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Electronic Database Support Systems for Strategic Planning Activities in the Hospitality Industry

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Abstract
An electronic database support system for strategic planning activities can be built by providing conceptual and system specific information. The design and development of this type of system center around the information needs of strategy planners. Data that supply information on the organization's internal and external environments must be originated, evaluated, collected, organized, managed, and analyzed. Strategy planners may use the resulting information to improve their decision making.

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by
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Most people are familiar with how American Airlines used its reservation and yield management systems to capture and maintain market share. In fact, all major airlines currently use computer-based reservation and yield management systems. Hotel chains also invest in and enjoy the benefits of sophisticated reservation systems. Holiday International, for example, has recently invested millions of dollars upgrading its information systems and Choice often markets itself as a company that can deliver bookings because of its superior reservation system.

Harnessing the power of information technology is particularly important to the hospitality industry because the information content of its operations is high. Many different types of information systems have been developed, but not all have proven successful. Yield management, for example, was introduced into the hotel industry more than nine years ago, yet, a recent telephone survey indicated fewer than 1 percent of lodging properties employ it.[1] Sheraton took an early lead in the development of executive information systems (EISs) by working as a beta test-site for a major EIS developer, yet relatively few of their properties use the technology.

Why do some types of information systems flourish while others dwindle? There are many possibilities; costs may exceed benefits; the

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system may be too difficult to operate; no one may want to support it; or the system may demand too much from the organization. Nevertheless, companies continue to invest in "high risk" systems because they act as tools to satisfy particular needs and because the payoffs can be considerable.

An area increasingly in need of more sophisticated support is that of strategic planning. Many experts feel that strategic planning is one of the industry's largest challenges. Such planning is challenging because it involves open systems and requires organizations that can transform as they integrate information. Support must focus on internal and external environments while integrating quantitative and qualitative information with intuitive decisions and participatory involvement.[2]

It is possible to support strategic planning activities with electronic databases and data analysis. To succeed, these systems require vision, internal and external information sources, prudent management, specialized analytical methodologies, effective decision-makers, and communication that elicits change. Like high risk systems, database support systems for strategic planning activities require changes in the organization and top management support, and may be difficult to operate. However, unlike high risk systems, they do not have to be complex, expensive, or even complete to be useful.

Even if your company is not actively engaged in strategic planning activities, a vision of how information technology can help its members to meet corporate objectives is useful. If a company is engaged in strategic planning, a vision of the role of information technology is imperative. The result of a successful strategic planning database support system is a powerful competitive weapon, but it must originate from a clear vision.

Top Management Must Have an "Information Vision"

External market pressure by itself will not direct an organization. Nor does the environment predetermine how well problems will be solved or how choice, or the lack of it, will resolve them.[3] Contemplation, resolution, and strategic determination are essential for an organization to endure.

A hospitality organization's performance depends upon how well and how quickly its members can convert knowledge from information and information from data. Data alone are simply facts and figures. Information is data that is organized to improve decision making, and knowledge is information that is associated with other information to form a specific body of knowledge.

The role of information technology has always been to deliver new services, or to help solve critical problems. If its full benefit is to be realized in strategic decision making, top management must take the lead by envisioning how information can best be exploited, and provide employees with the information resources they need to optimize their decisions.

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To achieve this, there must be a conscious effort to blend business and information technology throughout the organization. One approach is to develop employees who are hybrids of business and information technology. This provides the organization with people who know the business well enough to identify an opportunity and who know the technology well enough to understand how it can be applied. According to Meiklejohn,[4] British Airways has been working to develop this type of an employee.

Findings from survey results suggested that information systems that fail to support organizational strategies and missions often do so because senior management fails to communicate its company's strategic business plans.[5] To harness the organization's information potential, an information vision must be developed and communicated throughout the organization.

Electronic Database Support System Is a Competitive Weapon

Although there is no one right vision, it is fitting and appropriate to visualize an electronic database support system for strategic planning activities as a competitive weapon. Such a system would be important in providing those involved with the strategic management process the right information to make important decisions.

The specific design will be unique to each organization, but certain activities will remain in common. These activities include assessing the organization's strategic information requirements, originating, organizing, managing, and analyzing data, transmitting the results, making decisions, communicating decisions, and providing system feedback. Exhibit 1 depicts the relationships among these activities. The upper portion of each box represents the database activities just listed and the lower portion the type of employee most likely to be involved. In practice, one person may be responsible for several activities, especially in smaller organizations.

Information Requirements Must be Determined

Hospitality organizations must first ask: What information do we need? What forms should it be in? And, how is it important to people in the organization?[6] To answer these questions, the process of strategic planning must be understood.

