Slywotzky in his latest book profit patterns: Customer Solutions he refers to it as **the single most powerful mindset**[36]. He goes on to say that we are all trained to be product centric thinkers. The magic was in the product. We built entire systems to manufacture the product efficiently and distribute efficiently. The magnitude of the abyss between the product world and the solutions world is huge in many industries. **Just as suppliers have been trained to be product centric on the supply side, customers have been trained to be product centric on the demand side**. The mindset on both sides of the equation seems to have conspired to do what was the **least valuable** for seller and buyer alike. Mindset obstacles notwithstanding, the **solutions pattern** will be triggered repeatedly in the next few years because its **economic effects are powerful** and customers will focus on the few things they do best.
- Would you characterize the business models in the chemical industry cyclical or non cyclical or both and why. Eastman's strategic intent goals aim at moving away from cyclicality, how do you plan to achieve those. Would you say that chemical companies can successfully create non cyclical businesses and if so what critical characteristics would they possess.
- Shareholder value as measured by Market to Book ratios or Market Value created or Market value to Sales seem to be frequent measures that are used to characterize successful enterprises. Do you agree with those measures, are there any others that may also be necessary to characterize successful chemical industries.
- Reviewing the performance of the PAC 10 chemical companies over the last four years along those measures, we find that Dupont, Rohm & Haas, Dow and Akzo Nobel, seem to outperform Eastman. Why do you believe that is the case.
- Do you perceive that size, i.e. vertical or horizontal integration (vertical - back or forward in the value chain, horizontal - across business lines, bundling products and services, broader range of products) play a significant role in creating differentiated shareholder value
- Do you perceive that there is a different strategy model other than the Porter Five Forces or the Resource Based model, one that integrates both, focuses dramatically on

[36] Slywotzky, Adrian;Morrison, David J, Profit Patterns, Random House,1999

the customer, on alliances that cultivate thriving complementors while creating open architectures and potentially abandons the "competitor as enemy" mindset. Is there enough trust in the system to create such business models and create greater shareholder value.

- In this knowledge intensive era and low unemployment, it is argued that a measure of a healthy company is the concept called "net flow of talent" and that no organization strategic plan can succeed without having the spirit of success embedded in its culture and organization. Do you agree with that and how would you characterize the current state of the chemical industry, Eastman, now and in the future, one of net talent inflow or outflow.
- It would seem that a low cost strategy no longer commands premiums in the market given that it has become a norm for doing business. Furthermore these models have also created a convergence of strategies vs. unique different business models. Do you agree with that perception and if so how can a future model be different. If not please share with me a current model that you believe does fit part one of this question
- How are Eastman's latest cost cutting initiatives impacting your strategies and how will it enhance value creation.
- How do you incorporate other functions input into the strategy development process, such as technology
- It seems that a typical model that has been rewarded in the past by the market is a company with a continuous stream of product innovation that stays ahead of the competition. In other words the company continuously maintains a two year lead in product innovation in the market. Do you agree with that assessment and if yes is it sustainable and if not what other models are possible.
- What happens to companies that do not have that technical competence and sell mature products. Would they have to differentiate their offering based on cost, i.e. best product position.
- Dupont recently redefined itself as the company of "miracles of science." Eastman in the past defined itself as a company that brought " the chemistry of new ideas" to the market. Looking at both companies from that perspective one could interpret that both companies are technology and innovation driven. Financial evaluations of both

companies though reflect that Du Pont's shareholder value creation to be stronger than Eastman's. What are your thoughts about that assumption and how do you react to the market financial rewards towards both companies

- How do you currently capture the voice of your customers, your customers strategic needs and how are they translated into business strategy
- Eastman's recent reorganization as publicly stated was to become more customer focused, and words such agility, speed, accountability were used to describe the new organization. In the context of those words how is the sales organization changing
- How much time do you personally spend with strategic customers
- It is also said that we have entered the "knowledge intensive era" and that those companies that know how to capture information/ knowledge and have an ubiquitous way of sharing and transferring that information across the organization or value chain will create greater shareholder value. What is your reaction to that statement. If you agree how is your Business Organization capturing knowledge and transferring it across your world wide organization.
- What would be your reaction on how the internet will impact the chemical industry, Eastman and Eastman's customers.
- Jack Welsh recently mandated a ebusiness initiative to every business manager, ie create a ebusiness strategy that could destroy your business model or current value proposition. What is your reaction to those actions and do you see that as a possible initiative at Eastman or within the chemical industry.
- It appears in such changing times, long-term forecasting as well as strategies are not delivering their objectives. If that is the case, how will strategy development change and is it currently changing

Creating Shareholder value through "Total Customer Solutions"

Creating "Total Customer Relationships" in order to deliver "Total Customer Solutions"

Introduction

From the latest www.cio.com magazine we read: These days, companies don't compete on innovative products. Instead, the big differentiator is an innovative business model, such as the customer-centric model espoused by Dell, says Mark Shirman, vice president of customer management solutions at Cambridge Technology Partners, a consulting firm in Cambridge, Mass[37]. Furthermore a June 1999 survey by Cambridge, Mass.-based Forrester Research Inc. found that 92 percent of respondents thought that a total customer solutions concept was critical or very important to their company—yet only 2 percent said that they'd achieved their goal.

