

# MODULE 4



## **ENTERPRISE APPLICATIONS**

# OUTLINES

- Applications that support the major functions, including:
  - Enterprise Resource planning
  - Supply Chain Management
  - Customer Relationship managements Systems
- Management Decision Support Tools
  - Decision Support Systems
  - Group Decision Support Systems
  - Executive Support Systems
  - Knowledge working
  - Business intelligence solutions and analytics

# Introduction

An **enterprise application** is a business **application**, obviously. As most people use the term, it is a big business **application**. In today's corporate environment, **enterprise applications** are complex, scalable, distributed, component-based, and mission-critical.

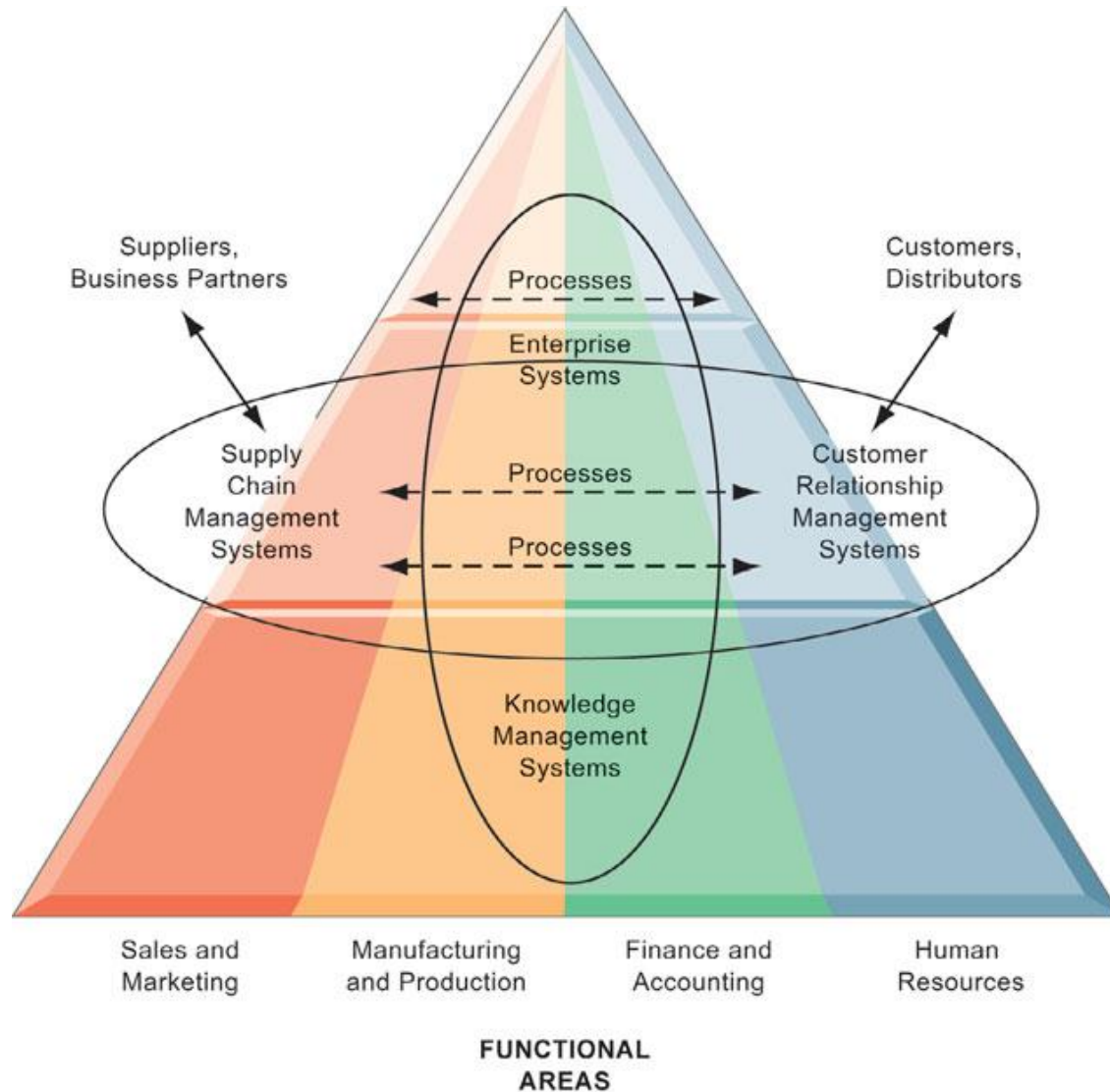
**Enterprise applications** are systems that can coordinate activities, decisions, and knowledge across many different functions, levels, and business units in a firm. It include enterprise systems, supply chain management systems, and knowledge management systems.