Good strategic planning begins with an evaluation of the organization's external business environment. It is a difficult and continuous task that should result in a list of opportunities and threats. The impact of supplier, competitor and customer behavior, labor markets, general economic conditions, political activity, and impending legislation must all be considered. Environmental data should reveal trends, forces, and events that could impact the organization along with their timing and probabilities of occurrence. Competitor files should provide insights into competitors' strategic initiatives rather than just common information. Supplier information should be current. Labor market data must include material on government regulations as well as

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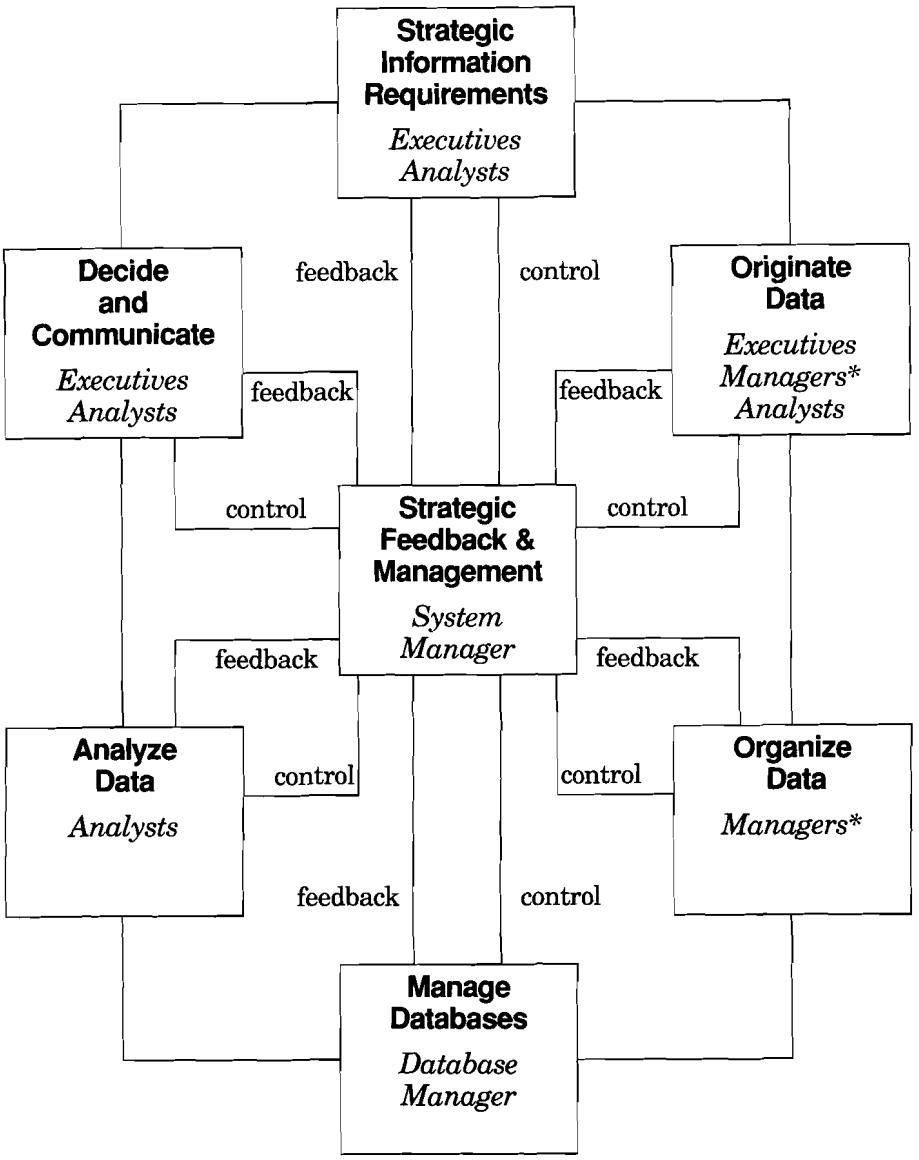
Exhibit 1
Electronic Database Support System for Strategic Planning Activities



* "Managers" refers to System and Database Managers
Note: One person may assume several roles

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Exhibit 2
Examples of Economic and Political Trends Disclosed From Trend Analysis

- Global corporate downsizing
- Disparity between the "have's" and "have not's"
- Information and communication technology revolution
- The leadership vacuum
- The absence of values
- Degradation of the environment
- The demographic impact of the baby boomer generation
- Increasing inability of governments to provide basic services
- An increasing individualistic society
- The growing strength of special interest groups
- Virtual corporations
- Global regional economic power centers
- Global financial flow

demographics. And customer information should be developed from a variety of sources, not the least of which are the customers themselves.

