Analysis in Business Planning and Strategy Formulation

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Prepared for the Art and Science of Business Intelligence Analysis, *JAI Press, Gilad and Herring, eds., copyright JAI Press*

ANALYSIS IN CONTEXT

What is Analysis?

When we speak of analysis in a business context, we typically are referring to one of several kinds of symbolic manipulation that ultimately transform "data"—isolated facts—into "intelligence"—actionable information. Merriam Webster defines analysis as "the separation of a whole into its component parts". It comes from the Greek *analyeiu* (to break up). This literal definition describes much of what we do in business analysis, i.e., to break down observed or reported phenomena into their basic elements to see what "makes them tick."

Much of the work that we do as analysts also involves *synthesis*, literally the opposite of analysis. Webster has this as "the combination of parts so as to form a whole", from Greek *synthenenai* (to put together). When an analyst takes 50 completed questionnaires and builds a coherent story out of them, it is actually synthesis that is the process. However, in this paper I have used the more conversational meaning of *analysis*, which includes both analysis and synthesis.

A good deal of business analysis involves symbolic transformations that neither break down nor build up, but rather *transform* data in a way that releases new insights. For example, taking numerical data and plotting it on a graph is in itself neither analysis nor synthesis in a literal sense, though it facilitates other kinds of analysis (like comparisons with last year's figures).

Analysis is used to mean both a *process* ("This analysis will last three days") and the *product* that results ("My analysis is contained in this report.") Typically analysis supports other core business functions, and is a staff activity. In rare exceptions (consulting firms, for example), analysis is the primary product of the company.

Business analysis has grown substantially in importance in the years since World War II. Since then there have arisen legions of corporate workers called "analysts" whose jobs consist of true analysis and other forms of symbolic manipulations, and little else. Peter Drucker called these "knowledge workers." Heavy concentrations of them are found in corporate staff functions such as market research, strategic planning, and management information systems.

Since the dawning of the Computer Age around 1950, analysts have been increasingly called on by businesses to gather and interpret data and information. The increasing importance of analysis is reflected in the fact that business leaders are increasingly frequently MBAs who have been trained in various methods of business analysis.

What is the Role of Analysis?

Analysts must bear in mind that better results are the ultimate aim of their work , not simply “better decisions”, and certainly not “better analyses”. Analysis by itself creates no value—it must be used in a decision-making context in order to provide value.

Analysis is part of a complex process that turns raw data into value for the organization. This “business intelligence value chain” is diagrammed in Figure 1. Note that the process consists of *states* (the boxes) and *transformations* (the arrows).