Enterprise applications help businesses become more flexible and productive by coordinating their business processes more closely and integrating groups of processes so they focus on efficient management of resources and customer service.

There are four major enterprise applications: enterprise systems, supply chain management systems, customer relationship management systems, and knowledge management systems. Each of these enterprise applications integrates a related set of functions and business processes to enhance the performance of the organization as a whole.

# Introduction... cont

## ENTERPRISE APPLICATION ARCHITECTURE



# Enterprise Resource Planning

**Enterprise Resource Planning**, also known as **ERP**, is a management tool to integrate all departments and functions across a company onto a single computer system that meets company needs. Enterprise resource planning is becoming a business tool more companies are employing to help them manage resources and information.

An integrated enterprise resource planning approach will have a tremendous financial and time savings if the organization installs the ERP software correctly.

Here is an ERP example: Without ERP, a customer places an order, that order begins an order taker creating a mostly paper-based journey from sales to billing to shipping. Frequently, company employees have to re-enter data about that order at the various stops. This inefficiency leads to time delays, input errors and higher labour costs. A fully integrated ERP system allows all departments access to the order and coordinates the process at each step along the way.

No matter how big or small your business is, you need help managing the information you have and the information you gather each day. By using ERP software, you can streamline the way departments speak with each other, while also helping with customer communication and orders.

# Enterprise Resource Planning

## Benefits of Enterprise Resource Planning Systems

The benefits of enterprise resource planning systems are many, allowing you the opportunity to enhance your business' efficiency.

Many people can be scared off by the complex name 'enterprise resource planning.' They think that because this sort of business organization sounds complex, that it is more complex than they can handle. But when you start to look at the many benefits an ERP system can provide, you might become more option to its implementation in your own business plans.

While there are always downsides to new business practices, especially in the learning stages, enterprise resource planning offers more benefits than disadvantages.

1. Ease of implementation
2. High availability of ERP products
3. Integration between systems already in place and new systems
4. Order tracking for business which sell directly to customers
5. Financial management of invoices, refunds, etc.
6. Inventory management
7. Assists with forecasting models

# Supply Chain Management

**Supply Chain Management (SCM):** is the supply chain software which are tools or modules used in executing supply chain transactions, managing supplier relationships and controlling associated business processes. It integrates supply and demand management within and across companies automating the process of planning and management of all activities involved in sourcing, procurement, conversion, and logistics management activities.

It addresses the following problems:

- **Distribution Network Configuration:** Number location and network missions of suppliers, production facilities, distribution centres, warehouses, cross-docks and customers.
- **Distribution Strategy:** including questions of operating control (centralised, decentralised or shared); delivery scheme (e.g. direct shipment, pool point shipping etc.); mode of transportation, replenishment strategy (e.g. pull, push or hybrid); and transportation control (e.g. owner-operated, private carrier, common carrier, contract carrier).

Supply chain management systems are one type of inter-organizational system because they automate the flow of information across organizational boundaries.

# Supply Chain Management

## Information Systems and Supply Chain Management

Inefficiencies in the supply chain, such as parts shortages, underutilized plant capacity, excessive finished goods inventory, or high transportation costs, are caused by inaccurate or untimely information.

Information from supply chain management systems helps firms

- Decide when and what to produce, store, and move
- Rapidly communicate orders
- Track the status of orders
- Check inventory availability and monitor inventory levels
- Reduce inventory, transportation, and warehousing costs
- Track shipments
- Plan production based on actual customer demand
- Rapidly communicate changes in product design



# Supply Chain Management

## Supply Chain Management software

Supply chain software is classified as either software to help businesses plan their supply chains (supply chain planning) or software to help them execute the supply chain steps (supply chain execution).

**1) Supply chain planning systems** enable the firm to model its existing supply chain, generate demand forecasts for products, and develop optimal sourcing and manufacturing plans.

Such systems help companies make better decisions such as determining how much of a specific product to manufacture in a given time period; establishing inventory levels for raw materials, intermediate products, and finished goods; determining where to store finished goods; and identifying the transportation mode to use for product delivery.

For example, if a large customer places a larger order than usual or changes that order on short notice, it can have a widespread impact throughout the supply chain. Additional raw materials or a different mix of raw materials may need to be ordered from suppliers. Manufacturing may have to change job scheduling. A transportation carrier may have to reschedule deliveries.