To assist in this effort, the environment may be broken down into categories in order to enhance the data gathering and analysis processes. Such a categorization system is available in the textbook by Olsen, Tse, and West, and it allows data to be placed into specific categories for analytical purposes.[7] Without such a scheme, it is almost impossible to organize, manage, and interpret large amounts of data relating to the forces driving the business. Exhibit 2 illustrates examples of events in the economic and political environmental categories that could have an impact upon the multinational lodging industry.

Next, an internal or firm analysis is performed. Organizational strengths and weaknesses, in the context of events previously identified in the environment, are evaluated by functional areas such as human resources, finance, and marketing. Internal data generated from typical performance indicators should reveal where the company is doing well, where it is deficient, what its history and direction are, where it could excel, and where it may fail if the events identified in the environmental analysis come to pass.

After the internal and external environments have been assessed, environmental threats and opportunities are compared to the organization's strengths and weaknesses. In this context, the company's mission statement should be re-evaluated. Does the current mission statement reflect the best match between the company and its external environment?

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Exhibit 3
Information Richness and Communication Media

Information Medium	Information Richness
Face to face	Highest
Telephone	High
Written (Personal)	Moderate
Written (Impersonal)	Low
Numeric Output	Lowest

Whether performed manually or electronically, the process of collecting and analyzing data is iterative and continues to add value with each cycle. This process will only be effective if the organization carefully identifies both internal and external information needs and then seeks to match those needs with available resources.

Data Must be Originated

Once the organization has assessed its information requirements, internal and external sources of data must be originated. To select data sources that meet an organization's information needs, the concept of information richness should be understood.

Daft and Lengel[8] define information richness as the information carrying capacity of data. If the communication of a datum, such as the company's net profit figure for the year, provides substantial new understanding, it is considered rich in information. If it provides little or no new understanding, it is low in information richness. Thus, the same data may have different levels of richness under different circumstances.

In a similar sense, some types of communication media can carry richer information than others. For example, face-to-face communication typically offers richer information than a written report of the same material because expressions can be interpreted, feelings sensed, and questions answered. This explains why executives, who are dealing with complex problems and facing high levels of uncertainty, are more likely to communicate face-to-face, or over the phone, than by text. For example, executives holding face-to-face discussions with a panel of financial analysts can learn more about their firm's performance, than by simply comparing annual reports. Exhibit 3 lists information media and their relative ability to carry information.

When identifying a data source one must first determine if it can provide information that fulfills a need. Information that fulfills a need is termed "effective information" and suggests a certain level of quality One set of measures for information quality is validity and reliability. Another set of measures is relevance, timeliness, accuracy, and ver-

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ifiability.[9] For example, when sourcing competitor information one might ask how much information that cannot be verified is acceptable.

The second consideration is efficiency. Information-rich data sources are often more difficult and costly to obtain than less rich data sources, but they can save considerable time and effort. Data that are less rich must be aggregated, processed, and analyzed. The less information costs the organization (including acquisition and processing costs), the more efficient it is. If information from two sources costs the same, the one that requires less processing (to be of equivalent value) is more efficient than the other. When the cost of evaluating the quality of new data sources is high, existing data sources typically offer greater efficiency. Hospitality organizations often discover they don't need more information; they just need to learn how to use what they already have.[10]

The executive's mind is the one "database" that always stores information from a wide variety of sources. While this is obligatory and good for the executive, it compels the organization to depend on a particular person for much of its environmental intelligence. If the executive leaves the organization, or simply forgets something, the information is lost. It is also time consuming for executives to educate their fellow strategic planners, but the receivers do benefit from rich, face-to-face communications during such briefings.

Successful Databases Require Varied Sources

Successful databases for strategic planning require a mix of internal and external information sources. These sources may be classified as either human-based or computer-based and may use either formal or informal channels. In an ideal situation, electronic databases would hold everything important to the strategic planner. Unfortunately, some types of information cannot be captured electronically; other types are too expensive to convert, and still other types will lose their richness in the conversion process. Exhibit 4 shows human-based and computer-based information sources broken down by the four types of information channels. For each channel the grid depicts sources and notes the feasibility of converting human-based information to computer-based information. It is relatively impractical, for example, to convert external-based informal information (like a chance meeting between two executives at a charity event) into storage on a computer. The following sections explain more about the different types of information channels to help identify where strategic information originates.

- **Internal Sources:** Internal information sources originate from either formal or informal channels and are relatively easy for the organization to obtain and control. Examples of internal information sources include rumors, informal meetings, conversations, memos, formal presentations, strategic plans, financial reports, operational reports, marketing reports, and e-mail.