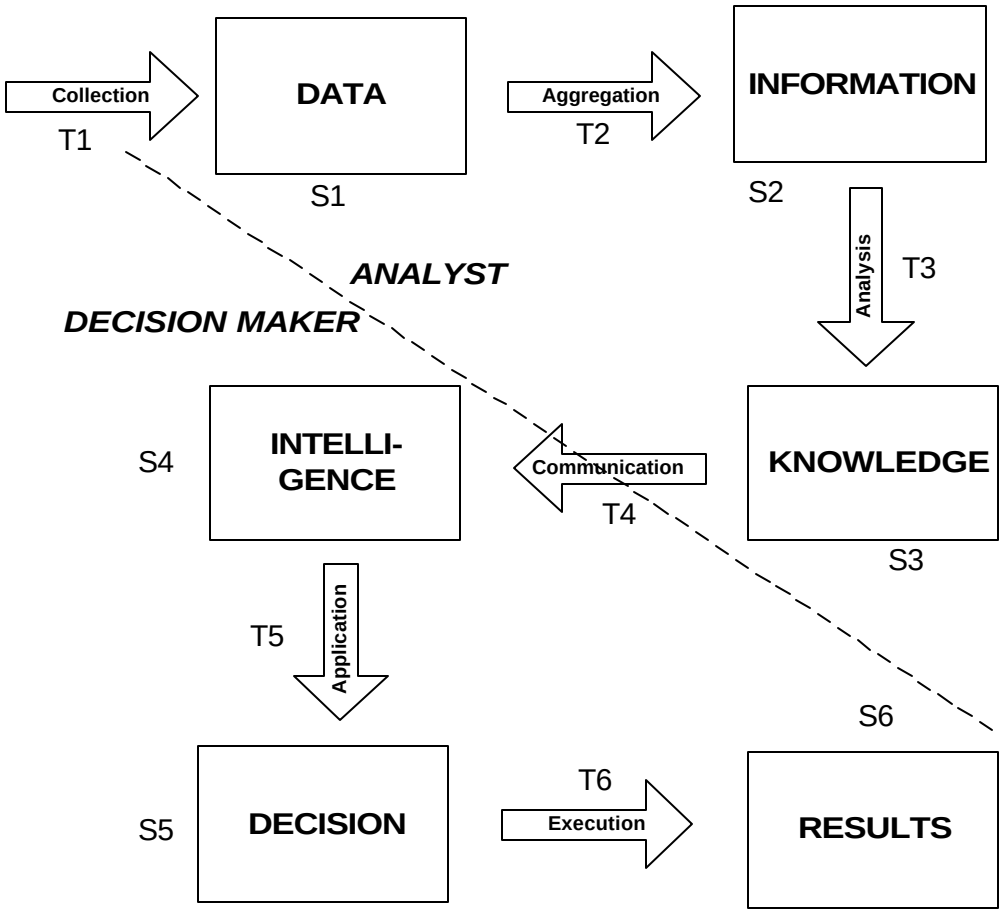

Figure 1: The Business Intelligence Value Chain

Transformation 1 is the collection of data from a universe of data sources. Data (State 1) are facts, points of information, atoms in the molecular structure of business intelligence. An example of a data element is today's closing stock price of another company who has a strategic fit with ours.

Transformation 2 is the aggregation of individual data elements to form larger patterns, or Information (State 2). An example of information is the one-year history of daily high, low, and closing stock prices and the trading volume. It is usually at this stage that other transformations occur in order to make information ready for true analysis. The information is "massaged" or "cleaned" in order to be comparable. In our stock price example, adjustments would be made for any stock splits or dividends that occurred during the study time frame. Also at this stage, "outlier" data—data that falls well outside the range of other findings, and whose credibility is thus suspect—may be discarded.

Transformation 3 is the true analysis, though steps 1 and 2 are often performed by the analyst as well. In the analysis, *comparisons* might be made with other data. For example, the stock price might be compared with that of the market overall as measured by the Standard & Poor's 500 index. Other information may be brought into the picture at this point in order to create these *benchmarks*. Symbolic transformation occur at this point, for example, preparing charts of the price histories. The information is *interpreted* at this stage—for example, a drop in stock price could have been due to poorer than expected operating results for a

particular company, or to a sell-off in the market at large. Finally, *implications* for action are developed.

Note that all of the steps described so far are performed by the analyst. In Transformation 4, the knowledge is communicated to a decision-maker. This communication must be very focused, and tailored to the needs of the individual decision maker. The result of this communication is intelligence (State 4)—the knowledge is now ready to be applied. In our example, the analyst could bring her findings to the corporate business development officer who is responsible for undertaking acquisitions.

Transformation 5 is the application of the intelligence to a business decision. State 5 is the decision itself. The nature of the decision to be made informs the rest of the process. An important decision—one in which significant resources of the organization are at stake—will require greater attention to each step than a less significant decision. The decision in this case could be one to make an acquisition offer to the target company.

Transformation 6 is the execution of an action or series of actions based on the decision made in State 5. The business results (State 6) are

where the value is created from what originally started out as data. Was the acquisition consummated, at what price, under what terms, with what results, etc.?

What Good is Analysis?

Many companies now pride themselves on their "bias toward action". As a result, disciplines like business planning have lately had to work harder to justify themselves. "Paralysis by analysis" is a danger, since too much analysis may unnecessarily delay a decision. And analysis consumes people, time, and resources.

So why do organizations need analysis? I would suggest the following reasons:

- *To reduce the number of input variables.* Most organizational decision makers would be quickly overwhelmed by the amount of relevant data available for consumption. The information explosion currently sees the amount of available business data double approximately every five years. At the same time, there is no evidence that the human mind is expanding in a corresponding way to accommodate all this information. Some psychologists, in fact, put the

number of different things that human being can keep actively in mind at once at “five plus or minus two.” One of the analyst’s tasks is to reduce the volume of material that the decision-maker must sift through. The end result of this is that she can spend time making decisions that otherwise might be spent absorbing facts.

- *To provide connections among data and information*. In addition to simply reducing the amount of data, data elements must be related to each other in a way that offers a vision of a larger whole. Ancient mariners who gazed into the night soon realized that there were far too many stars to make sense of them all *en masse.* They “created” constellations, arrangements based on human forms that literally connected the dots. From then on the night sky became a rotating group of familiar figures, much easier to understand. (The alert reader will spot this as an example of synthesis, rather than analysis, but as we pointed out earlier, both are part of what we colloquially know as “business analysis.”)

- *To provide a context for information.* Analysis provides the “so what” for information. It relates the information to organizational goals, values, and strategies. It relates information to other information.

To create stories. Analysis ultimately takes information and makes a "story" out of it, a working hypothesis. For example, Wall Street securities analysts boil down a lot of financial data and pronouncements from company management into a simple "buy, sell or hold" recommendation. In doing so, they also create a "story" about the company that tells the investor something about why he should buy, sell or hold the stock. Likewise, corporate competitive analysts create stories about the business environment. These become invaluable in helping communicate the results of their analysis to decision-makers. A good story can tie together the facts and build credibility for the analysis.

