

# **Strategic Marketing Management**

## **Lecture 6 – Marketing Information Systems**

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## Lecture Learning Objectives:

At the end of the lecture, you will be able to:

1. Explain the basics about marketing information system (MkIS)
2. Discuss the strategic role of the marketing information system (MkIS)
3. Apply the role of the internet in the business
4. Differentiate the benefits of the marketing information system (MkIS)
5. Explain the marketing information system functional components
6. Write an analysis of the marketing decision support system
7. Discuss the customer management systems
8. Explain privacy and marketing information system

### An Overview

The **Internet** is rapidly changing the way business views marketing information systems. New business models present challenges and opportunities as organizations seek to adopt "ebusiness" methodologies in the search for competitive advantage. **Organizations** of all sizes are feeling the "ripple effect" of Internet-enabled customers, supply chains and competitors. This pressure is particularly acute in the marketing function where information technology touches the customer and is increasingly becoming the key to creating superior customer value.

The importance of marketing information is particularly apparent as the economy continues to emphasize services as a primary source of value. **Services** are heavily information dependent. **Information** is rapidly becoming a service in its own right. Even in industries that are primarily manufacturing in nature, the information content of the final product is rapidly increasing. **Mass customization**, often described as "**one- to-one**" **marketing** or the customizing of products and services for individual customers, is heavily dependent on comprehensive and timely customer information.

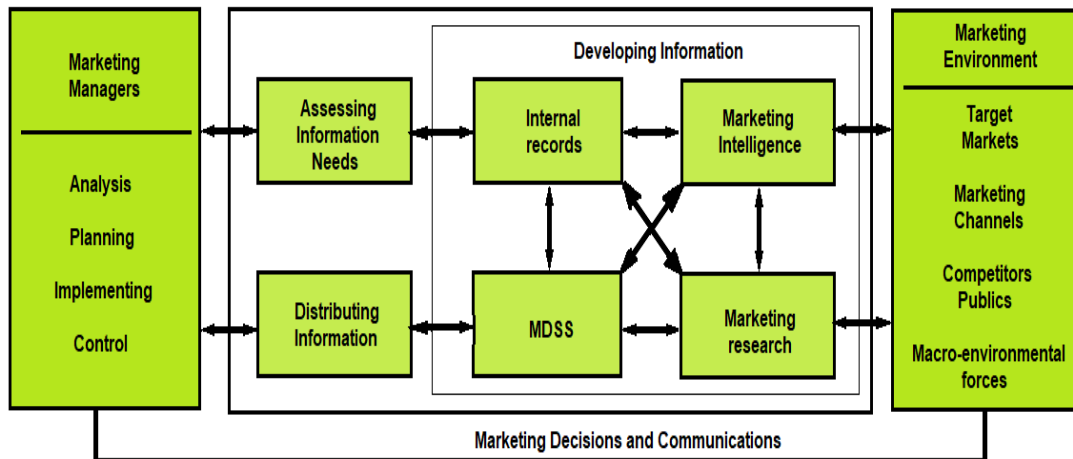
Modern marketing organizations, with their focus on the Internet, exhibit different characteristics than their "old economy" brethren. They create and manage the customer interface where interactions are more virtual than face-to-face. They leverage IT technology to integrate and coordinate with customers and business partners to rapidly achieve measurable business results. The emphasis is on the rapid conversion of knowledge into customer value which depends on the ability to develop, deploy, and manage powerful new marketing information systems (MKIS). The key to competitive advantage depends on the firm's ability to convert knowledge into customer relationships, reduced time to market and lower costs. To survive in highly competitive markets, companies need to be able to develop the marketing function and scale it up on "Internet time" with best-of-class decision support solutions for customer relationship management, sales force automation, market research, marketing communications, logistics, and product development. The purpose of this lecture is to provide an overview of the MKIS as it is evolving into an Internet-based system.

## DEFINITION-MARKETING INFORMATION SYSTEM

Simply put, a **MKIS** is a computerized system that is designed to provide an organized flow of information to enable and support the marketing activities of an organization. The **MKIS** serves collaborative, analytical and operational needs. In the collaborative mode, the **MKIS** enables managers to share information and work together virtually. In addition, the **MKIS** can enable marketers to collaborate with customers on product designs and customer requirements. The analytical function is addressed by decision support applications that enable marketers to analyze market data on customers, competitors, technology and general market conditions. These insights are becoming the foundation for the development of marketing strategies and plans. The **MKIS** addresses operational needs through customer management systems that focus on the day-to-day processing of customer transactions from the initial sale through customer service. **MKIS** systems are designed to be comprehensive and flexible in nature and to integrate with each other functionally. They are formal, forward looking and essential to the organization's ability to create competitive advantage. The **MKIS** is the firm's "window on the world" and, increasingly, it is the primary customer interface. Figure presents the basic architecture of the **MKIS**.

## STRATEGIC ROLE OF THE MARKETING INFORMATION SYSTEMS

Historically, the role of the marketing function has been to support "make and sell" business strategies that emphasized increases in market share over the creation of long-term customer value. This view started to change after World War II with the recognition that satisfying the customer's needs and wants should be the focus of a firm's business activities. The emphasis on the customer elevated the importance of marketing as a core business function on a par with research and development and production. The marketing function has become the firm's window to the world in the sense that it must monitor the marketing environment for changes in buyer behavior, competition, technology, economic conditions, and government policies. **Marketing** is a "strategic" function in that marketing activities enable organizations to identify and adapt to changes in the market environment. The strategic function of marketing is further emphasized as Internet-based technologies have enabled radically new approaches to selling where information technology for the first time touches customers and provides new means for collecting marketing information. In a knowledge-intensive economy, the ability to collect, analyze and act upon marketing information more rapidly than the competition is the core competency from which competitive advantage flows. **Marketing information systems** provide the information technology backbone for the marketing organization's strategic operations. In a broader sense, the **MKIS** creates an organized and timely flow of information required by marketing decision makers. It involves the equipment, software, databases, and also the procedures, methodologies and people necessary for the system to meet its organizational objectives. **MKIS** encompasses a broad spectrum of activities from simple transaction processing complex marketing strategy decision making.