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Exhibit 4
Electronic Database Support System for Strategic Planning Activities

	Human-Based Moderate to High Richness Limited Retrieval Limited Access	**Computer-Based** Low to Moderate Richness Fast Retrieval High Access
Informal Channels	Conversations, Memos and Unplanned Meetings	Electronic Notes
	→ → → → → → → → → → → →	
	Executives Managers Line Workers Staff	(transcriptions - - $$$) (recordings - + $$)	Electronic Databases
Formal Channels	Reports, Letters, and Planned Meetings	Electronic Mail MIS Reports
	→ → → → → → → → → → → →	
	Executives Managers Line Workers Staff Consultants	(transcriptions + + $$$) (recordings - + $$) (scannings + + $)	Electronic Databases
Informal Channels	Conversations and Unplanned Meetings	None
	→ → → → → → → → → → → →	
	Competitors Suppliers Customers Regulators Politicians	(transcriptions - - $$$) (recordings - + $$)	Electronic Databases
Formal Channels	Reports, Journals and Planned Meetings	Database Services
	→ → → → → → → → → → → →	
	Competitors Suppliers Customers Regulators Politicians Consultants	(transcriptions - + $$$) (recordings - + $$) (scannings + + $)	Electronic Databases

- - relatively impractical - + somewhat impractical + + reasonably practical
$$$ highly expensive $$ moderately expensive $$ relatively expensive
*Cost is dropping as technology advances

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Computer-based internal information is normally the organization's most abundant data resource. Management Information Systems (MISs) are designed to manage and report internal information and are a classic source of formal computer-based information. Unfortunately, much of the data are not presented in a way that strategic planners can easily apply, nor are they as rich as human-based sources. Executive information systems (EISs) represent the state of the art for organizing MIS reports and presenting them to the executive in an easy-to-understand format.

• **External Sources:** Environmental scanning is the primary method for collecting external information. It is the process of periodically sampling external events, forces, and trends that may impact the organization. Examples of external sources include formal and informal meetings, conversations, presentations, annual reports, news articles, product literature, price lists, market studies, journal articles, public filings, bulletin board systems (BBSs), Internet, Bitnet, and commercial databases.

Studies by Mintzberg, Choran, and Kurke show that executives spend about one-third of their time in verbal contact with people outside the organization.[11] Most of this time is via informal face-to-face contact and telephone conversations.

Human-based information from formal external channels is abundant. Written material is everywhere. Some governments spend billions of dollars gathering and publishing data for the benefit of their citizens. Laws and regulations require public corporations to disclose financial data. The hospitality industry has many highly competitive trade and professional journals to select from and some provide good environmental information. The latest trend has been the industry newsletter where analysts publish and distribute "inside information" at relatively low cost.

The problems with human-based information from formal external channels are not cost and availability as much as organization and management It is difficult and impractical to organize, store, and retrieve volumes of published data on a manual basis.

One approach is to convert the information. Some companies have articles abstracted and stored in an electronic format for about $12 each, while others employ clipping services to cut important articles out of a wide range of sources. For example, Motorola has a professional firm abstract about 5,000 articles each year as part of its environmental scanning program. Executives then access these abstracts to keep abreast of activity in their respective business environments. Typed material can now be quickly and accurately scanned into electronic databases. This process helps to centralize external information sources, reduce duplication, and make information more accessible to organizational members involved in strategic planning.

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External Computer-Based Databases Expand

Nowhere is the dawning of the information age more evident than in the proliferation of external computer-based databases. Organizations that have developed truly useful computer systems have so much money invested that they are eager to sell access. They don't fear that access to their systems will eliminate their competitive advantage because they consider their experts better at analyzing information than those who are accessing it.[12]

American Airlines is a good example. This company has spent close to a billion dollars perfecting its information systems. Now it is willing to license much of its technology because it feels that its analysts are best in converting the data to information. American Airlines realizes that the market power it might enjoy by keeping the system to itself is not as great as the revenue it can generate by selling it.[13] Similarly, Holiday Inn Worldwide is making its reservation system available to others.

Examples of commercial electronic databases include SDC Search Service (ORBIT), Interfile, Disclosure, National Automated Accounting Research Systems (NAARS), Westlaw, Lexis, Flite, New York Times Information Bank, Compuserve, ADP Network Services, Data Resources (DRI), General Electric Information Services, Mead Data Central, SDC Information Services, Dialog, Compuserve, Knowledge Index, Source Telecomputing Corporation, and Dow Jones News Retrieval. These and other services allow executives to monitor industry news on a daily, even hourly basis. These data can be entered directly into an electronic database with minimum effort since they are already electronically based.