- *To compensate for lack of data.* In the "real world", analysis is often called on to create conclusions where, in a laboratory setting, there would be deemed to be insufficient data. Competitive analysts pride themselves on their ability to notice trends before they become trends, and to see phenomena developing at the periphery. In any complex system, it has been said that "a butterfly flapping its wings today in Tokyo may cause a rainstorm tomorrow in New York". Similarly, in a complex system such as our economy, something that seems insignificant today, perhaps an obscure patent filing, could prove to be the beginning of a whole new

industry to compete with our own. Analysis is often called upon to make sense of small, noisy, unruly data sets.

What Makes a Good Analysis?

From a distance, most analyses look more or less the same. They consist of words written on paper, or on a computer screen, or spoken. Charts, graphs, tables and symbols are typically included.

The presence of good data alone is not sufficient to guarantee a good analysis. It is possible that "good" raw data will be subjected to a poor analysis—and that the wrong conclusions will thus be reached.

What, then, are the criteria by which we should judge analysis? The following come to mind as characteristics of a "good" piece of analysis:

- *Comprehensive.* The analysis must consider all available data, not selectively cite facts that support a certain conclusion. All the dots must be connected, or if not, some explanation of why not must be included. Any data that should have been considered, that was not, should be mentioned as such.

- *Credible.* Not only must the supporting data be credible (with sources cited for that data), the analysis itself must be "believable". This is not to say that "conventional wisdom" type conclusions must be

supported. Indeed, there must be room for non-linear hypotheses. Nevertheless, each hypothesis must at least be internally consistent.

- *Understandable.* Elaborate analytic methods whose basic logic cannot be explained to decision makers have little value in the modern organization. The language of the analysis should be clear, direct, and lean.

Actionable. Analysis is not simple a mental exercise for decision-makers. Implications for action must be drawn as part of the analysis. An analysis informs business judgment, but is not a substitute for it. Any analysis must be subjected to the "common sense" test before being considered for action.

Can We Measure the Return on Analysis?

It is conceptually possible to state that, since analysis is a value-adding function, there is some *return on analysis* factor. This a would consist of an internal rate of return (IRR) for the process of analysis, which clearly is costly in terms of time and human and computing resources. When the return on analysis exceeds some hurdle rate, the analysis is good. When it fails to exceed this rate, the analysis is not "worth it."

The conceptual appeal of such a construct is obvious. However, in fact, it is virtually impossible to accurately measure the return on any sort of information or knowledge, as any information professional who has had to defend a budget will know. It follows logically that it is even more difficult to measure that portion of the value added that comes from just the analysis part of the process.

Even though we can't measure it, return on analysis is a useful concept, in that it that reminds us that there is a cost to doing analysis. In many cases the most significant element of this cost is *time*—delays in making a key decision while yet another analysis is prepared.

How Is the Type of Analysis Selected?

There are many different techniques of business analysis. Some of them are described later in this chapter. Any given business situation often demands the use of more than one technique, just as making a piece of furniture demands the use of more than one tool. In such a case, we can think of analysis as a *portfolio* of techniques to be brought onstream as appropriate.

It may even be appropriate to use *competing* techniques as checks against each other. I recently spoke to an investment banker who

performs evaluations of companies as part of their initial public offerings of stock. He uses no fewer than three different techniques to arrive at his valuation. If the results from all three methods are about the same, he is comfortable that he has found the "right" answer—or, at least, one that is defensible before any critical audience. If the three differ substantially, he goes back to the analytic drawing board.

An analyst usually brings the techniques she is most familiar to the situation—whether or not they are optimal for the situation. This is human nature. As the saying goes, "When you call the fireman, you get either the ax or the hose." A market analyst, a financial analyst, and an economist will look at the same situation through the filter of their respective analytic toolkits. It becomes the responsibility of the "client" for the analysis—the decision maker—to be sure that the right person or team is called on to evaluate the situation in the first place,

The business situation determines the type of analysis that is best. The type of analysis to be used in turn determines the data to support that analysis. The type of data in turn determines the type and scope of data collection effort that is required. These relationships are shown in Figure 2.