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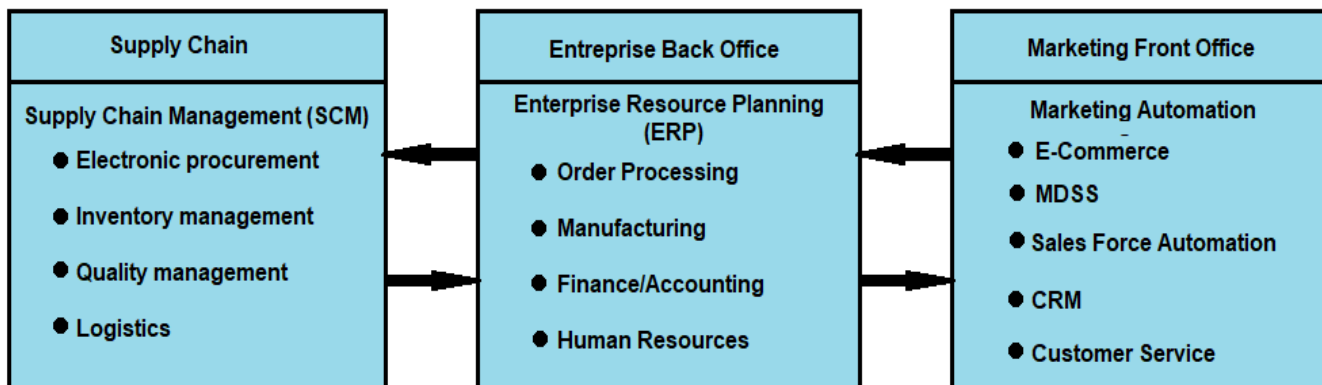
### ROLE OF THE INTERNET

Information technology has transformed how firms conduct business. **For example**, financial service providers such as banks, stockbrokers and insurance companies could not do business today without their client-server-based information technology. This technology has long supported marketing activities. However, it is the recent advent of the Internet, and especially the browser-based World Wide Web, which has ignited a revolution in MkISs.

The term "**cybermarketing**" is often used to describe the Internet's convergence of computers, information systems, telecommunications and the customer with the marketing process. **Internet marketing** is characterized by interactivity, graphical user interfaces, multimedia content, and one-to-one connectivity. Internet technologies are not only providing new ways to reach the customer, but also to enable the reengineering of the entire marketing process and, indeed, the entire enterprise. It is no longer acceptable to view marketing as a standalone activity with lengthy time lapses between product concept, marketing strategy and commercialization. Marketing has become interactive and real time.

The rapidly growing field of marketing automation encompasses customer management functions to support e-commerce. As depicted in Figure, customer management applications include marketing decision support systems, customer relationship management, sales force automation, customer service and e-commerce activities. These activities are often described as "**front office**" customer-oriented activities. "**Back office**" enterprise resource planning (ERP) activities include manufacturing, finance and human resources. "Supply chain management" (SCM) activities encompass electronic procurement, inventory management, quality management and logistics systems to link an organization with its suppliers. These **three elements** comprise the enterprise information system.

## The Enterprise Information System



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Large integrated enterprise software companies such as Oracle, SAP, PeopleSoft, and IBM address all three major applications, and they are beginning to use Web-based technologies to redesign business processes throughout the organization. The result is leaner organizations, faster response times, and lower costs. **Decisionmakers** are able to integrate information from customers, suppliers, and the internal organization to obtain an enterprise-wide view of their ability to develop and execute marketing strategy. Until truly integrated browser-based systems are widely in use, the principal challenge for marketers is to tie e-commerce generated data with legacy information systems in order to create a unified view of each customer. **Marketers** will need to understand all the various ways that customers are touching the business through existing interfaces and e-commerce. Many of the older interfaces, such as telemarketing centers, point of sale (POS) systems, and the sales force are likely to be supported by legacy client-server technology. **Marketers** need to consolidate data from those systems with that from the Web-based ecommerce sources into a holistic view of the customer and make it available to decisionmakers.

### BENEFITS OF THE MARKETING INFORMATION SYSTEM

The **MKIS** increases the number of options available to decision-makers and supports every element of marketing strategy. **MKIS** affects marketing's interfaces with customers, suppliers and other partners. The **primary benefits of the MKIS** impact in the areas of functional integration, market monitoring, strategy development, and strategy implementation.

- **Market Monitoring:** Through the use of market research and marketing intelligence activities the MKIS can enable the identification of emerging market segments, and the monitoring of the market environment for changes in consumer behavior, competitor activities, new technologies, economic conditions and governmental policies. **Market research** is situational in nature and focuses on specific strategic or tactical marketing initiatives. **Marketing intelligence** is continuous in nature and involves monitoring and analyzing a broad range of market-based activities and information sources. There are three major sources of market information. The first is syndicated data published by market research companies and industry associations. Company-sponsored primary research is