Some of these databases can be purchased on CD-ROM. The Bureau of Economic Analysis, for example, has begun moving its voluminous collection of economic statistics onto the CD-ROM format. The Regional Economic Information System (REIS) contains economic data on 3,107 countries and 337 metropolitan areas from the years 1969 through 1992. It includes personal income data, farm income, SIC breakdowns, employment statistics, and more. In all, it includes over 450 megabytes of data and sells for only $35. (Accession number 55-92-30-599. Phone number 202-606-5360.). A consortium of hospitality organizations including the American Motel and Hotel Association, the University of Nevada-Las Vegas, Cornell University, and the University of Wisconsin have produced a CD-ROM that holds citations and abstracts of hospitality related articles.[14]

Data Must be Organized

Data organization differs among source, usage, and data types. Macro environment, competitor, firm, customer, supplier, and labor market data are best organized in distinct ways. Users may require different organizational schemes for analysis, distribution, and presentation. The organization of numeric data will differ depending on whether it is stored in spreadsheet or database programs. Text-based database management programs organize data in particular formats.

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Graphics require an organizational scheme that can be supported by a graphics-based database manager. Audio-visual data require organizational schemes acceptable for multimedia database management.

Traditional designs for data organization include relational, network, and hierarchical designs. Relational designs have been popularized by the many database management programs available for the personal computer, including DBase, RBase, Access, Paradox, and FoxPro. One principal advantage of relational databases is the minimization of data redundancy. Network models, while not as common, are more flexible than any of the other types of organization schema, but more difficult to program. Hierarchical layouts popularized by IBM's IMS system in the early 1960s are intuitive and powerful, but are also considered difficult to program.

Good database organization keeps data separate from programs, uses only one location for data, keeps redundancy to a minimum, and uses a data model (e.g., relational, hierarchical, network, or other). Other important attributes for data organization are physical and logical independence. Physical independence means if the internal level of data is changed, the conceptual or external representation of data is not affected. Relational data structures can do this easily, but it is more difficult for hierarchical structures because their internal configurations are highly related to their physical configurations. Logical independence means if the conceptual or external level of data is changed, it does affect the internal model.

Even though database organization schemes can become quite complicated, databases for strategic planning do not demand sophisticated designs to be useful. The quantity of data and the sophistication of the database design are not as important as the quality of data and the quality of the data analysis. In fact, data organization should be kept as simple as possible for strategic planning activities. There is even evidence that smaller systems are more cost effective than larger ones. Fuld[15] found that small systems can be very productive and that there is a diminishing return on the size of the investment.

Software Is Critical to System

The most important element of a good strategic planning support system is software that features powerfill modeling. One approach is to use specialized database programs for different types of data in an operating system that allows the products of those programs to be freely exchanged. This will keep the logical independence high and allow the most powerful modeling programs to be used. For example, financial data are maintained in a financial management package; reports are kept in a text-based database manager, and numbers that undergo heavy statistical analysis are maintained in a statistical buy package. Each of these programs uses a different organization schema for its respective data. As long as the results can be exported and imported through a common medium, for example ASCII in the DOS or Windows environment, the particular data organization for

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Exhibit 5
Products and Vendors

Decision Support Systems

Name	Vendor
Express	Information Resources, Inc. 200 Fifth Avenue, Waltham, MA 02254 617-890-1100
SAS	SAS Institute, Inc. SAS Campus Drive, Cary, NC 27513 919-667-8000
System W DSS	Comshare, Inc. 555 Briarwood Circle, Ann Arbor, MI 48106 313-994-4800

Text Based Database Manager

Name	Vendor
askSam Systems	askSam Systems P.O. Box 1428, 119 S. Washington Street Perry, FL 32347 904-584-6590

each modeling environment is not as important as the analytical power.

A second approach is to use a flexible alphanumeric and/or multimedia database for all primary data. With a powerfill query language, programs can be written to export the data that are required for specific modeling. The data are exported and modeled in a more specialized software package, then the results are imported back into the primary database for presentation to the strategic planner. For example, a relational database manager such as FoxPro or DBase can be used to store both alpha and numeric data. If a special statistical analysis is required, a report is written to export the appropriate data into a statistical analysis package such as Statistical Package for the Social Sciences (SPSS). The numbers are then analyzed and the results imported back into the database.