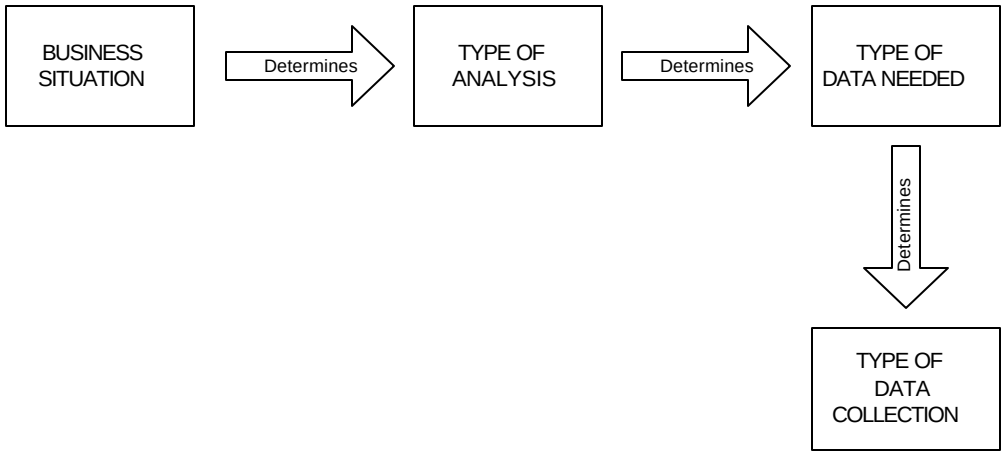

Figure 2: Selection of Analysis and Data Requirements

The reader may recognize this as somewhat of a mirror image of Figure 1. That is, the process of analysis traces in reverse the steps needed to determine which type or types of analysis are most appropriate for the business situation at hand. In spite of this, the strategy for analysis should not be "set in stone" before data collection, since the data itself may suggest another form of analysis that was not contemplated in advance.

Analysis as a Strategic Differentiator

One may even feel the need to "invent" a new kind of analysis that is new and completely unique to the situation. In rare cases, the analytic technique may represent an intellectual property in its own right that can

be protected legally through trademarks and copyrights (and perhaps even patents). The Boston Consulting Group, for example, gained prominence during the 1960s partly because its dog-star-cash cow-question mark matrix was both memorable, and applicable to one of the major management problems of the day—building portfolios of companies. Unique and persuasive analytic models are the stuff around which consulting practices, academic careers, and software packages can be built.

Analysis and communication of intelligence are the factors that will differentiate companies' intelligence capabilities at the beginning of the next century. Data acquisition is becoming somewhat more trivial and undifferentiated, since much of it can occur electronically. All competing companies are, or soon will be, looking at more or less the same set of data, delivered in virtually real time. What will differentiate them is their ability to analyze it, make sense of it, and formulate and execute actions based on it.

No two analysts will do this exactly alike. In many cases, two analysts could look at the same data set and come up with fundamentally

different conclusions. There is a great deal of art included with the science of analysis.

Corporations will become more like Wall Street in this respect. Wall Street trading firms all have massive information infrastructures that allow them to all have essentially the same market information at the same time. But because they all have it, it is no longer a differentiating factor.

What differentiates Wall Street firms, and thus enables them to create value out of the data, is:

- *Their proprietary analytic techniques and software.* They hire "rocket scientists" to develop unique algorithms, then hire top computer programmers to embed those methods into program trading and other kinds of software.

- *Their analytic people.* The top Wall Street analysts are widely quoted and followed, and can provide high visibility for their employers. They are ranked by clients each year in a widely-publicized poll. Top-ranked analysts may receive salaries up to ten times that of their less-prominent colleagues.

Corporate business data is continually becoming more comprehensive and available. If present trends continue, corporate decision makers will soon be nearly as heavily "wired" with real-time business data as are securities analysts. Ability to access data will itself not provide any strategic advantage. It is the ability to *analyze and act upon* that data that will increasingly differentiate the strategic capabilities of firms.

Can Analysis Be Automated?

The information revolution has clearly had a major impact on data acquisition—first commercial databases, and now the Internet, have put a vast array of information at the feet of the analyst. There has been significantly less impact in the area of analysis. As we'll see below, one whole category of analysis is *qualitative* in nature, and therefore not as easily automated. The other category, quantitative analysis, can to an extent be automated. Modern electronic spreadsheets have more and more of these quantitative algorithms built in, and still others are available as optional add-ins.

What's built in and automatic, of course, is simply the drudge work of number-crunching. The selection of an appropriate method of analysis, and the evaluation of the results of the automated procedure, is still the responsibility of the human analyst. Nevertheless, it is a great improvement over the situation in the early 1970s, when the analyst had to pay exorbitant rates to timesharing services to use these same algorithms.

It is, however, possible to *routinize* many kinds of non-quantitative analytic processes. An analyst may have, for example, a standing assignment to review all press releases issued by major competitors during the week, categorize them by subject and company, and prepare brief summaries for management. Any world-class corporate business intelligence facility includes a portfolio of such routinized analytic processes, as well as processes that are literally automated to the extent this is possible and cost-effective.

TOOLS OF ANALYSIS

Understanding an analytic technique is somewhat like understanding a foreign language. There is the "reading" level of knowledge, wherein you can follow an analysis that somewhat else has

constructed. And there is the "writing" level, where you can perform the analysis yourself, given nothing but the data.

The well-equipped business intelligence analyst should have at least a "reading" knowledge of most of the following techniques—and a Rolodex of specialists available who can actually produce the analyses.

Quantitative ("statistical") methods

The quantitative methods for business analysis derive mainly from three disciplines: market research, econometrics, and financial analysis. Each of these disciplines also uses qualitative methods. What follows is an illustrative list, not by any means an exhaustive one.