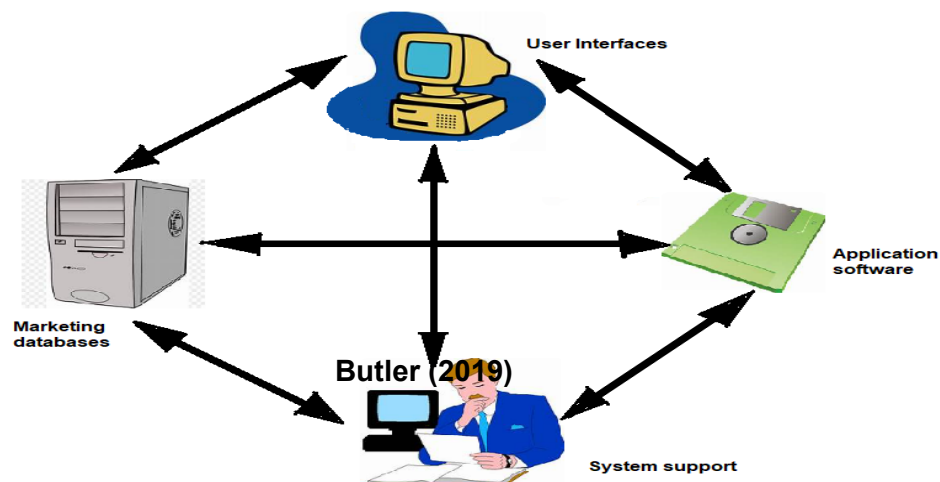
another option. It is much more focused since you ask specific questions of respondents within your markets. But it is considerably more expensive and time consuming. Perhaps the best data available are your own customer's behavior captured from web site viewing, point of sale (POS) transactions, and systematic feedback from the sales force.

- **Strategy Development:** The **MKIS** provides the information necessary to develop marketing strategy. It supports strategy development for new products, product positioning, marketing communications (advertising, public relations, and sales promotion), pricing, personal selling, distribution, customer service and partnerships and alliances. The **MkIS** provides the foundation for the development information system-dependent e-commerce strategies.
- **Strategy Implementation:** The **MkIS** provides support for product launches, enables the coordination of marketing strategies, and is an integral part of sales force automation (SFA), customer relationship management (CRM), and customer service systems implementations. The **MkIS** enables decisionmakers to more effectively manage the sales force as well as customer relationships. Some customer management software companies are extending their CRM applications to include partner relationship management (PRM) capabilities. This has become increasingly important as many marketers are choosing to outsource important marketing functions and form strategic alliances to address new markets.
- **Functional integration:** The **MKIS** enables the coordination of activities within the marketing department and between marketing and other organizational functions such as engineering, production, product management, finance, manufacturing, logistics, and customer service.

## MARKETING INFORMATION SYSTEM (MKIS)

### FUNCTIONAL COMPONENTS

- **User Interfaces:** The essential element of the MKIS is the managers who will use the system and the interfaces they need to effectively analyze and use marketing information. The design of the system will depend on what type of that will be used, the way information is analyzed, formatted and displayed, decisions managers need to make. The interface includes the type of hardware and how reports are to be compiled and distributed. Issues to resolve are ease of use, security, cost, and access.



As shown in Figure, a MKIS consists of **four major components**:

- **Applications Software:** These are the programs that marketing decision makers use to collect, analyze, and manage data for the purpose of developing the information necessary for marketing decisions. **Examples** include the marketing decisions support software (MDSS) and customer management software for on-line sales and customer service
- **Marketing Databases:** A **marketing database** is a system in which marketing data files are organized and stored. **Data** may be collected from internal and external sources. Internal sources largely result from transactions. They provide data from e-commerce sites, sales results, shipping data, inventories, and product profitability. **External sources** include market research, competitor intelligence, credit bureaus, and financial institutions. **Data** can be organized in a flat file (Text file with one data record per line) or a relational database (Data is stored in tabular form where each row represents one entity, and each column represents one characteristic of that entity). **For instance**, each row could represent a customer with the columns providing name, identification number, and purchase information.
- **System Support:** This component consists of system managers who manage and maintain the systems assets including software and hardware network, monitor its activities and ensure compliance with organizational policies. This function may also include a help desk for system users.

## MARKETING DECISION SUPPORT SYSTEM

**Marketing decision support systems (MDSS)** constitute a set of core applications of the MKIS. The **MDSS** provides computer-based tools, models, and techniques to support the marketing manager's decision process. In the general case, **MDSS** is optimized for queries of historical data. MDSS data typically are derived from both internal and external market sources. The MDSS features inquiry and report generation functions where the manager can access marketing data, analyze it statistically, and use the results to determine an optimal course of action.

## MARKETING DECISIONS SUPPORT SYSTEM FUNCTIONS

The **MDSS** can provide analytical models for forecasting, simulation, and optimization. MDSS tools include simple spreadsheets such as Excel, statistical analysis packages such as SPSS and SAS, on-line analytical processing (OLAP) tools, data mining applications, and neural networks. The MDSS provides the user with the ability to explore multiple options.

**Typical MDSS functions include models and tools for:**

- **Sensitivity analysis:** Decision-makers can explore changes in a strategic variable such as price and model its impact on demand or competitive behavior.
- **What-if analysis:** Can be easily accomplished with a spreadsheet. Revenues and costs can be manipulated to show the impact of each variable on profits and cash flows.
- **Goal setting:** Analysis focuses on the desired result and builds the resource base necessary to accomplish the goal.

- **Exception reporting:** Analysis looks for results that exceed or fall short of stated goals or benchmarks. Which products or segments exceeded sales forecasts? Sometimes called gap analysis.
- **Pareto analysis:** Analysis looks for activities that generate disproportionate results. **For instance**, the top 20 percent of customers may account for 80 percent of sales revenues.
- **Forecasting models:** Econometric models are used to analyze time series data for the purpose of predicting future sales and market share levels.
- **Simulation models:** Monte Carlo simulations address marketing decision making under conditions of uncertainty. Variables such as the market price, unit variable cost, and quantity sold are not known ahead of the product investment decision. Simulation models allow the marketer to analyze risk and assess the probabilities of likely outcomes of their decisions.
- **Scorecards and dashboards:** Scorecard systems can present a consistent framework for tracking the effectiveness of marketing activities. They often have different modules for senior executives, marketing managers, product managers, and customer service managers. Scorecard systems allow the user to "drill down" on an analytic and workflow basis to determine the status of any strategic initiative. Dashboards allow frontline managers to monitor their critical performance indicators. These systems are often used in conjunction with "best practice" standards for call-center-based customer support.