A third successful approach is to use a decision support system (DSS3 designed to manage databases in combination with analytical data modeling). DSSs are purposefully designed to combine databases with analytical models. This makes DSSs ideal for many of the types of analysis required for strategic planning activities. DSS users claim they benefit by an increase in the number of alternatives examined, a better understanding of the business, fast response to unexpected situations,

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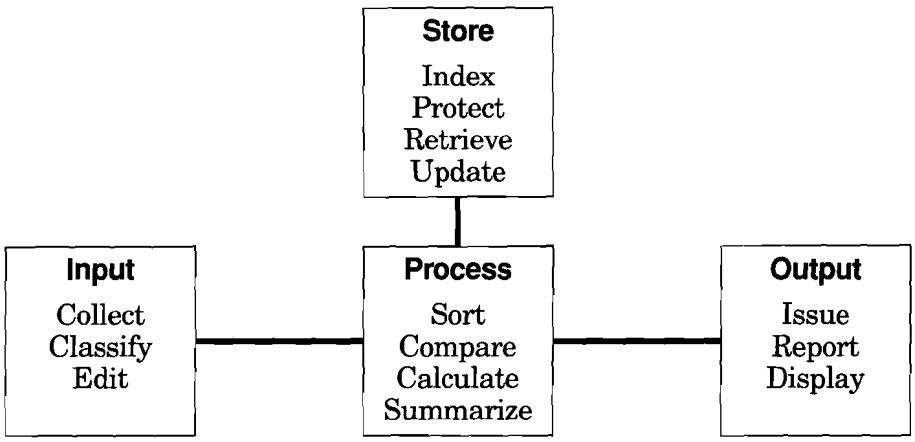
Exhibit 6
Database Managment

Planning, Organizing, and Controlling Data



Adapted from: Hicks, 1992[26]

the ability to carry out an ad hoc analysis, new insights, improved communication, better control, monetary savings, time savings, better decisions, more effective teamwork, and better use of data resources.[16] All DSSs manipulate numerical data, but not all DSSs support text. A list of DSSs and text-based database managers is provided in Exhibit 5.

Database Must be Managed

Database management is the planning, organizing, and controlling of data input, storage, processing, and output. Information's intangible nature makes data management a complex task and it is difficult to evaluate the effectiveness of the database manager. Many hospitality organizations are limited in the skills necessary to manage this important function, especially when many of the existing databases are difficult to integrate into an overall system.

The database manager is given the responsibility and authority to manage data used for strategic planning activities. He or she must be a person who has strong technical capabilities, works well with different types of people, is responsible, and can be trusted with sensitive information. The manager must also be able to identify useful information, organize it properly, coordinate the system, deliver information on time, reduce duplication, and stay within budget.[17]

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• **Planning, Organizing, and Controlling:** The input, storage, processing, and output of data require planning, organization, and control. Exhibit 6 shows how these functions are related and the type of activities involved. Data input involves collecting, classifying, and editing. Data storage involves protecting, indexing, retrieving, and updating. Data processing involves sorting, calculating, summarizing, and comparing. Data output involves reporting, displaying, and issuing.

Information is a corporate asset that must be controlled. Standards for information quality and its management must be set and compared to actual conditions. Variances should be regulated just as with any other corporate asset and warning signs should be carefully monitored. Williams and Dordick[18] suggested that six conditions should be watched as indicators of system problems. These included information overload, information scarcity, information duplication, incorrect information, a excessive workload on information providers, and excessive costs.

Data Must Be Analyzed

Information systems are so widespread that they do not, by themselves, represent a competitive advantage. The new competitive challenge is to develop information through data exploitation. As Hopper[19] recognized, some companies will excel in manipulating and analyzing the data electronic information systems offer, but none will be locked out of its access.

Data are analyzed for strategic planning activities to gain insights into the options an organization has in charting its future and to assess the potential consequences of its decisions. Analyzing data for the purpose of strategic planning requires the development of a systematic capability to collect, array, and analyze a large number of variables in an effort to represent a system of relationships. The product of successful analysis is information rich data.

The analyst holds a crucial position in the database support system. He or she must know the business and environment, be intelligent and creative, and have a "toolbox" of quantitative and qualitative analytical skills. Some strategic planners prefer to do the analytical work themselves because in the process of modeling and analyzing a great deal of knowledge is acquired. However, using several analysts at some point in the process insures more complete and comprehensive results.

The first step in data analysis is to determine what the strategic planner needs to know. If the planner rejects certain types of information, it is counter-productive to spend resources to supply it. Some strategic planners are satisfied by what they get in the normal course of business. Others want everything. In the first situation critical information will be omitted, while in the second situation an overload condition is created.

The types of data analysis required to provide strategic planners with information they need will differ depending on the problem to be

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solved and the nature of the data. Sprague[20] suggested that there are two fundamental types of data to be analyzed. Type I employ well-defined procedures, are easily measured, and are well-formed. Examples include industry performance, market research, and competitor data. Type II are process-independent, difficult to measure, and ill-structured. Type II data are more typical of strategic planning activities that include detecting, monitoring, forecasting, problem-solving, design, and communication. Exhibit 7 lists many of the methods used for quantitative and qualitative data analyses, categorized by applications. Some techniques work best for detecting, monitoring, and forecasting; others work best for problem solving and design; some are best for communication, and some can be used in a variety of applications.