Clearly one realizes that establishing a winning strategy creates significant value, yet the winning strategy will not create shareholder value unless it is flawlessly executed. And it is also in the execution of the strategy that firms can truly differentiate themselves. "Wanting to be the best in class paradigm drives a convergence mind set" and it is by "exclusively tailoring activities in the value chain to deliver an engineered customer value proposition that will differentiate one firm from another", said Michael Porter. The Delta Model goes beyond that affirmation. Understanding how one can enhance the customer's economic business model, what activities the customer will value and stringing together those activities focusing exclusively on the customer is at the heart of the Total Customer Solutions strategic choice.

This paper will not focus on the process of defining one of the three choices within the Delta Model, but will focus on developing customer relationships to execute a Total Customer Solutions strategic choice. In order to enrich this discussion on creating Total Customer Solutions Relationships I will utilize some examples from my own experience

[37] http://www.cio.com/archive/081599_customer.html

with Eastman Chemical Company as well as general comments from within the strategy world. However, prior to proceeding with the proposed model, it is my belief that we should define what does one mean by Value Proposition as well as Total Customer Solutions, two terms widely referred to in this paper. There are various definitions for the above terms; each one of them slightly different matching slightly different points of view.

"What do we mean by unique? **Unique** Value Proposition is the **unique component(s)** of the firms offering to the customer that **impacts** their **profitability** in a significant way and **is not easily replicable** by competitors, at least for some period of time. It also is defined as a **simple, clear**, internal **statement** of: our target customers, key **benefits (desirable end-results, solutions)** we offer them, and the price we ask. A particular choice the firm has made on how to serve a particular customer.

How does one define value? "**Value**" in business markets is the **worth in monetary terms** (dollars per unit) of the technical, economic, service and social **benefits** a customer company receives in exchange for the price it pays for a market offering.

A "**proposition**" is a specific set of experiences offered to a customer or potential customer in return for buying into a relationship with your organization. Any proposition offered which has **perceived customer value** is a **Value Proposition**[38].

Total Customer Solutions is defined in the Delta Model conceptually as **bonding**[39]. Given the **goal of creating superior and sustainable financial performance**, a critical means to achieve it is by **attracting, satisfying and retaining the customer**. Rather than focusing on the product economics, they **thrive by engineering customer economics**. Instead of offering independent products, they put together a **bundle of services** aimed at **solving a wide array of customer needs**. Conceptually thinking, the move from Best Products towards Customer Solutions involves bundling of products, customization and learning.

Clearly, the Total Customer Solutions definition may have a different meaning to different people as they experience different issues. Suffice it to say, that key words are

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[38] Eastman Chemical Company, Generate Demand Presentation, March 1999

[39] Hax, Arnoldo;Wilde, Dan, The Delta Model: Discovering New Sources of Profitability, Copyright 1999

bonding, change of mindset, customer focus, customer centric view, customer economics, and exceeding customer expectations. Finally it is important to understand that as the relationship migrates from Best Product to Total Customer Solutions the relationship increases in complexity as well as risk. Complexity because of the bonding and multiple ways of addressing customer needs and risk because of the interlocking teams that will create the bonding. Bonding means you will intrinsically know each other, each other's strengths, as well as weaknesses. It will be the desire to make each other successful that will be the powerful economic force effect. The risk will be that it will not work.

Building Strategic Customer Relationships Model

The strategic customer relationship model that I will propose is a concept that was originally used by Eastman Kodak in Australia then brought in house to Eastman Chemical Company. The concept is quite useful in the sense that it becomes a road map (for a Professional Sales Person, Customer Solutions Manager, Account Executive, or even Market Business Unit) when establishing customer relationships. It starts by defining some fundamental elements of getting to know the customer, followed by establishing the relationship, growing the relationship, solidifying the relationship and culminating in what is called the pinnacle of relationships. The experience of both Eastman Kodak and Eastman Chemical Company is that once two thirds of the steps where accomplished, significant business was developed with that customer. Furthermore, as one progressed up the pyramid both firms were very successful in retaining their customers. This model is a generic model and applicable to all customers and as all models it becomes alive as you associate the model with a specific customer. The model from the outset also clearly established that one had to make strategic choices and not every customer would become a pinnacle relationship.