### MDSS ANALYSES

Marketers typically use MDSS models and tools to analyze markets, customers, competitors, and internal operations. The following list presents some of the most **common types of issues targeted by MDSS analyses**.

- **Market segment analysis:** Use of modeling techniques to identify segments and analyze economic trends, demographics and behavior.
- **Market share analysis:** Analyze trends and determinants of market share. *Competitor analysis:* Analysis of competitors' market positions, economics customer base, and marketing strategies.
- **Pricing analysis:** Identifies and analyzes the factors that influence a firm's ability to set prices including price elasticity and demand analysis. Includes internal economics and market related factors.
- **Cost analysis:** Studies a firm's overall cost structure and its impact on product cost. Margin analysis combines cost analysis with pricing analysis. Variance analysis looks for explanations of costs overages and underages.
- **Sales analysis:** Studies the distribution of a firm's sales by region, product, brand, sales territory, etc.
- **Sales forecasting:** Develops estimates of sales potential by product, region, sales territory, brand, etc.
- **Sales force productivity:** Studies sales force effectiveness and efficiency and contributing factors.
- **Advertising analysis:** Analyzes advertising effectiveness, media choices and brand awareness.

- **Distribution:** Analyzes channel decisions from economic and strategic perspectives.
- **Simulation:** Simulates decision making under various strategic scenarios.
- **Customer satisfaction:** Analyzes issues concerning the customer's expectations and outcomes with the product.

## DATA WAREHOUSING

IBM defines a **data warehouse** as a place that stores enterprise data designed to facilitate management decisions. In essence, a **data warehouse** provides the basis for an analytical system where periodic data points are collected and stored at specified times for future analysis. **Data warehousing** enables marketers to capture, organize, and store potentially useful data about customers and markets for decision-making purposes.

Every record of a transaction or interaction with a customer, supplier, channel member, or salesperson is an opportunity to create knowledge. **Firms** collect data from these day-today business operations. In order for this data to be useful, it is often organized and stored in a data warehouse. Simply put, a marketing data warehouse is a repository for data that has been collected from internal and external data sources. Each customer generates a stream of transaction records over time. **Data sources** may include scanner data, billing records, applications, registration forms, warranty forms, call reports, customer service inquiries, and web site data. **Data warehousing** enables the firm to organize and store this data for analysis purposes. By careful analysis of this and other data, firms can design more effective and efficient ways to serve their customers. **Data warehouses** exist to support the decision-making process by providing ready access to market and customer data. The **Internet** has shifted power away from marketers to customers by lowering search costs and providing greater choice. **Competitors** are only a "click" away. Consequently, **marketers** need to work smarter to create and manage the one-to-one relationships that customers desire. This goal requires increased knowledge about customer preferences, behaviors, and value expectations in order to create better products and services. Conversely, **marketers** need to understand which customers are the most valuable to them over time. They need to regularly monitor and evaluate the "lifetime value" of each customer in order to determine which customers to continue investing in and which ones to drop.

### Data Warehouse Processes

**Data warehouses** can provide narrow or broad strategic views of key marketing activities for the purpose of generating higher customer value and business returns. **Data warehousing** activities commonly support customer relationship management, product development, and customer service delivery.

*Data warehouse architectures are based on the following **three processes**:*

- **Data collection:** Processes need to be developed for capturing data from the appropriate internal and external sources and then organizing, verifying, integrating and otherwise preparing it for loading into the database.
- **Data management:** This step involves formatting and storing that data for easy access by data warehouse users.
- **Data access:** This process involves specialized tools to query the data, analyze it and create and distribute useful business reports.

**Data warehouses** are an integral part of the MDSS. They provide the ability to access data for creating marketing operations reports, analyze sales results over time, identifying and mapping patterns, trends, that may be emerging in the market, and enabling the development of new products, pricing, market segmentation strategies, marketing communications campaigns, and distribution channels.

### **DATA MARTS**

A **data mart** is a scaled-down version of a data warehouse. It is more focused, less complex, and holds a subset of the entire data, often in summary form. It is usually designed for a smaller number of users. They provide fast, specialized access and applications. They are sometimes call departmental data warehouses.

**Data marts** are useful when it is not feasible for a data warehouse to meets the needs of all potential users. **Data marts** enable a more limited number of users to exert greater control over the data they need. **Data marts** enable increased data access speed and minimize preemption of user queries. They also minimize performance sacrifices inherent in large data warehouses by enabling small groups to get the data they most need when they need it. They may also include specialized data sets that can be analyzed with statistical or data mining tools. Not all the data in the data mart need come from the data warehouse. A **marketing researcher** may overlay customer purchase histories from the data warehouse with Geographic information system (GIS) data from a commercial service and store it in the data mart.

### **DATA MINING**

Internet-based marketing strategies generate extremely large data sets from customer interactions. Purchase histories, financial records, customer service records, and web site usage are just some of the data that reside in customer databases. In order to transform this mountain of diverse data into operationally useful information, marketers are increasingly using data mining procedures. **Data mining** is the computer-based exploration and analysis of large quantities of data in order to discover meaningful patterns and rules for the purpose of improving marketing, sales, and customer support operations. The combination of data mining procedures with data warehousing enables the MDSS to move beyond just support for the operational processes in the marketing organization and to focus on actual customer behavior. Data mining and data warehousing provide the means and the infrastructure for extracting strategic opportunity from knowledge of the customer.