• **Quantitative Methods:** Quantitative analytical methods are used to evaluate numerical data. Their primary advantage is that large amounts of data can be analyzed in many different ways with a high degree of accuracy. Predictive and explanatory relationships that cannot be identified by visual inspection can often be disclosed using quantitative techniques. When the attributes of events and activities can be measured, and activity in the time period under investigation is relatively stable, quantitative methods are the preferred forms of analysis.

Strategic planning does not require design and problem-solving as much as it does detection, monitoring, and forecasting. The most important quantitative methods for design are capacity planning, critical path method (CPM), program evaluation and review technique (PERT), financial modeling, Markov analysis, queuing theory, sensitivity analysis, and simulation. Dynamic programming, goal programming, multivariate analysis, linear programming, nonlinear programming, and other optimization techniques are more for problem-solving. Accounting analysis, financial analysis, econometrics, multivariate statistical analysis, neural nets, simulation, statistical, and time series analysis are the most common types of quantitative analytical methods employed to detect, monitor, and forecast.

• **Qualitative Methods:** Qualitative analytical methods are based on the identification of patterns occurring in the data and the associations which exist among a multitude of variables that affect the success of the business. Because of the need for pattern recognition, the human mind is more adept than the computer at this type of analysis. Nevertheless, since people are only capable of supporting from five to seven ideas at a time, the computer may be useful for aggregating and summarizing information before and after patterns are analyzed.

Text-based database management programs are powerfill tools for supporting qualitative analysis, but since they manage large amounts of comprehensive information there is a tendency to allow poor quality data to enter the system. Inferior data can easily malign the results

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Exhibit 7
Data Analysis Methods

Function	Quantitative Methods	Qualitative Methods
Detecting, Monitoring and Forecasting	Accounting and ratio analysis Econometric analysis Multivariate analysis Neural nets Simulation Statistical analysis Time Series Exponential smoothing Envelope curves Trend extrapolation Other	Content analysis Critical success factors Cross-impact analysis Expert systems Graphical analysis Heuristics Historical analysis Judgmental analysis Political analysis Portfolio analysis Scenario analysis Trends analysis Uncertainty.complexity analysis
Problem Solving and Design	Capacity planning CPM/PERT Dynamic programming Financial modeling Goal programming Multivariate analysis Linear programming Markov analysis Nonlinear programming Optimization modeling Queuing theory Sensitivity analysis Simulation	Cross-impact analysis Cybernetics Expert systems Graphical analysis Heuristics Historical analysis Judgmental analysis Planning analysis Political analysis Portfolio analysis Scenario analysis Uncertainty.complexity analysis Delphi
Communication	Graphics Numbers Reports Tables Verbal	Graphics Reports Tables Verbal

Adapted in part from Wright and Geroy, 1991[27]

of an analysis. Quality control is therefore critical when developing and operating textual databases.

When attributes of events and activities cannot be measured, or the activity in the time period under investigation is relatively dynamic, qualitative methods are the preferred form of analysis. Critical success factors, content analysis, expert systems, graphical analysis, heuristics, historical analysis, judgmental analysis, political analysis,

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portfolio analysis, trends analysis, scenario analysis, and uncertainty/complexity analysis represent the most common forms of qualitative analysis.

Detecting, monitoring, and forecasting are the most typical types of activities associated with supporting strategic planning activities. The impact of events, forces, and trends must be addressed by detecting, monitoring, and forecasting them. Their detection requires an intimate knowledge of the environment under study. To do this, activities and elements of the environment must be carefully tracked to detect changes.

A particularly useful method for detecting events, forces, and trends is constituted by combining content, trend, and statistical analysis. Using this approach, data sets composed of textual material about the environment under study are first collected across different time periods. This can be done by abstracting articles from trade journals and newspapers, or by subscribing to services that do this for you. Second, word frequencies are computed for each data set. Key words, such as those identified by Olsen, Tse, and West,[21] can be counted using a text-based database program. Third, word frequencies are computed and compared across time using a spreadsheet to find out which are increasing or decreasing. Fourth, the results are analyzed statistically. And, fifth, significant changes are analyzed qualitatively by examining the articles where the key words have increased or decreased to understand exactly what has occurred. Significant and substantial changes are equivalent to the detection of movements in events, forces, or trends.

Use of Technology Changes

The use of technology in the hospitality industry can help illustrate this process. Using the key word "technology," the industry literature in the early 1980s identified the various software that was being made available to the industry. While the sub-keyword "software" appeared many times during this period, it was mainly in articles that were devoted to describing market products. Later in the decade the use of the word increased and the context of the articles changed. By counting the times the word "software" appeared and then relating it to the context of the article itself, it became easy to monitor this trend and to conclude that the industry was moving toward the use of integrated software. To the strategic planner in a hospitality firm considering a software investment, it would have been important to know where the industry was moving and how quickly, so that the most effective decision could be made.