Market research

Market research has created a large body of statistical techniques of potential value to the business intelligence analyst. Here are brief descriptions of some of the most widely used of these.

Cross-tabulation. Cross-tabulation is a common tool for analyzing survey data. It basically consists of analyzing *segments* of the data as if they were meaningful sub-sections of the whole. In fact, the result of such an analysis often is to see whether such sub-division actually do contain meaningful differences. The segments are most often defined in terms of

demographic factors that are gathered as part of the survey. For example, within a sample overall, 60 percent of respondents may prefer Beverage A over Beverage B. One factor that the cross-tabulation may contain is age. A cross-tabulation by age could show that 70 percent of respondents age 20-40 prefer A over B, while only 20 percent over age 55 prefer A over B. These are significant factors in how these beverages are most effectively marketed.

Some basic cross-tabulation capabilities are now included in major commercial electronic spreadsheet software.

Conjoint analysis. Conjoint analysis is used to analyze trade-offs. A classic example is in the design of a new credit card. Various factors go into each card, for example, the annual percentage rate, the annual fee, the grace period, the “extras” such as buyer protection, and any rebates or credits that may be involved. Conjoint analysis can test consumer preferences for each in a very large universe of possible designs.

Multi-dimensional scaling. Here two (or more) factors are represented as axes on the same graph. A map of computer model performance (one axis) versus price (the other axis) is a simple example. Often, the axes are used to represent customer perceptions. In this case,

the resulting graph is called a perceptual map. Using automobiles as an example, consumers' perceptions of various makes of car on two dimensions, say *luxury* and *performance*, can be charted. Is is then easier to identify *clusters*, that is, cars whose luxury / performance perceptions are close to each other.

Forecasting / Econometrics / Modeling

The study of macro-economics has given rise to several techniques of value to the business analyst.

Multiple regression. The degree to which one or more *independent variables* affect a *dependent* variable can be mathematically measured. This is done by measuring the degree to which the data points fit a line (often a straight one, though it need not be.) If the data points fit the line closely, the relationship could be significant. The results can be used to forecast the dependent variable. Again, commercial electronic spreadsheets usually offer some form of this analysis.

Time series analysis. Economic and financial data are often found in the form of time series—measurements of a given variable along equal units of time. Closing prices of a stock are an example. Simply graphing these is the most common form of analysis. Various techniques to

"smooth" time series data can be used, such as moving averages and adjustments for seasonal variations. Regressions are often done using time as a variable—since time is one of the few things that is always predictable! This way, *leading indicators* (those that usually preceed a certain set of other events) can be described, as well as *lagging indicators* (those that usually follow).

Factor analysis/Neural networking. Factor analysis is a way to determine which of many factors in a data set have the most effect on another variable. An automated technique for doing this, called *neural networking*, has recently come into practice. Credit card companies use neural networking to predict which credit card applicants will be the best credit risks. Neural networking software has recently been developed for personal computers.

Indexing. Indexing is way of making data easier to compare. It is often used with time series data, wherein data for some base period is set equal to some arbitrary figure, often 100. The data for other years is then represent as the ratio of the current year to the base year, times 100. The Consumer Price Index is a common example of an indexed number.

Financial analysis

Reporting requirements to protect investors have helped create huge bodies of information useful to the business intelligence analyst.

Financial statement analysis. Here there is a good deal art along with the science. As my finance professor was fond of saying, "A financial statement is little more than a pack of lies, agreed upon." Accounting standards in the US allow companies a remarkable degree of latitude in reporting their results. This is true worldwide, and to make it even more confusing, the standards differ among countries. What this means, as any analyst learns, is that you can't simply "line up" various companies' financial statements, and hope they will be directly comparable. They won't be, and you'll have to make adjustments to make them come anywhere near conforming with each other.

One of the tricks is in being able to read the footnotes to the statements, and to understand what they mean. A company's choice of amortization and depreciation schedules, for example, could make a major difference in its financial statements, though not one wit of difference to the economic reality of its situation.

Your goal in financial analysis is to understand the economic engine that is the company you're studying. Whether it's a competitor, an acquisition target, or your own company, you need to tear apart the dry financial statements to discover the dynamics that make this company run (or not run, as the case may be).

Key ratios and heuristics. Once the data are made comparable and well-behaved, then the quantitative analysis can begin. There is a standard set of ratios that can be applied across industries, for example, the *current ratio*—the ratio of current assets to current liabilities. There are other ratios that are unique to particular industries. The semiconductor industry, for example, uses the *book-to-bill ratio* as a check on whether demand for chips is trending up or down.

Heuristics are rules of thumb that indicate whether a given value for a ratio is within an acceptable range or not.

Pro forma analysis. Where projections of future financial results are involved, pro forma forecasts (literally "according to the form") are prepared. These represent expected results from, for example, a merger of two companies.