#### **The Data Mining Process**

Large multinational organizations produce much more marketing data per day than its managers can assimilate. The **Internet** facilitates the rapid growth of data on a worldwide basis. But exponential growth of data can, paradoxically, lead to a situation where more data leads to less information as managers become swamped by the flood of data that defies ready interpretation. **Marketers** need to develop procedures for processing, filtering and interpreting this data for strategic marketing purposes. **Data mining** is essentially the engine for a knowledge-based marketing strategy. It provides the ability to collect, process, disseminate, and act upon information more rapidly than the competition that is essential to for the creation of first-mover advantage.

The first step in the process is to collect data on what the customer does. On-line transaction processing (OLTP) systems do precisely that. Virtually everything a customer does when purchasing a product or service generates a string of transaction records. If the customer calls an "800" number to order a product, the phone company will capture data on the time of the call, the number dialed and the duration of the call. The marketing company will generate similar data in addition to that on products and services purchased, catalogue referenced, special offers, credit card number, order size, and time since last purchase. Further transactions are generated by the order entry, billing, and shipping systems. The bank and the shipping company will log further transactions. The customer may need to call customer service to solve post-purchase problems. Internet transactions can generate even more data as the customer's purchase behavior can be linked to web- browsing behavior within a site and throughout the web. This data can then be linked to purchase histories, financial history and other personal-identity information.

### **DATA MINING TASKS**

After the data have been collected and reside in the data warehouse, approaches to analyzing the data are considered. Data mining methodologies may encompass a range of approaches from rigorous scientific methodologies and hypothesis testing to qualitative sifting through massive amounts of data in search of relationships. The type of analysis typically is a function of the task the researcher wants the data mining exercise to accomplish. **Typical data mining tasks include:**

- **Classification:** A predetermined classification code is assigned to a database record. Decision tree analysis techniques are commonly associated with this task.
- **Estimation:** Input data are used to estimate continuous variables such as age, income, and likely behaviors. Neural networks are often used for estimation.
- **Affinity Grouping:** Rules of association are developed from the data and used to group variables that seem to go together. Market basket analysis is a preferred technique that analyzes the linkages between items consumers buy in a basket of items.
- **Description:** Summary observations are made about the data that serve to increase the understanding of the phenomena that generated the data. Description often motivates further research and data analysis. Market basket analysis, query tools, and visualization (mapping) techniques are commonly used.
- **Clustering:** Used to segment a large heterogeneous population into homogeneous clusters based on measures of similarity. The researcher must determine the meaning of each cluster. Clustering algorithms are used to analyze the data.
- **Prediction:** Records are classified based on predicted future values or behaviors. Neural networks, market basket analysis, and decision trees are common techniques.

### **Data Mining Techniques**

Researchers looking for behavioral insights in large customer databases **commonly use the following data mining techniques.**

- **Market Basket Analysis:** Searches for associations in the data such as professional women who drive 5-Series BMWs also use web-enabled mobile

phones. The weakness of the technique is there are an infinite number of possible rules in any given database and only a few have marketing importance. The problem is to find them. Techniques works best when the researcher has an idea of what to look for.

- **Cluster Analysis:** Based on the hypothesis that customers of the same type will exhibit similar behaviors. K-means cluster analysis is the most common method. The purpose is to assign objects to groups that are relatively homogeneous within and heterogeneous between.
- **Decision Trees:** Decision trees enable classification for directed data mining. Simple rules are often used to divide the data into subsets in which key attributes can be more readily evaluated. Decision trees can facilitate prediction by linking customer characteristics with purchase behaviors.
- **Query Tools:** Structured Query Language (SQL) is often used for conducting a preliminary analysis of a data set. Data summaries such as simple averages, frequencies, and cross-tabulations are useful for looking for patterns and rules that may form the basis for more structured analyses.
- **Neural Networks:** Neural networks are a class of tools that are used for classification, clustering and prediction. These networks are computer models that simulate the neural connections in the human brain. There are two critical stages for using neural networks-the encoding stage where the network is trained to perform a task and the decoding stage where network executes the assigned task. In practice, these machine learning tools are used to identify loyal customer clusters, find fraudulent credit card transactions, diagnose medical conditions, and predict the failure rate of aircraft engines.

### **ON-LINE ANALYTICAL PROCESSING (OLAP)**

**OLAP** is a family of analysis and report generating tools that are used to access large databases. It enables partially aggregated data or full reports to be stored in a multidimensional format for fast, convenient access and analysis. OLAP methods are based on databases that allow multidimensional views of business data. **OLAP** is useful for visualization of relationships between pre-designated variables. OLAP applications are used achieve a higher view of the data such as total sales or profitability by product line, sales territory, or market segment. The OLAP database is usually updated in batch mode from multiple sources. **OLAP** is optimized for analysis and reporting. In contrast, users of on-line transaction processing (OLTP) applications are involved with creating, updating, or retrieving individual customer records. OLTP databases are optimized for updating transactions.

An OLAP system essentially stores answers to predefined business questions for report generation needs. The user can choose from a predetermined set of options for types of data and display formats. Output is typically in the form of charts, graphs, tables or maps. **OLAP** solves the problem of distributing information to large numbers of users with diverse reporting needs. **OLAP** relieves the long response times that can be encountered when many users need to repeatedly query large databases for extended periods of time.

Time series data are probably the most common dimensionality in an OLAP database. Marketers want to look at trends in all aspects of the business-sales trends, market trends, pricing trends, profitability trends, etc. OLAP can compare current results with prior periods, calculate year-to-date results, and present other comparative historical data. OLAP can also present

multiple hierarchies and classes within given dimensions. **For instance**, data may be "drilled down" by "state-county-city-customer" or "sales region-sales district-sales person customer."