When it is not possible to directly measure the attribute of interest, Fuld[22] suggested using surrogate variables. For example, if you want to know the revenue of competitors, you may make estimates based on the number of people they employ. Similarly, if you want to know what areas competitors are interested in, identify the types of people they are hiring through the alumni records of universities.

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Monitoring events, forces, and trends is less difficult than detecting them but requires a continuous effort. Information on organizational performance is an example of monitoring type data.

Forecasting is the most difficult of Type II problems and is customarily performed using time series, causal relationships, simulation, or qualitative methodologies. In dynamic environments qualitative forecasting methodologies are usually superior and in stable environments quantitative forecasting methodologies methods are usually superior.

Analyze Data Qualitatively and Quantitatively

The richest information results when data are analyzed both qualitatively and quantitatively. The first step in analysis is to examine the problems and data qualitatively. Variables, attribute, and potential relationships should be brainstormed and inventoried.

Quantitative analysis typically involves four steps. First the situation is classified and modeled. Second, the problem is identified and goals are formed. Third, the problem is analyzed. And, fourth, data are synthesized and the solution is designed.[23]

When possible and appropriate, data should next be analyzed using quantitative techniques. The initial qualitative analysis will often reveal the best methodology to employ. Frequently, several different quantitative tools will be used in sequence to properly format the data for the final analysis. Familiarity with the many different analytical techniques such as those identified in Exhibit 7 helps to ensure that the most appropriate tools are chosen.

Decisions Should Be Made and Communicated

When making decisions, the first thing a strategic planner must consider is the time-horizon of the decision's consequences. Determining this often requires experience and good qualitative judgment.

Next the information must be organized. One proven method is to organize data for and against. This approach helps to counterbalance the natural inclination to seek only confirming information. If planners want to improve their decision-making they should actively look for exceptions, even if it means more work. By looking at both confirming and disconfirming information, it becomes easier to develop multiple hypotheses. These hypotheses should portray comparable alternative solutions.

Once decisions are made, the circumstances surrounding them should be monitored to help with decision audits, which entail examining a recent decision selected at random to determine how well it was made. Was it the right problem? Was it defined well? Was the information organized properly? Was confirming and disconfirming information used? Were multiple hypotheses developed? Was the right time-frame used? Was sound logic employed? Was the best decision made and, if not, why? Decision audits can help reduce confirmation bias, rationalization, and the illusion of control.[24] To illustrate, using the example of the evolution of software during the 1980s, if a large hotel chain decided to invest in the development of integrated soft-

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ware, a decision audit would certainly suggest that it was a good decision given the announcement in 1993 of Holiday Inn Worldwide's $60 plus million investment in integrated information systems.

After decisions are made, they must be communicated. Strategic planning results in decisions that affect the organization's inertia. Unless the organization's energy and resources can be sufficiently mobilized for it to adapt to its environment, strategic planning is of little value. An effective strategic planner must communicate in a manner that elicits change, or, more simply put, strategic decisions must be presented to the right people, in the right way, at the right time.

Database Management System Requires Feedback

The electronic database support system should incorporate feedback to regulate its activity (Exhibit 1). The system manager, who may also act as the database manager and analyst, receives feedback from each activity area and oversees any adjustments required to meet the information needs of its users. Feedback should control the system and the system manager should ensure the system remains responsive by making adjustments to keep the decision quality as high as possible.

Database support systems are best developed in an evolutionary manner. Since the system must be environmentally responsive, it will never be perfected, nor finished. Information requirements of strategic planners will always be changing. Data sources will come and go. Data organization and management will improve as new technologies are developed. Methodologies for analyzing data will vary in response to new requests, and decision making and communication will change as planners gain experience and new ones take their places.

The Fittest Will Survive by Leveraging their Minds

Competitive environments are not the same as they were 10 years ago, or even one year ago, for that matter. The role of strategic planning has become even more crucial as tighter and more complex markets grant less room for error. Every potential competitive weapon must be considered if the organization chooses to ensure its survival. Information technology is such a weapon, since it holds the power to help make the right decisions, but it must be developed and mastered.

The most significant technological advances for the application of information technology to support strategic planning activities are yet to come. In the meantime, the most powerful tool strategic planners have to work with is their minds and the best contemporary use of information technology for strategic planning activities is to leverage their minds. Information technology can improve strategic decision making by enhancing the executives' understanding of the organization and its environment. It can do this by collecting, organizing, and managing large amounts of information and by increasing the richness of information through data analyses. The hospitality companies that have an information vision and choose to grow with information technology will reap the rewards of an intimate understanding of its capabilities.

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