## Supply Chain Management

**2) Supply chain execution systems** manage the flow of products through distribution centers and warehouses to ensure that products are delivered to the right locations in the most efficient manner. They track the physical status of goods, the management of materials, warehouse and transportation operations, and financial information involving all parties.

### **Business Value of Supply Chain Management Systems**

Total supply chain costs represent the majority of operating expenses for many businesses and in some industries approach 75 percent of the total operating budget. Reducing supply chain costs may have a major impact on firm profitability.

In addition to reducing costs, supply chain management systems help increase sales. If a product is not available when a customer wants it, customers often try to purchase it from someone else. More precise control of the supply chain enhances the firm's ability to have the right product available for customer purchases at the right time.

# Customer Relationship Managements

**Customer Relationship Management (CRM)** consists of the processes a company uses to track and organize its contacts with its current and prospective customers. It is used to support these processes; information about customers and customer interactions can be entered, stored and accessed by employees in different company departments. It involves the use of technology in attracting new and profitable customers, while forming tighter bonds with existing ones.

CRM includes: Front office operations (face-to-face meetings, phone calls, e-mails etc.); Back office operations (billing, maintenance, planning, marketing, finance etc.); Business relationships (interaction with other companies and partners e.g. suppliers, vendors etc.); Analysis (market share, number and types of customers, revenue etc.).

## Types of CRM

- Operational CRM (support front office business processes e.g. service staff)
- Analytical CRM (analyses customer data using e.g. data mining)
- Sales Intelligence CRM (includes alerts sent to sales staff regarding sales performance, customer trends, customer margins and alignment, etc.)
- Campaign Management (combines elements of Operational and Analytical CRM)
- Collaborative CRM (uses information collected by all departments to improve quality of services provided by the company)
- Consumer Relationship CRM.

## Customer Relationship Managements

Well-designed CRM systems provide a single enterprise view of customers that is useful for improving both sales and customer service. Such systems likewise provide customers with a single view of the company regardless of what touch point the customer uses.

Good CRM systems provide data and analytical tools for answering questions such as these: “What is the value of a particular customer to the firm over his or her lifetime?” “Who are our most loyal customers?” (It can cost six times more to sell to a new customer than to an existing customer.) “Who are our most profitable customers?” and “What do these profitable customers want to buy?”

Firms use the answers to these questions to acquire new customers, provide better service and support to existing customers, customize their offerings more precisely to customer preferences, and provide ongoing value to retain profitable customers.

CUSTOMER RELATIONSHIP MANAGEMENT (CRM)



# Customer Relationship Managements

## Customer Relationship Management Software

Commercial CRM software packages range from niche tools that perform limited functions, such as personalizing Web sites for specific customers, to large-scale enterprise applications that capture myriad interactions with customers, analyze them with sophisticated reporting tools, and link to other major enterprise applications, such as supply chain management and enterprise systems. The more comprehensive CRM packages contain modules for partner relationship management (PRM) and employee relationship management (ERM).

PRM uses many of the same data, tools, and systems as customer relationship management to enhance collaboration between a company and its selling partners.

ERM software deals with employee issues that are closely related to CRM, such as setting objectives, employee performance management, performance-based compensation, and employee training.

# Decision Support Systems

## Decision Support System (DSS)

DSS combines data, analytical tools, and models to support semi-structured and unstructured decision making. Unstructured decisions are decisions which must be made in situations where it is not possible to specify in advance most of the decision procedures to follow (several 'right' answers, no precise way to get it). DSS use data collected by TPS to evaluate business models and assist managers in making tactical decisions. *A DSS does not make decisions*, but allow the manager consider a number of alternatives and evaluate them under a variety of potential conditions.

**DSS** support more non-routine decision making. They focus on problems that are unique and rapidly changing, for which the procedure for arriving at a solution may not be fully predefined in advance. They try to answer questions such as these: What would be the impact on production schedules if we were to double sales in the month of December? What would happen to our return on investment if a factory schedule were delayed for six months?

Although DSS use internal information from TPS and MIS, they often bring in information from external sources, such as current stock prices or product prices of competitors. These systems use a variety of models to analyze the data and are designed so that users can work with them directly.

# Group Decision Support Systems

The DSS we have just described focus primarily on individual decision making. However, so much work is accomplished in groups within firms that a special category of systems called **group decision-support systems (GDSS)** has been developed to support group and organizational decision making.