**OLAP** may be used in conjunction with data mining, but it is not a substitute. **OLAP** tools are powerful and fast tools for generating reports on data, whereas data mining tools find patterns in the data. **OLAP users** are constrained in the questions they can ask since OLAP and only answer the questions that the data formats were designed to address. They cannot go back to the original data and search for new solutions. Therefore, **data mining** is more powerful than OLAP.

## **GEOGRAPHICAL INFORMATION SYSTEMS**

**GIS systems** enable marketers to geographically map their customers, competitors, suppliers, sales concentrations, prospects, suppliers and partners. Site selection, trade- area analysis, environmental analysis, territory design, network planning, risk analysis are common applications. Newer (GPS) capability for location reports from resources in motion such as mapping transportation fleet movements, sales representative reporting, and locating and managing key assets in real time. GIS data provide powerful new visualization opportunities for customer data that can link consumer behavior to a fixed location at a specified time.

### **Geographical Information System Marketing Applications**

- **Customer location:** Links behavioral data from customer master files, subscription lists, support and warranty claims, transaction history and identity with time and location information. This is very powerful information for mapping and predicting consumer behavior. The advent of mobile ecommerce will enable marketers to identify and map consumers at the actual point of purchase. The wireless carriers will be able to provide this data.
- **Geographic market information:** Links marketing data to physical maps. Data may be classified by county, city, ZIP code, Census tract, etc.
- **Marketing activity location:** Links POS transactions, distribution patterns, direct response results, sales forecasts, advertising expense, etc. to geographic location.
- **Business location:** Labels business facilities on a map that can display retail density, population density, buying power, media coverage, etc.
- **Marketing resource location:** Links assets in motion to physical location through GPS from trucks, autos, aircraft and wireless devices.

## **CUSTOMER MANAGEMENT SYSTEMS**

Companies need a method for viewing all customer and marketing-related information in an integrated way. Often marketing organizations maintain multiple databases for each business and marketing activity with data that is not easily integrated for strategic or operational purposes. A new generation of software that is Internet based gathers information from customer service, Web sites, direct mail operations, telemarketing, field sales, customer service, distributors, retailers and suppliers for the purpose managing marketing, sales and customer service activities. The major applications families are commonly referred to as sales force automation (SFA) and customer relationship management (CRM) systems. Some CRM systems are fully integrated with SFA applications, and some are standalone. The worldwide market for such systems is projected to grow five times faster than the overall software market, from \$5 billion in 1999 to more than \$22 billion in 2003.

## SALES FORCE AUTOMATION

The fastest growing elements of the MKIS. SFA applications are often integrated with the CRM system. **SFA** involves the application of information technology to the sales function or, more appropriately, to the activities leading to a sale. These activities include acquiring sales leads, managing the sales opportunity, closing the sale and managing the customer relationship. The historic role of personal selling has been to move the product to generate transactions. As selling has become increasingly more professional, salespeople emphasize building relationships with customers that will generate loyalty-based repeat transactions over time. **Relationship building** often necessitates that the salesperson has consultative and advisory skills in addition to product knowledge and sales abilities. Team-based selling places emphasis on role specialization, collaboration and coordination. **Customers** have become more sophisticated as well. Requirements for customized solutions, rapid response times and the need for concurrent and post-sale service have greatly increased the need for information technology in the sales process.

The goals of SFA are to increase the effectiveness of the sales organization, improve its efficiency and to create superior value for the customer. Sales effectiveness focuses on getting the sale by improving lead generation, qualifying prospects, coordinating sales efforts, and tracking commitments. Effectiveness is a function of improving the sales process. Sales efficiency is evaluated by measuring the return on sales efforts. **SFA** can improve sales efficiency by reducing sales cycle time, by managing workflow, and tracking the current status of critical activities related to the sale. Proposal generation, opportunity management, fulfillment, and follow up are facilitated by SFA. Superior customer value is achieved when the customer expectations are exceeded. It is a primary determinant of customer satisfaction. **SFA** enables better understanding of customer expectations and management of the customer account.

### The Sales Process

The typical field sales process consists of a series of steps that are designed to lead to a sale. The typical role of the MKIS is to support the **sales process steps** of lead generation, sales process management, and account management.

#### **(1) Lead Generation**

**Leads** represent potential customers. The identification of a lead is the beginning of the sales cycle. After leads are identified, they must be qualified. This process involves gathering information about the lead and comparing the result against qualifying criteria. The lead generation process is becoming more automated with regard to obtaining more pre-qualifying information directly from the lead and augmenting it from commercial and other databases such as credit bureaus. The advent of Web-based technologies is driving this trend. **Qualified leads** are then distributed to the sales force.

#### **(2) Sales Process Management**

This process starts when the salesperson receives the lead information. The primary information system need is for a convenient method to track the process and store data the data generated at each stage. There are a number of **sub-steps to this stage of the process**.

##### **(a) Verification of the Opportunity**

The **salesperson** usually contacts the lead and attempts to verify the existence and nature of an opportunity including its size, timing, and appropriateness of the products and services of the selling company. **Salespeople** will also desire to verify the lead's ability to purchase, identify

the names of key decision-makers and influencers, and the level of budget authority. This information is entered into the sales database.

***(b) The Sales Call***

If the **lead** is amenable and the opportunity justifies it, a sales call is scheduled. Information may be sent to the prospect and a custom presentation may be created. The SFA system is used to provide a single point of interface for the salesperson to coordinate the activities leading up to the sales call. After the call, the SFA system is updated with customer requirements, new information and commitments made by the salesperson.

***(c) Opportunity Management***

If the salesperson is successful, the next step is typically the receipt of a request for proposal (RFP) from the prospective customer. The RFP will generally state the customer's requirements and the date for the final submission. Follow-on visits may be necessary to clear up or identify new requirements. The prospect may want to visit the **seller's** manufacturing site. The final product of this stage is the creation of a proposal and price quote to be presented to the prospect. This document should build a sound economic case for the purchase. All these interactions, requirements, commitments, and competitor information are tracked by the SFA system that provides the database, tools and templates to generate the proposal.