Utilizing this successful model and concept I will customize it to represent the Total Customer Solutions strategic choice. The model geometric design is also consistent with the Delta model.

Keep in mind that while this model may appear static or hierarchical the reality of building customer relationships is far from that. When thinking about relationships one

must think in terms of **flow vs. stock**, i.e. a successful and rewarding customer relationship is incredibly dynamic and fluid, where the flow of information is occurring at all levels of the pyramid. Strong relationships usually deteriorate when either party takes the other for granted or think of them in terms of stock. The **dynamic motivation** of the model relies upon the fact that one is **obsessed with making the customer successful**. And it is in this success that the customer realizes that its success is significantly due to the relationship with the supplier. Hence the **bonding** effect that enhances the entire value chain comprised of supplier and customer, even to downstream customers.

Foundational Level: Creating the right to serve a customer

Before one can begin to address customer needs and propose customer solutions, one has to have an in-depth knowledge of the following factors within one's own firm as well as about oneself. The foundational level can be seen as one of the most critical phases in the entire concept of Customer Relationship Management (CRM). It will require enormous up front work and resource investments to gain significant information. This, most firms fail to do, mainly because most firms are mostly inward focused.

Information: The most important product within a firm

As a first step, given that significant resources will be invested in establishing an in depth Total Customer Knowledge, as well as establishing successful relationships, one of the main problems seen in the industry is the lack of the firm's ability to retain information that will be attained in a cohesive and integrated way. On the average, 30%-40% of Sales Managers time is usually spent on validating information, either from the field to the back office or vice versa. It is probably one of the greatest sources of value outflow within a typical firm and within the marketing and sales value chain activity. On this subject we read at www.cio.com: "The whirl of Customer Relationship Management (CRM) hype centers on an ambitious goal: building an integrated and corporate wide view of the customer. By tying together all the front-office functions that involve customer contact, companies aim to present a single face to the customer. This means that disparate customer-care information systems should be linked; a customer representative

at a call center needs to know that the person on the phone also sent an e-mail the day before. More important, however, customer-facing functions such as sales, marketing, call centers and online support must become organizationally integrated. If that sounds a lot harder than putting in a piece of software, it is, says Alex Black, a Boston-based partner with Computer Sciences Corp. "I've had clients who didn't make it [with CRM] because they couldn't get past the organizational silos[40]."

Even Dell who is widely recognized as having a leading edge capability in managing customer information says that: "We don't have 100 percent information capture of all the customer touch points yet[41]." Therefore an initial word of caution is to think through how information will be captured, shared and utilized by multi-functions and people across all organizations that will be part of the Total Customer Solutions team.

Another assumption we make at this point is that there is a person in charge or assigned as a Total Customer Solutions Representative. While this issue is debatable as to whether one person or many persons have the responsibility of managing the relationship, it is my opinion that clear accountability and assigned responsibility at least in the beginning phases of the process is essential to its success. In some instances companies have gone as far as giving that representative P/L responsibility from a customers point of view.

Business Strategy:

Prior to spending significant time and resources on establishing relationships with our customers, we must have a clear understanding of the Corporate Strategy as well as the Business Unit Strategy. (Remember that the Total Customer Solutions strategic choice has already been made). Both these strategies have to be explicit about their purpose as well as direction. Furthermore a majority consensus and 100% alignment must exist amongst all key people that will implement and execute the strategy. While this paper assumes that such actions have already taken place, following are some brief issues that have to be explicitly embedded and stated by the strategy.

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[40] http// www.cio.com, "Know your Customer", *CIO*, Aug. 15, 1999

[41] http// www.cio.com, "Know your Customer", *CIO*, Aug. 15, 1999

- Major Corporate and Business Strategic Thrusts
- Environmental Scan
- Industry segmentation
- Industry structure analysis (Porter five forces analysis)
- General Competitive environment analysis
- General Value Chain analysis
- Customer segmentation
- Functional Strategies
- Ebusiness strategy (preferably seen as an enabler of Corporate or Business strategy)

Firms Unique Sources of Competitive Advantage:

Understanding the firms own value chain and strengths as well as weaknesses within that chain is essential in developing Total Customer Solutions. Part of this analysis will define the firm's current arsenal of capabilities, and define how exclusively tailored each of these activities will be in driving Total Customer Solutions. The following part will be determining what capabilities I need to successfully create Total Customer Solutions. Hopefully there is not a significant gap. If there is we will address later how to determine it and possible ways to solve those issues. Hence it is imperative that the person representing the firm (notice that this can be one or multiple people that relationships), explicitly understand the activity strategies that are going to be part of enhancing the customer's economics. Examples could be:

- Technical Service capabilities
- Supply Chain capabilities
- Research and Development capabilities
- Product Innovation and Technology capabilities
- Human Resource capabilities
- Financial services capabilities
- Custom manufacturing capabilities
- Complementor contacts and Relationships

Market Environment: Determinants of National Advantage

As the firm begins to shift outwards towards determining the competitive field, it is important to also understand the external market environment the firm as well as the customers and competitors face. This step is quite critical in particular in different countries as well as different regions. The Corporate Strategy as well as the Business Strategy may have been more generic in nature and not addressed a specific customer in a specific country. Most global companies would view this is an essential element of the overall understanding and knowledge one must possess in order to serve customers outside of the firms native country. Quite clearly this would be captured by the Geographic Business Strategy point of view. Some of the following issues would be essential in understanding the overall market competitive landscape:

- Overall Market Supply and Demand Conditions
- Firms Strategy Structure and Rivalry
- Country Factor Conditions
- Related and Supporting Industries
- Government Influences and Regulations
- Critical relationships in the local markets and industry
- Chambers of commerce, lobbying activities
- Key Conglomerates
- Financial Institutions, Capital Markets
- Overall underlying major industry trends
- Economic, Social and political stability
- Understanding Customer influences in this environment.

Customer Targeting: Strategic Choices

We have presented each of these options as if they were mutually exclusive. However, in reality a business can and does pursue a blend of these strategies. There should be a select group of customers that should be treated in the special differentiated Total Customer

Solutions option[42]. In general terms we see the 80/20 Paretto rule clearly reflected, where 80% of the business or more is reflected by sales to 20% or less of all of a firm's customers. This analysis is similar when conducted across each of a firm's sales regions. The main question then becomes, can we offer all of these customers a Total Solutions business approach, or do we have to make strategic choices? Within Eastman we used to believe that each customer was to be treated equally. With that paradigm in mind we can see that we would not have sufficient resources to accomplish our business objectives, furthermore there would be significant value outflow. A Total Customer Solutions approach requires enormous investments of time, firm resources, and people involved at all levels of an organization, therefore as we stated earlier knowing what not to do, or in this case, knowing which customers you will not serve from that strategic perspective is equally important. That does not mean that there may not be alternative ways of serving them such as electronic commerce. However when using the Total Customer Solution Relationships model within the Delta Model, by definition we will establish that we have a desire to reach the **pinnacle** with **every key customer targeted**.

Knowing your Customer:

Gaining a thorough knowledge about your strategic customers is the most critical step. I would call this Total Customer Knowledge. By **knowing** we mean both qualitative and quantitative knowledge. Here are some examples of questions one would ask in order to gain such knowledge. Notice that while these are simple questions, in many cases extensive metrics would have to be developed to quantitatively position each customer within that metrics.

- What kind of Business/Industry is your Customer in
- Who are your customers main customers
- Who are your customers main competitors
- How do they segment their business
- How do they segment their customers/products
- What markets to they serve
- What is their financial condition

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[42] Hax, Arnoldo;Wilde, Dan, The Delta Model: Discovering New Sources of Profitability, Copyright 1999

- What is their value creation model
- What is your customers market share in the markets they compete in with your potential products as well as general market position
- What is your customer's major customers business share
- What are their current strengths
- What are their current weaknesses
- What is their reach, local, regional, global
- How do they manage their supply chain
- How IT integrated are they and how do they utilize IT
- Where in the overall value chain do they exist
- What are some of the current critical tactical issues they face
- Know the totality of products they buy both from domestic and international sources
- Know the key buying criteria they employ
- Know who are the key decision makers
- What kind of technology issues are critical to your customer in order to sustain a competitive position
- What are your customers major competitive fears, what keeps them awake at night
- What motivates them to come in the morning
- What future trends does your customer perceive to be highly critical to their success

Knowing your Competitors:

As we focused on knowing the strategic customer, most likely we found information about the firm's competitors at that particular customer. (While the focus of the Delta Model calls for a total focus on the customer, ignoring the competitor, it would be my humble opinion that until we reach a strong position within that model, we still monitor competitors). Most likely Porter's Five Forces analysis has also significant information on some of the firm's major

competitors. What is essential though, is to understand and know the particular major competitor one faces at that particular customer. In a sense, as the relationship with a particular customer is enhanced and well cemented, this issue may become less important. My perspective though is that one can never relax and one must be always alert to new business models, or enhanced business models that may detract the customer's attention from your firm (much has been written about the costs to acquire new customers). The Total Solutions Customer model if well executed would suggest that if one would have such intense knowledge of one's customer, that firm and customers would be intimately bonded to each other. (While this is a holistic approach to a relationship, we all have seen the best of love stories fall apart. Hence, as a Chinese proverb says: "keep your friends close, but your enemies even closer.") The current competitive landscape is confronting times of change considered to be as significant as the age of the industrial revolution, hence it is important to keep the radar screen wide open in order to understand current and future competitive trends as well as competitors. Remember that convergence of same value offering propositions only ends up competing on price. Knowing your competitor will allow you to choose a set of activities and string those activities in such a way that they do not easily become replicable. Therefore some issue to keep in mind when maintaining a view of your competitors or competitive trends could be:

- Who are your main two to three competitors you face
- What is their financial strength
- Who are their main customers

- What are their main strengths and weaknesses
- What is their Supply Chain Capability
- What is their business model and sources of strategic control and how do they create shareholder value
- What is their reputation in the market
- What is the depth of their R&D capability, technical service capability, ebusiness capabilities
- How do they segment their customers
- How do they segment their products
- What are the skills and experience of the current account manager serving your potential customer
- What are their business ethics
- How connected are they in the local market
- What Chambers of Commerce do they participate in
- How connected to government, unions are they
- How satisfied is their workforce
- Do they utilize complementors to fulfill customer needs
- How do they compete with you
- What is your competitor's value proposition
- What major shifts in trends do you see in the horizon
- What major shifts in trends does your competitor see in the horizon

Personal Skills:

This far we have focused our attention on some of the foundational elements before bridging to establishing those critically few chosen Total Solutions Customers. Those elements focused both internally on the firm as well as externally at understanding and knowing the customer as well as the overall landscape. Equally critical at this level is the person in charge of establishing such relationship, or the custodian of the relationship (or the people in the Customer Solutions Team). For many reasons, firms tend to have significant rotation in these positions, or do not employ the kinds of candidates that have

the overall capacity to manage such important relationships. The intent here to briefly describe the overall skills a custodian would need to poses, given the complexity of the overall Firm-Total Solutions Customer relationship:

- Individual characteristics such as Integrity, Character, Energy, Self Motivation and Edge
- Should like to deal with people
- Should be a multidimensional as well as linear thinker
- Marketing
- Selling
- Financial Analysis
- Communication, oral, written,
- Technical Knowledge
- IT knowledge
- Ability to relate at all levels of an organization, both internal and external
- Business Analysis
- Scenario Planning
- Forecasting
- Leadership
- Ability to understand tactical issues as well as strategic issues
- Languages (specially when dealing with multinational customers)
- Statistical Analysis
- Intuition
- Ability to collect valuable market intelligence
- Networking capability both internally within the firm, externally in the market as well as within customers firms
- Ability to anticipate current and future customer needs

Establishing the Customer Relationship

The final element within the Foundational Level is to bring to life all of the data and information one has gathered. And it is again a critical moment given the fact that most effective relationships are defined during the initial meetings between firm and customer. This can be defined as the moment of truth. It will either confirm or not, if what you know is accurate, and it will also confirm if your value proposition indeed is value creating from the customers point of view. In an already established relationship this step will have been already performed. Nevertheless it would be beneficial to review its validity and applicability to current customers.

But before we get to that point, there are three principles that most successful and high performing sales people could utilize in order to establish the basic elements of a Total Customer Relationship[43].

1. **Focus on the Customer**: High performance Sales People view the **Customer** as the **center** of the process. As such, building the **customer's trust** is an essential element to establishing a long-term successful and sustainable relationship. This process has primarily in mind: What is in it for the Customer. How will the Customer benefit from my actions, products and services, how will I increase my customers economic profit. It will also have in mind, how value is derived for own company.
2. **Earn the right to advance**: Again, high performing sales people earn the right to advance at each step of the relationship and buying process. As such, the position of the sales person is to establish himself or herself as a solutions provider. As the right to advance is established, more people become involved both from the customer side as well as the provider's side.
3. **Persuasion through involvement**: Establishing a long-term and strategic relationship with a customer means getting to know the customer and his or her needs in an intimate way, allowing the customer to arrive at the conclusion that the solution provided is indeed value creating to his/her enterprise. And it also means that your interest is in providing him/her with the best solution available in the market.

[43] The Forum Corporation, "Face to Face, Advice and Device", 1991

It is at this stage that I would like to take the opportunity to clear up a misconception that seems to exist in some consultant's world as well as the literature. One often hears the word or term, **"owning the customer relationship."** This concept is potentially a terribly damaging way of thinking about a customer, specifically when one is talking about Total Customer Solutions. Notice that at the beginning of the paragraph # 2, the term **earning the right to advance** is used. **No one and nobody owns a relationship**. We may own material things, but in order to think strategically and long-term with a sustainable Total Customer Solutions mindset, we must know that at each step, the bond between supplier and customer must be **earned**. One should never forget such fact if one is to be successful in implementing a sustainable and lasting customer relationship.