Discounted cash flow/PV/IRR. Given the discrepancies mentioned above between traditional financial statements and economic reality, many analysts have come to view cash flow as a more realistic measure of thata reality. Discounted cash flow (DCF) analysis is a method of accounting for the time value of money—the fact that the dollar you get today is worth more than the dollar you will get a year from now. Originally applied to problems of project finance, it is now also used in analysis of mergers and acquisitions.

Present value (PV) and internal rate of return (IRR) are types of discounted cash flow analysis. Electronic spreadsheets and many hand calculators can handle this type of computation.

Qualitative ("soft") methods

There is a whole set of qualitative methods that are applicable to strategic analysis. These come from fields as diverse as economics, psychology, political science, and strategic planning.

Industry structure analysis

Industry structure analysis was defined in its current form by Professor Michael Porter of Harvard. Porter described the companies that make up an industry: suppliers, buyers, current competitors, potential

competitors, and substitute technologies that could replace the current ways of competing. Environmental factors such as government regulation must also be considered in such an analysis.

Value chain analysis

Value chain was also introduced by Michael Porter in a competitive analysis context. This method explicitly considers all the stages in which a company adds value.

- *Primary activities:* inbound logistics, operations, outbound logistics, marketing and sales, and service.
- *Secondary activities:* procurement, technology development, human resources management, and other infrastructure.

Each activity in the value chain is a potential source of competitive advantage.

Stakeholder analysis

Strategic decision-making must explicitly consider various constituencies that might be affected by a decision, and event, or a communication. These could include employees, management, customers, labor unions, and both individual and institutional shareholders

Portfolio analysis

Various methods have been developed to analyze portfolios of businesses. The results can be used to identify businesses sectors in which to make acquisitions, and existing businesses which it would be better to exit. The Boston Consulting Group's dog-star-cash cow-question mark matrix is the most widely known of these.

SWOT analysis

An explicit analysis of a business unit's internal Strengths and Weaknesses, and external Opportunities and Threats, may be used as a summary analysis that takes into account other types of analysis conducted previously.

Content analysis - classification into strategic categories

A client called me one day, having just read my report detailing the activities of her major competitors. "We knew most of what was in your report already. But the way in which you arranged it enabled us to see it in a new way." The simple arrangement of data into categories, if those categories are meaningful competitive leverage points, can have a major impact on the value of the information.

"Matrixing"

The two-dimensional matrix is a simple yet useful tool for analysis. A series of entities, companies for example, can be compared across a standard set of measures. A matrix of more than two dimensions may be conceptually useful, but is difficult to represent in the context of communicating the analysis.

Time line analysis

Taking a random list of strategic events for a company and arraying them in chronological order can be a revealing form of analysis. Patterns may become clear, and a strategic "story" for the company may be discernible. If this does occur, it becomes easier to extrapolate future possible actions and strategies.

Scenario development

Any forecast of events should be considered in light of at least two or three feasible scenarios of the future. One variation of this is the common "best case / worst case / most likely" kind of projection. In other cases, there is some inference of causality between external events and what is being projected. Any forecast of demand for industrial commodities, for example, must take into consideration varying assumptions about how the economy as a whole will be behaving during the forecast period. As events unfold, there can then be a monitoring for key "trigger" events that will indicate in fact which of the alternative scenarios is occurring.

Personality profiling of key executives

There is a convincing school of thought that says that how corporations "behave" has less to do with formal methods of analysis and strategy, and more to do with the personal characteristics of that relatively small number of individuals that typically guide the actions of even very large corporations. If this is true, one can learn much about how the company will act and react by identifying who those individuals are, then finding out enough about them to be able to develop psychological

profiles of them. The literature is full of alternative schemes for classifying personalities, including some designed specifically to predict decision-making behavior.

Political analysis

There are two sense in which this term can be used. On a macro level, political analysis is usually associated with assessments of the political risk inherent in operating in a foreign country.

On a micro level, the politics of a situation can be analyzed in terms of blocs, coalitions, reciprocal pacts, etc. This is true for situations in the private sector, as well as in government, the traditional domain of politics. Micro-political analysis is particularly powerful when coupled with personality profiling of the key individuals involved.

Business analogies / "Comparables"

We live in a era when the discipline of business strategy is becoming more scientific than it used to be. The technologies available to us allow us to test concepts, to forecast results within a smaller margin of error, and to monitor results on virtually a real-time basis. One technology in particular, the searchable electronic database, is causing a

permanent change in the way business is conducted. It is now possible to search, quickly and inexpensively, for citations in the literature that may be comparable to our currant situation. The key to the effectiveness of this technique, of course, is the ability of the analyst to determine the degree of relevancy of the analogous situation uncovered in the research.

Benchmarking

Benchmarking is a relatively new tool for process improvement or re-design. It is a comprehensive technique that includes data collection, analysis, and feedback of results. Benchmarking consists of a structured comparison between comparable entities. It was first applied to the performance of competing products. More recently, it has been expanded to include corporate processes and metrics (cost structure, for example.) Comparisons may be made with direct competitors, or with companies judged to be “best-in-class” along the dimension being studied.