***(d) Closing the Sale***

The presentation of the proposal and the price quote is the start of the closing process. Even if the salesperson has done a good job of presenting the business case, further negotiations may be necessary to close the sale. If all objections are met and the proposal is accepted the close is successful. If not, the sales team will need to debrief the lessons learned to determine why the proposal was not accepted. The outcomes are recorded in the SFA system.

***(3) Account Management***

The automation of the sales process may result in a standalone system that is not integrated with other management systems. However, SFA is increasingly being integrated with the overall CRM system. This is especially true of the account management function. Since the primary goal of the CRM system is to manage the customer relationship in order to generate repeat sales, a good salesperson will want to keep track of the status of a new account and how well the customer is being served. This is especially true if the account is to become "referenceable" to other prospects. The account management function of the CRM system enables the salesperson to track order entry, order processing, shipment, and installation. The salesperson may need to ensure that post-sales service is delivered or monitor the results of and installation and track the customer's satisfaction. The ability to track outcomes and interact with the customer in order to reassess needs and create new opportunities is a major benefit that flows from effective account management.

## **Sales Force Automation Tools**

SFA tools consist of software applications that enable the salesperson to better target sales opportunities and manage the sales cycle. The tools are increasingly available bundled as integrated suites that are Internet enabled, accessible through a browser and linked to the CRM system. The **software applications may be categorized** as:

### ***Document Management Tools***

Support all stages of the sales process. They include word processors, graphics programs, spreadsheets, email, expense reports, proposal generators, and "product configurators." A Web-accessible sales library or encyclopedia of previously developed product

information, brochures, product demonstrations, presentations, financial information, price lists, white papers, and public relations materials is a key resource for sales force productivity.

### ***Personal Management Tools***

These tools focus on increasing the efficiency and effectiveness of the sales teams' efforts. They typically include calendar and scheduling programs, contact management systems, and call reporting capabilities.

### ***Process Management Tools***

These tools are used to keep track of customer requirements and sales commitments. They include opportunity management systems, project management systems, account management systems, order-entry systems, telemarketing systems, team-selling systems. Increasingly, with the rise of Web-based hosting and the application service provider (ASP) industry, SFA applications and databases are being hosted by third-party specialists and accessed remotely on the Internet. With the ASP model, client companies are essentially outsourcing all or part of their IS function. Remote hosting raises issues of security and scalability. The advantages of an ASP approach are its browser-based simplicity, rapid implementation, and lower cost of deployment. Most ASP applications use a subscription-based pricing model. Some vendors are proposing that renting the application or paying by the transaction may become the pricing model of the future.

## **CUSTOMER RELATIONSHIP MANAGEMENT**

The **Internet** has facilitated a fundamental shift in market power from sellers to buyers. Customers, newly endowed with the power of market information, have much different expectations than before. **Customers** can easily move their business to another vendor with the click of a mouse. They have access to the same cost data as their suppliers and they demand 24x7 customer service. **Customers** now have almost unlimited ability for interactions with organizations through the Web in addition to the traditional phone and mail methods. Company web sites facilitate information search, shopping and customer support. **E-mail communication** can target specific offers on a one-to-one basis. Understanding and meeting demanding expectations has placed a renewed emphasis on managing customer relationships.

The primary goal of CRM systems is to increase the return on marketing expenditures by enabling the understanding of the complete history of a firm's interactions with its customers. CRM applications can deliver targeted solutions that promote customer loyalty as measured by increased response to promotions, purchase frequencies and volume, and minimizes the time between orders. CRM systems are able to target marketing communications to likely buyers, facilitate sales efforts and deliver customer service. CRM systems increase revenue, lower costs and optimize customer lifetime value.

### **Customer Relationship Management Design Principles**

The CRM field is rapidly evolving into an integrated discipline that manages all of a company's touches with the customer. Accordingly, several **design principles** have evolved as the foundation for CRM development:

- **The CRM system should offer the customer multiple channels for communication** such as the telephone, e-mail, fax, on-line or some combination. Each channel should

lead to an interaction that satisfies customer expectations. **Customers** must be able to choose the method that best meets their needs on each occasion.

- **Each CRM interaction should deliver value to the customer.** The CRM system must be able to determine what value is required and deliver it quickly whether it is a product or service transaction or a customer service request.
- **The CRM system integrates the customer throughout the firm's value chain.** **Customers** should be able to reach into all necessary functions of the organization not just to the sales organization, or customer service, but to manufacturing and even the CEO. Better integration of the customer into the process can lead to higher levels of trust, loyalty and repeat purchases. The cost of acquiring a new customer often far exceeds that of retaining existing ones.
- **Knowledge is captured during each CRM interaction.** The CRM system should capture knowledge about the customer and the customer's relationship with the company over time. Sales and customer support histories should be analyzed for indications of how well the vendor is doing in meeting customers' needs and how valuable the customer is to the marketer.

### **Customer Relationship Management Functions**

CRM applications provide the customer-related information that is necessary to drive a firm's ebusiness activities. Better customer information enables more effective demand forecasting, product launches and marketing campaigns. CRM functions are sometimes referred to as the company's "**front office.**"

#### ***CRM functionality includes:***

- E-commerce support
- Sales force automation
- Tele sales and call center automation
- Direct mail and catalog sales
- Email and e-newsletter response
- Web sales and personalization
- Analysis of Web generated data
- Traditional customer support and service
- On-line support and customer service
- Mobile support through laptops, handheld devices.
- Training.