A GDSS is an interactive computer-based system for facilitating the solution of unstructured problems by a set of decision makers working together as a group in the same location or in different locations. Collaboration systems and Web-based tools for videoconferencing and electronic meetings described earlier in this text support some group decision processes, but their focus is primarily on communication. GDSS, however, provide tools and technologies geared explicitly toward group decision making.

GDSS-guided meetings take place in conference rooms with special hardware and software tools to facilitate group decision making. The hardware includes computer and networking equipment, overhead projectors, and display screens. Special electronic meeting software collects, documents, ranks, edits, and stores the ideas offered in a decision-making meeting. The more elaborate GDSS use a professional facilitator and support staff. The facilitator selects the software tools and helps organize and run the meeting.

## Group Decision Support Systems... cont

A sophisticated GDSS provides each attendee with a dedicated desktop computer under that person's individual control. No one will be able to see what individuals do on their computers until those participants are ready to share information. Their input is transmitted over a network to a central server that stores information generated by the meeting and makes it available to all on the meeting network. Data can also be projected on a large screen in the meeting room.

GDSS make it possible to increase meeting size while at the same time increasing productivity because individuals contribute simultaneously rather than one at a time. A GDSS promotes a collaborative atmosphere by guaranteeing contributors' anonymity so that attendees focus on evaluating the ideas themselves without fear of personally being criticized or of having their ideas rejected based on the contributor. GDSS software tools follow structured methods for organizing and evaluating ideas and for preserving the results of meetings, enabling non-attendees to locate needed information after the meeting. GDSS effectiveness depends on the nature of the problem and the group and on how well a meeting is planned and conducted.



# Executive Support Systems

**Executive Support Systems (ESS)** supply the necessary tools to senior management. The decisions at this level of the company are usually never structured and could be described as "educated guesses." Executives rely as much, if not more so, on external data than they do on data internal to their organization. Decisions must be made in the context of the world outside the organization. The problems and situations senior executives face are very fluid, always changing, so the system must be flexible and easy to manipulate.

**ESS** help senior management make these decisions. They address non-routine decisions requiring judgment, evaluation, and insight because there is no agreed-on procedure for arriving at a solution.

ESS present graphs and data from many sources through an interface that is easy for senior managers to use. Often the information is delivered to senior executives through a **portal**, which uses a Web interface to present integrated personalized business content.

ESS are designed to incorporate data about external events, such as new tax laws or competitors, but they also draw summarized information from internal MIS and DSS. They filter, compress, and track critical data, displaying the data of greatest importance to senior managers. Increasingly, such systems include business intelligence analytics for analyzing trends, forecasting, and "drilling down" to data at greater levels of detail.

## Executive Support Systems... cont

### The Role of ESS in the Organization

Executives often face information overload and must be able to separate the chaff from the wheat in order to make the right decision. On the other hand, if the information they have is not detailed enough they may not be able to make the best decision. An ESS can supply the summarized information executives need and yet provide the opportunity to drill down to more detail if necessary.

As technology advances, ESS are able to link data from various sources both internal and external to provide the amount and kind of information executives find useful. As common software programs include more options and executives gain experience using these programs, they're turning to them as an easy way to manipulate information. Many executives are also turning to the Web to provide the flexibility they need.

### Benefits of ESS

As more executives come up through the ranks, they are more familiar with and rely more on technology to assist them with their jobs. Executive Support Systems don't provide executives with ready-made decisions. They provide the information that helps them make their decisions. Executives use that information, along with their experience, knowledge, education, and understanding of the corporation and the business environment as a whole, to make their decisions.

# Knowledge Working System

Knowledge work systems (KWS) support the creation of new knowledge and its integration into the organization. KWS require easy access to an external knowledge base; powerful computer hardware that can support software with intensive graphics, analysis, document management, and communications capabilities; and a user-friendly interface.

Knowledge work systems (KWS) serve the information needs at the knowledge level of the organization. Knowledge work systems aid knowledge workers.

In general, knowledge workers are people who hold formal university degrees and who are often members of a recognized profession, like engineers, doctors, lawyers, and science. Their jobs consist primarily of creating new information and knowledge. Knowledge work systems, such as scientific or engineering design workstations, promote the creation of new knowledge and ensure that new knowledge and technical expertise are properly integrated into the business.

Good examples include firms of lawyers, accountants and management consultants. Knowledge workers, who create, produce and share knowledge, have traditionally utilized office automation technology as well.