Presenting the firm to your customer: Finally ready to go

While many of the above mentioned answers to these questions are not easy to attain, it is clearly that approaching the customer with such knowledge, could immediately establish and in-depth credibility and trust. This would demonstrate that one is prepared and serious in establishing a long-term and strategic relationship. It is also clear from the above list, that gaining such information by one individual is quite complex and time consuming, so obviously a support team behind the salesperson is essential in helping create such important data base. This further infers to the customer that the overall firm is quite committed to this relationship.

It is in this light that we review this step in the series of activities.

- Introduction of yourself to your customer
- Introduction of your company to your customer
- Description of your business and business plan
- Demonstration of your Market and Business Knowledge
- Description of your products, technical competence
- Confirmation phase of your overall Industry, Market and Customer knowledge (at this point, one has collected enormous amount of information, and it is important to validate what you think you know, and to fill in the gap of what you know. It is also obvious that one is not going to be able to reveal of this knowledge in one or two sessions, so careful analysis and situational

understanding as well as judgement should be exercised in determining what to present)

- Confirm that the business partnership is viable
- Establish current customer needs, specifically current tactical issues
- Develop a thorough understanding who key decision makers are in all functional areas, specifically in areas that you will enhance your customers economic growth and value creation
- Reconfirm potential value proposition and know that it is value creating from your customer's point of view
- Confirm and reconfirm has a deep implication: **Listen to your customer and accurately capture your customer's current needs and future needs.**

This completes what one would define the Foundational Level. At this point in the process, one has complete knowledge of the business strategy, industry structure, outside or market influences, customers knowledge, competitors knowledge as well as knowing that one has the capability to deliver Total Customer Solutions. One has also verified that the firms value proposition indeed is value creating for the customer (as well as the firm). To conclude, we would suggest that a feedback loop be established to review all of the Foundational Level facts in order to ensure total alignment between all of the parties involved. These feedback loops can either be direct customer surveys or third party surveys.

Operational Effectiveness: Maintaining the Right to serve the Customer

At this point the firm has earned the right to move to the next level. This level is extremely critical in delivering the agreed upon value proposition or customer solution. In a sense this process then takes on a transactional or tactical nature. What does one mean by tactical or transactional needs? A basic relationship has been established, value creating services or products have been contracted for and it is the time when the firm has to deliver. In a sense, in order to progress to the bonding stage, it is at this time when the firm has to demonstrate its trustfulness, its capability to deliver. Another Moment of Truth. Based on the Delta Model perspective, it is at this stage where the operational

effectiveness process assures the deliveries of products and services to improve the customer economics. Notice the increase in complexity as more and more people as well as functions become involved. Therefore following are areas to be considered when managing the relationship at this stage:

- Customer value proposition is fulfilled via product sale, service rendered, solution provided or bundle of service and product delivered.
- Linkage between the Firm's Supply Chain Management and Customers Supply Chain Management is established. From this perspective the vantage-point is to maximize the efficiency of the supply-delivery process, removing as much cost as possible while improving the economics of the process.
- Agreed upon measures between Firm and Customer are developed to track product and or service performance. These measures could track product performance, timeliness of delivery, value creation.
- Clear feedback loops should be established that allow both the firm and customer to openly communicate and review expectations and performance.
- Functional contacts and lines of communications are clearly established and fully operational
- IT systems compatibility is determined and deficiencies resolved
- In depth ebusiness strategy, capability, and solutions phase is shared, accepted and implemented, clearly quantifying the value created.
- Complaint system is on line, fully operational in order to capture, record, and quantify non performance of the firm
- Customer Value chain, total costs, firm understanding of revenue and profits determined
- Impact on customer profit due to our service is demonstrated
- Validate firms strategic controls points that allow firms to move with confidence that the business model will not be duplicated and will also capture value for the firm.

Global Accounts:

Many of the Total Solutions Customers are global in nature. Therefore it is important to determine if the value proposition or solutions approach is offered on a comprehensive

basis, i.e. at each local contact point. If the account is a global account, the overall strategy, value proposition and impact of any agreements are now also reviewed on a global or as needed basis and any issues that may arise are brought forth to the Customer Relations steward.

Hence following are some issue to consider:

- Communicate overall objective of strategy across all regions and all local customer locations
- Ensure that there is a thorough understanding about the value proposition and there is consistency on approach. There needs to be clarity about what is determined by the value proposition and any potential competitive impact is also determined.
- The viability of such value proposition is determined. There are instances where the same transactions cannot be duplicated and implemented across borders.
- Some companies establish what is called a Global Customer Forum or Growth Forums. This allows many responsible parties and all of the focal points to work on the various issues that may arise in order to provide the Global Customer Solutions.