Symbolic representations—qualitative or quantitative basis

Diagramming or charting a situation is itself a powerful form of analysis, as well as a supplement to several of the methods mentioned above. Patterns among numbers often become more evident when a graph is drawn. On the other end of the spectrum, something as

intangible as a business process can be diagrammed, using the technique of flowcharting. Again, this can make clear relationships that would have been difficult to notice without the diagram.

Such symbolic representations can also be very helpful in communicating the results of an analysis. In addition to illustrating key point elegantly, they provide relief from the monotony of words.

APPLICATIONS / CASE STUDIES

New business entry decision

In consulting firms' brochures and proposals, there are often pictured neat phases of work. Data collection, then analysis, then representation of results. When one is in the middle of a tough strategy-oriented research effort, there are no such neat boxes. The effort may oscillate rapidly between data collection and micro-analysis (as opposed to the "grand analysis" that drives the entire effort). Concurrent, real-time analysis must be used to determine whether the current avenues of inquiry are worth pursuing. If not, they should be modified or dropped.

Conversely, the micro-analysis of a certain data source may indicate that there is a new avenue worth pursuing that was not

anticipated at the beginning of the effort. Again, modifications of the original work plan may be in order.

Statement of business problem

In this actual case, a large company wants to know if their decision to enter the car wash business—which decision has already been made—is right. ("Car wash" is a disguised version of the actual business.) It is a business that is largely fragmented, with no dominant providers nationally, and only a few regional suppliers. The company sees an opportunity to create a nationally recognized, branded service that "fits" with the other services they already offer their customers. The company has budgeted $2 million for the national rollout of the service.

Data Collection

Literature search

The first stop is an electronic database search on the car wash industry. It is not an industry that is fashionable to write about. A total of three articles result.

Author interview

One of the articles is by a professor on sabbatical at the Automotive Services Trade Institute (again, disguised). He has left the Institute, but through them we manage to locate him. He is writing a book on the car wash industry, and shares with us some of the sources he will be using.

It turns out that state investigators in three states have conducted studies of the car wash industry. We contact those agencies, and get the reports. Now we have developed a background body of information on the industry.

State and Federal Regulations

The car wash industry is regulated in several states, and others are considering imposing such regulations. Even the federal government has considered some regulations. We conduct an electronic database search that enables us to determine the status of current, pending, and proposed legislation in each jurisdiction.

SEC Documents

Our work so far indicates that there are several chains of car wash providers that operate regionally, and are publicly held companies. As a result they must file regularly with the Securities and Exchange Commission. We obtain recent annual reports and 10-K filings for them.

Provider Database

Using another electronic database that comes originally from the yellow pages, we determine the number of car wash providers (around 5,000). We are able to use their zip codes listings to map their locations around the US. We also have names and phone numbers for them.

The provider database is married with the PRIZM (tm) database in order to gain a picture of the demographic base for the car wash business. This step is also used to select cities and regions for upcoming customer interviews.

Provider interviews

We use the database of providers to conduct interviews with a sample of providers. This gives us first-hand information on the competitive environment, pricing, the financial performance of the business, customer preferences, how they differentiate themselves, how they advertise, and so on.

Customer interviews

Finally, interviews of customers coming out of car washes are conducted in twenty cities around the country. We test customer preferences, selection criteria, price elasticity, and other factors.

Analysis

Regulations

A review of regulations indicates which states might be areas to test the new business in, and what direction any federal regulatory initiatives are likely to take.

Competitors

A review of the financial statements and the provider interviews these begins to give a picture of the competitive environment. We are also able to begin to build a financial model for a company in the car wash industry.

Customer preferences

Analysis of the customer interviews gives us detailed information that allows us to develop market segmentation criteria—to highlight differences, for example, among those who get the car washed regularly once a week and those who get it washed "when it needs it". Proximity to the car wash (work or residence) turns out to be a major selection criterion. The idea of a national car wash chain sounds appealing to the majority of these customers.

Financial model - storefront

Based on a synthesis of the data from the public financial statements, and the interviews with providers in the business, we are able to build a dynamic spreadsheet model of a car wash location. We can estimate revenues, costs, and margins one month after opening, six months after opening, a year after opening, and the "steady state", which is achieved after 18 months.

Financial model - enterprise

We build a second model that incorporates the rollout scenario that the company has planned (20 stores after 6 months, 50 stores after one year, etc.), as well as the micro data from the storefront model. This "enterprise" model enables us to construct a pro-forma profit and loss statement for the business.

Result

Our model shows that the anticipated returns from this business could be much lower than the company had originally estimated. The company decides to investigate other opportunities instead of this one. $2 million in rollout costs are saved.

Acquisition Decision

The decision to acquire another company is another kind of decision that requires intensive support from the business intelligence function. Several parties are typically involved, including corporate strategic planning, top management, and outside advisors such as investment bankers and lawyers.