## Knowledge Working System... cont

Now, however, they also have new technologies available to support their role in the firm. Powerful desktop computers called workstations with graphic, analytic, document management, and communications capabilities can pool together information from diverse perspectives and sources both inside and outside the firm. Lawyers, in turn, may want to scan thousands of legal finding on their desktop before recommending a strategy.

Computer-aided design (CAD) systems, augmented reality applications, and virtual reality systems, which create interactive simulations that behave like the real world, require graphics and powerful modeling capabilities. KWS for financial professionals provide access to external databases and the ability to analyze massive amounts of financial data very quickly.

# Business Intelligence Solutions and Analytics

When we think of humans as intelligent beings we often refer to their ability to take in data from their environment, understand the meaning and significance of the information, and then act appropriately. Can the same be said of business firms? The answer appears to be a qualified “yes.” All organizations, including business firms, do indeed take in information from their environments, attempt to understand the meaning of the information, and then attempt to act on the information. Just like human beings, some business firms do this well, and others poorly.

“Business intelligence” is a term used by hardware and software vendors and information technology consultants to describe the infrastructure for warehousing, integrating, reporting, and analyzing data that comes from the business environment. The foundation infrastructure collects, stores, cleans, and makes relevant information available to managers. “Business analytics” is also a vendor-defined term that focuses more on tools and techniques for analyzing and understanding data.

So, stripped to its essentials, business intelligence and analytics are about integrating all the information streams produced by a firm into a single, coherent enterprise-wide set of data, and then, using modeling, statistical analysis tools (like normal distributions, correlation and regression analysis, Chi square analysis, forecasting, and cluster analysis),

## Business Intelligence Solutions and Analytics... cont

and data mining tools (pattern discovery and machine learning), to make sense out of all these data so managers can make better decisions and better plans, or at least know quickly when their firms are failing to meet planned targets.

### The Business Intelligence Environment

There are six elements in this business intelligence environment:

- **Data from the business environment:** Businesses must deal with both structured and unstructured data from many different sources, including mobile devices and the Internet. The data need to be integrated and organized so that they can be analyzed and used by human decision makers.
- **Business intelligence infrastructure:** The underlying foundation of business intelligence is a powerful database system that captures all the relevant data to operate the business. The data may be stored in transactional databases or combined and integrated into an enterprise-data warehouse or series of interrelated data marts.
- **Business analytics toolset:** A set of software tools are used to analyze data and produce reports, respond to questions posed by managers, and track the progress of the business using key indicators of performance.

## Business Intelligence Solutions and Analytics... cont

- **Managerial users and methods:** Business intelligence hardware and software are only as intelligent as the human beings who use them. Managers impose order on the analysis of data using a variety of managerial methods that define strategic business goals and specify how progress will be measured.

These include business performance management and balanced scorecard approaches focusing on key performance indicators and industry strategic analyses focusing on changes in the general business environment, with special attention to competitors. Without strong senior management oversight, business analytics can produce a great deal of information, reports, and online screens that focus on the wrong matters and divert attention from the real issues. You need to remember that, so far, only humans can ask intelligent questions.

- **Delivery platform—MIS, DSS, ESS.** The results from business intelligence and analytics are delivered to managers and employees in a variety of ways, depending on what they need to know to perform their jobs. MIS, DSS, and ESS deliver information and knowledge to different people and levels in the firm—operational employees, middle managers, and senior executives.

## Business Intelligence Solutions and Analytics... cont

In the past, these systems could not share data and operated as independent systems. Today, one suite of hardware and software tools in the form of a business intelligence and analytics package is able to integrate all this information and bring it to managers' desktop or mobile platforms.

- **User interface:** Business people are no longer tied to their desks and desktops. They often learn quicker from a visual representation of data than from a dry report with columns and rows of information. Today's business analytics software suites emphasize visual techniques such as dashboards and scorecards. They also are able to deliver reports on Blackberrys, iPhones, and other mobile handhelds as well as on the firm's Web portal. Business Analytics software is adding capabilities to post information on Twitter, Facebook, or internal social media to support decision making in an online group setting rather than in a face-to-face meeting.



# Review Questions

- What types of companies are most likely to adopt cloud-based ERP and CRM software services? Why? What companies might not be well-suited for this type of software?
- Define customer relationship management and explain why customer relationships are so important today.
- Supply chain management is less about managing the physical movement of goods and more about managing information. Discuss the implications of this statement.
- Define a service platform and describe the tools for integrating data from enterprise applications.
- What are the major types of knowledge work systems and how do they provide value for firms?
- How do business intelligence and business analytics support decision making?

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