Learning, transfer of knowledge solidifying the relationships:

As the firm and customer begin the bonding process, it is at this point that we want to determine any learning activities that could benefit the firm as well as the customer. Remember that this is described as a possible way of creating Total Customer Solutions[44]. This step is usually lead by the customer advocate, however as the relationship progresses it will occur naturally at all levels of the organization. Learning issues that would be noteworthy of capturing are:

- Validate and summarize the voice of the customer, is there any misalignment between what your customer is telling you and your actions, the solution being pursued.
- Validate the Business Strategy and strategic thrusts
- Validate value creation both at customer level as well as Business Unit level (in this case you would have a Balance Scorecard for both Profit at Customer Level as well as Business Unit level).

[44] Hax, Arnoldo;Wilde, Dan, The Delta Model: Discovering New Sources of Profitability, Copyright 1999

- Validate that all necessary information is systematically captured and transferred across both organizations as needed
- Validate Total Customer market share
- Validate trending value growth, threats and opportunities
- Maximize mutually beneficial ebusiness links to include extrannet connectivity to transfer knowledge and information between firm and customer. Clearly quantify value creation of business proposition.
- Determine any strategic partnership and growth issues required enhancing the customer relationship. It is quite often that if a particular business is not met that an opportunity exists to create a bundling of products or services with a complementor.
- Identify Customer tactical needs that are not being met by the firm and cannot be met as stated above
- Identify the value creation of such needs
- Identify if those needs can be internally developed
- If not feasible, identify opportunity to acquire capability
- Finalize decision on either meeting the customer needs or not
- If need is not addressed by the firm, understand that an open door is left that allows competition to establish a stronghold
- Clearly identify areas of mutual learning gaps that need to be addressed
- What lessons can be shared across the organization

Innovation: Earning the right to sustain the Customer Relationship

The Delta Model is clear about what is meant by the innovation phase of the adaptive process. When looking at the Total Customer Solution option the role of innovation is turned upside down. Now, instead of concentration on the deployment of internal competencies to generate new standardized, high volume products, we turn our attention to well-selected customers whose businesses we are trying to enhance[45]. It is by clearly linking innovation to the overall relationship that we maintain the opportunity to create a sustainable relationship. Lockheed Martin has gone as far as making the Customer Representative the steward of R&D resources. This means that every dollar spent in R&D

is tied directly to a customer need (order) either today, a year from now or five years from now. It is important to notice the specificity of focus, it is not internally driven, it is customer driven. For the firm this means an increased risk, given that we are going to align our innovation resources with meeting the customer's future needs. The risk in this sense though is mutual, given that the customer at this point will also deploy its innovation resources in step with the firm's. Clearly at this stage, both firm and customer have entered the bonding stage and as such following are some issues to manage:

- As the relationship with customer draws closer to the "bonding" stage, most likely the firms and customers legal department will need to become involved. This proximity, while mutually beneficial, could resemble a "joint venture" or "partnership"
- It is also possible that financial analysts from both sides will dialog and find ways to "financially engineer" the relationship
- Firms Senior Executives and Customer Senior Executives will become involved and drawn in to solidify the relationship
- Clearly define and propose key decision makers involved in determining innovation link between strategic customer and business unit
- Clearly define long-term strategic customer needs that need to be met by the firm
- Clearly define long-term strategic customer needs that cannot be met by the firm
- Clearly define mutual innovation arrangement where joint development work will be conducted and timing of the development.
- Define value creation by/for customer as well as by/for firm and commercial value to both firm and customer
- Define patent rights and transfer of knowledge rights
- Integrate defined Firm's R&D resources with Customer's defined R&D resources. (Could also be accomplished without physically relocating resources, create a virtual department)
- Determine ways in which technology can be expanded and used in mutually beneficial ways

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[45] Hax, Arnoldo;Wilde, Dan, The Delta Model: Discovering New Sources of Profitability, Copyright 1999

- If development is based on exclusive arrangement, define business model and clearly understand financial implications, as well as patent rights, intellectual property rights.
- Understand and define the value of bringing third parties into the relationship that can dramatically improve the customers and firm's economics from the technology point of view.

The Pinnacle: The rewards of the Total Customer Solutions strategic choice

From the Customer Relationship Management point of view, it is at this point, where the tactical needs as well as the strategic needs of customers are anticipated, acknowledged and exceeded. Furthermore it is at this point that there isn't any doubt about the commitment of each party to the relationship. This commitment is often materialized through reaching sole or majority supplier or through strategic partnership agreements. Furthermore a series of complex set of interrelationships have been established[46]. The strength of this model is the free flowing nature of these interrelationships, not disturbed by a bureaucratic policy on how to manage them. Moreover the model offers a rich variety of information that is shared and surfaces at each and every contact point. It is through the diversity of resources and points of view that possibilities surface of further enhancing the customer economic model.