Modern CRM systems are fully integrated with the "back office" elements of the enterprise resource planning (ERP) system such as accounting, manufacturing, project management, and human resources. This integration enables the sharing of customer information that can impact the operations of the enterprise and vice versa. Common customer definitions, price lists, employee definitions, service requests, call histories, order histories, contracts, service level agreements are accessible by all who need them. Correspondingly, marketing can access information on items such as new product development, product costs, order status, delivery dates and backorders.

## PRIVACY AND THE MARKETING INFORMATION SYSTEM

**Privacy in the Internet Age** has become a major concern for customers and marketers alike. Web enabled marketing information systems have the potential to collect highly sensitive and voluminous information on customers, competitors, suppliers and channel members. The speed in which this information can be collected, analyzed and acted upon can provide real competitive advantage to the user. This information can be used to better serve customers, streamline a company's operations, and develop better strategy. Some marketers use the data to better target advertising and marketing plans. Others sell or trade the data with other Web sites. Unfortunately, guidelines for how this information is collected, how it may be used, and how it is to be protected are not widely accepted. Since most non-IS people use privacy, confidentiality and security interchangeable, it is important to clarify some definitions before moving on. **Privacy**, as marketers define it, is the right not to be contacted or marketed to unless the customer has granted specific permission or "opted in." Security means keeping unauthorized persons from gaining access by breaking into the information system. **Confidentiality** is defined as maintaining appropriate controls on information so that only those authorized can access or use it. A **marketer** may respect a customer's privacy and only contact her after gaining permission, but they may have an insecure system that allows hackers to access credit card transaction data. Alternatively, a marketer may respect privacy rights and have a very secure system, but inadvertently releases a patient's health care record to the news media. In order to avoid these and other pitfalls, marketers must act to increase system security, establish confidentiality procedures and training, and implement privacy policies. The remainder of this section will focus on privacy issues as a representative case.

### TRACKING INTERNET USERS

It is axiomatic that no one is anonymous on the Web. At the current state of technology, marketers are able to develop customer profiles and track their behavior over the Web. Soon marketers will be able to track the locations and behaviors of Web-enabled cell phone and other wireless device users. The public uproar over such capabilities has caused several Web advertising networks to abandon efforts to link Web-use profiles to personal information. In order to track consumers on the Web, enabling IS infrastructure has been developed that links a surfer's Web-behavior to his **Internet Protocol (IP)** address. Once that occurs the information gathering begins. The following **infrastructure elements** are essential to the information model of the Internet:

- **Advertising networks:** Web-based advertising agencies such as DoubleClick, Engage, and 24/7 create profiles of Web surfers by tracking their on-line behaviors. Ads are customized and presented on-line to those most likely to buy when they visit supported Web sites.
- **Cookies:** A tiny text file that is placed on a consumer's hard drive when they first visit a site. It allows the site to track the user's behavior on the site. Most Web users are not knowledgeable about cookies. If a consumer removes the cookies from the browser most membership-based sites will prompt for usernames and passwords and install another cookie.

- **IP Address:** A number used to identify a consumer's personal computer so that Web data can be sent. These addresses enable profiling and ad targeting. IP addresses can be associated with behavioral and personal information.
- **On-line Profiling:** Web sites build consumer profiles of page viewing, time spent and shopping behavior by combining cookies with other information. This sounds ominous, but the ostensible reason is to provide better automated service.
- **Personal Information:** This includes the consumer's name, address, credit card number, driver's license number, social security number, and consumer behavior that is linked to customers personal identity. Most consumers are still reticent about e-commerce because they fear for the safety of their personal information. Identity theft is a rising problem.
- **Referers:** This is information that a Web browser passes along as a surfer moves from site to site. **Referers** are commonly collected and used to target advertising.
- **Registrations:** This is personal information that is collected when a consumer fills out a sign-up form on a web site. **Data** can be sold or shared. Many firms do not closely follow their stated privacy policies with regard to selling customer data.

### DEVELOPING A PRIVACY POLICY

Forward-looking Web marketers are at the forefront of the consumer privacy movement. Advertising network firms, such as DoubleClick, were caught on the wrong side of this issue and have suffered greatly in terms of company image and market capitalization. There is a growing realization that Web marketers should post disclosure notices on what information a company collects and how it is used or shared. At present privacy policies vary widely from marketer to marketer and there is no monitoring of their effectiveness. Concerned marketers are reacting to privacy concerns in an attempt to ameliorate consumer fears and to head off potential government regulation.

#### *The major actions marketers are taking include:*

- **Disclosure of privacy practices:** Smart marketers should clearly and prominently explain what information is collected, how it is tracked, how it is used, and under what conditions it is disclosed to partners. (1) New technology may help solve the privacy problem. Soon the P3P software standard will allow consumers to set privacy preferences in their browsers that will alert them when a site's privacy policy differs from their desires. (2) Ask permission. Web **users** should be able to opt in, especially if the data to be collected is sensitive. **Sensitive data** include medical information, financial information, insurance claims, and consumer behavior that can be traced to the individual by name. **Opt-In** means the site cannot collect personal information unless the user gives permission. **Opt-Out** is a default situation where the site collects personal data and is free to use or sell it unless the consumer specifically denies permission
- **Allow access:** Consumers should be allowed access to the personal data each site has collected on them in a manner similar to the access they have to their credit report. Perhaps this can be accomplished by enabling consumers to obtain the aggregated profiles the advertising network firms have constructed. Consumers should be allowed to correct or delete inaccurate data.
- **Establish industry-wide privacy rules:** The **On-line Privacy Alliance** is an association of leading global companies and trade associations dedicated to the protection of privacy on-line. They are working to educate on-line businesses on the need for a standardized

privacy policy to inform customers about what information is being collected, how it is used, how it is protected, and how people can access the information to prevent errors and how to opt-out.

**Textbooks:**

- Strategic Marketing Management, Naval, Girly H. Mind shapers Co, Inc. 2021
- Strategic Marketing Management, Butler, Dane ED-TECH Press 2019