Acquisitions can be financially driven, or strategically driven. Many of the acquisitions of the 1960s and 1970s were of the former variety, and were driven by the effects of the transaction on the share price and financial results of the acquirer, and/or the need of the acquirer to diversify into industries with different business cycles. This resulted in the formation of companies like ITT and Litton Industries, which owned hundreds of companies in dozens of widely diverse industries.

Now, more acquisitions are driven by strategic considerations, including:

- Gaining key technologies and patents
- Gaining key people
- Gaining access to new markets or distribution channels
- Gaining manufacturing capacity
- Rounding out the product line

Here, the acquisition is the answer to a strategy problem, rather than an end in itself.

In an acquisition, the analysis proceeds in a sequence of phases somewhat like peeling an onion—you need to develop a progressively greater depth of knowledge about a progressively narrower field of potential candidates. Finally, a few candidates emerge. From there it is a question of contacting them directly, and finally negotiating with them and *their* advisors. The following hybrid compiled from several acquisition assignments will illustrate the key phases of data acquisition and analysis.

Review of strategic intent

In this first step, we interview management in order to gain a general idea of their intentions behind making the acquisition. In one case, for example, the publisher of a financial magazine and series of newsletters is looking for new businesses to enter that could broaden his offerings to his existing markets. We are to stay, in other words, in the general realm of information products and services for the financial community.

Sector analysis

Initial research indicates that the financial information industry has been segmented by others according to several different schemes. (This is true of most industries, that there is no single best way to define its parts.) After reviewing several of these, we construct a composite segmentation scheme for the purposes of the rest of the analysis.

Using the composite scheme, we then gather macro-level data on current and historical growth rates, current and historical size, and current profitability. Our model, which incorporates these factors, indicates that two sectors are particularly attractive, *print databases*, and *online databases*.

Identification of "long list" companies

We then refer to several directories and databases in order to identify companies in these two segments. We enter these into a PC database management program for further manipulation and analysis. We "slice and dice" the list of companies, which has about 300 names in it, different ways (by revenue size, by subsector, and alphabetically).

Review of "long list" companies with management

We then meet with the top management of our client company to review the preliminary results. To the extent that an analyst can involve his client in the interim analysis, the client will have bought into both the

process and the product early on. And the client's expertise, though less structured and more anecdotal, brings a less removed, more in-the-trenches view to the process.

During this meeting, certain of these "long list" companies are rejected out-of-hand, for various reasons. Other companies have already been on the minds of client management. Still others, though not top-of-mind to management, are kept on the list for further consideration. The result is a "short list" of about 35 companies.

In-depth research against "short list" companies

Dossiers for each of the "short list" companies are prepared, using published information. Each dossier includes:

- Basic identifier information
- Lists of officers and directors
- Descriptions of the company's main lines of business
- Basic financial information
- Recent news articles about the company
- Investment analysts' reports on the company.

Second review

These company dossiers are sent to management for a second round of reviews. This brings the list down to about 10 companies. The “strategic” part of the analysis ends here. At this point, the investment bankers and attorneys take over the analysis.

Contact with target company principals

At this point, preliminary contact is made with the companies still on the list. Since this is to be a “friendly” merger, the cooperation of the acquired company’s management is seen to be essential. Several more companies fall out of consideration at this point.

“Newco” financial analysis

Using various assumptions about personnel needs, accounting treatment of assets, and other factors, pro forma financial statements for the “new company” are prepared. Since new shares are to be issued, the effects of this on dilution of results for the existing shares is considered.

Due diligence

In this final phase of analysis, all public filing documents of the candidate companies are read closely. Minutes of shareholders’ and Board meetings are reviewed. Management of the target companies are interviewed regarding their plans, strategies, and challenges. Key customers are interviewed regarding the companies, their performance, and their management.

Negotiation

Compatibility of management and management style are essential for a successful merger. By this time, a clear front-runner has emerged. It is now a matter of reaching mutually agreeable terms among the principals, and, finally, convincing the Boards and shareholders of both the acquirer and the target company to agree to the negotiated terms.

CONCLUSION

Business analysis is part science, part art. The science is in knowing the tools, techniques and sources for collecting and making sense of business information. The art is in having the intuitive instincts to be able to sense what the data points are saying—or, when they are silent, what their silence means.

The analyst takes data points, and connects them to make pictures out of them. Then she makes a series of pictures, and puts them in sequence to make moving pictures out of them. Then she takes the moving pictures and gives dimension to them, so they are like holograms. Then she makes the holograms speak to us.

Like the scientist, the analyst creates hypotheses—stories about the way things are, based on the known facts. As new facts come to his

attention, he incorporates them into the hypothesis. Occasionally, a fact that doesn't "fit" the working hypothesis crosses his radar. The analyst must discard it as noise, or somehow bend the hypothesis to fit the new data. Sometimes even bending is not enough—the hypothesis must be reinvented entirely.

This is the challenge of business intelligence.