The final metrics of all of these immense efforts clearly will and need to be reflected by superior financial results as well as bonding metrics. The Delta Model in figure 8.3 specifically captures a few measures of financial performance such as capital market indices, profitability measures, risk, cost of capital and growth[47]. The bonding metrics are reflected by Figure 8.4 in the Delta Model such as superior customer economic drivers, customer total cost with competitor's services, customer profitability, percentage of joint product development, and relative involvement in the customers value chain. In addition one would also expect that the value proposition metrics have been met and customer-switching costs are high.

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[46] Hax, Arnoldo;Wilde, Dan, The Delta Model: Discovering New Sources of Profitability, Copyright 1999
[47] Hax, Arnoldo;Wilde, Dan, The Delta Model: Discovering New Sources of Profitability, Copyright 1999

This model relationship is now based on: Value based decision-making, market pull, application and customer specific, driving standards, creating partnerships and delivering quality of all business. From this view, the system wins[48].

Conclusion:

This paper has hopefully demonstrated that if one will define as one's strategy the Total Customer Solutions choice, the resources that will deployed are very significant. This means that management has to strategically define a position within the Delta Triangle at the beginning of the strategy process. As such the Customer Relationship Management process needs to also be consistent with the strategic choice.

Some general final comments and learning from writing this paper:

1. I feel quite convinced that the Total Customer Solutions approach is an approach based on flow vs. stock, i.e. relationships, information, solutions, ideas, service, feedback, learning, linking of processes, bundling, de-bundling, re-bundling, removing barriers, etc. All of those terms absolutely do not refer to static processes.
2. Building Total Customer Relationships require extreme commitment including executive team commitment. In a recent conversation with Richard Anderson, IBM, he described how one of the metrics they use is called the "partnership agreements." These agreements measure in an explicit way the impact senior executives have on a specific customer relationship. GE's Jack Welsh, spends most of his days building those relationships.
3. Building those relationships require deep knowledge of one owns firm and a total knowledge of the customer in all of the possible ways one can imagine. That requires hard work, time, and dedication. Given the high caliber people required, it would be beneficial to minimize the administrative load. The most significant components that need to be measured and delivered are information and customer solutions. A balanced score card could significantly enhance the behaviors. One could even assign P/L responsibility to Customer Representatives.

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[48] Hax, Arnoldo;Wilde, Dan, The Delta Model: Discovering New Sources of Profitability, Copyright 1999

4. Create a Customer Centric Team that is focused and obsessed with satisfying the customer. This Customer Centric Team could be a mirror image of the Business Unit team, with the same functional managers serving both Business Unit and Customer.
5. It is through the tailoring of the activities in a customer centric way that one can begin to think about solutions. Ideally the result is economic value created within the customer value chain in such a way that no one else will be able to duplicate it. That is a sure way of creating value
6. The force field generated by powerfully held beliefs can be incredibly difficult to alter; the transition can absorb a tremendous amount of energy, with little guarantee of success. The mindset on both sides of the equation seems to have conspired to do what was least valuable for the seller and buyer alike. Mindset obstacles notwithstanding, the skills to move an organization from a product to solutions mindset can be learned. That is why we do not see many models that deliver Total Customer Solutions[49].
7. We must find alternative ways of creating shareholder value, because deflationary pressures are increasing and profitability returns are decreasing. Best Product has resulted in convergence of strategies, with little to no differentiation. The Delta Model offers the possibility to revert those trends.
8. You can no longer wing a Customer meeting or Customer relationship because they are loaded with information. It takes total and complete dedication to serve a customer.
9. If you are having trouble braking through and still feel that you have chosen the right customer, invert the pyramid of relationships. Have your CEO start the relationship.
10. The relationships are won one customer at a time and one instance at a time. We never own the relationship. We earn the trust and opportunity to serve.
11. Think in terms of speed, agility, and flexibility. So whatever organizational infrastructure you create, and remember that structure follows strategy, it needs to be agile, quick to move and react, and flexible.
12. And finally as a good friend of mine stated: "I know of only one place where a check comes from into the firm. It has Customer written all over it."

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[49] Slywotzky, Adrian;Morrison, David J, Profit Patterns, Random House,1999

13. This is part of the continuum of learning. I realize that certain issues discussed here may be quite debatable, and we all can learn by dialoguing about them. It is difficult to talk about absolutes in changing times, but we can always talk about how to earn a relationship.