

# Supply Chain Management

# What is Supply Chain

- All activities associated with the flow and transformation of goods from raw materials to end users.
- The term supply chain refers to the entire network of companies that work together to design, produce, deliver, and service products.
- A network of facilities including: – Material flow from suppliers and their “upstream” suppliers at all levels, – Transformation of materials into semi-finished and finished products (internal process) – Distribution of products to customers and their “downstream” customers at all levels

# Three Flows in Supply Chain

- There are three kinds of flows in a supply chain: material, information, capital.
- Downstream
  - Material: Products, Parts
  - Information: Capacity, Delivery Schedules
  - Finance: Invoices, Pricing, Credit Terms

- Upstream
  - Material: Returns, Repairs, After-sales Services
  - Information: Orders, Point-of-sale Data
  - Finance: Payments

# Supply Chain Management

- A set of processes and sub-processes which attempt to implement and optimize the functions, connected entities, and interacting elements of a supply chain.
- Involves:
  - Organizations, procedures, people.
  - Activities: Purchasing, delivery, packaging, checking, warehousing, etc.
  - Establishment of long-term relationships with suppliers (supply alliances) and distributors
  - Effective flow of information through the supply chain
  - Supply chain optimization

# Benefits of SCM

- Reduce uncertainty along the chain
- Proper inventory levels in the chain
- Minimize delays
- Eliminate rush (unplanned) activities
- Provide good customer service

# Why is SCM Important?

- **Strategic Advantage – It Can Drive Strategy**
  - \* Manufacturing is becoming more efficient
  - \* SCM offers opportunity for differentiation (Dell) or cost reduction (Wal-Mart or Big Bazaar)
- **Globalization – It Covers The World**
  - \* Requires greater coordination of production and distribution
  - \* Increased risk of supply chain interruption
  - \* Increases need for robust and flexible supply chains

- At the company level, supply chain management impacts
  - \* **COST** – For many products, 20% to 40% of total product costs are controllable logistics costs.
  - \* **SERVICE** – For many products, performance factors such as inventory availability and speed of delivery are critical to customer satisfaction.



# Problems along with SCM

- Delays in production, distribution etc.
- Expensive Inventories
- Lack of partners' coordination
- Uncertainties in deliveries
- Poor demand forecast
- Interference with production
- Poor quality

# More Challenges

- Complexity of the supply chain network – e.g. large numbers of suppliers and distributors
- Complexity in product structure and manufacturing process – How much product differentiation/ customization/ localization should be supported ? – Where do you customize a product (upstream or downstream) ?

# Variability in SCM

- Demand variability

Even the most sophisticated demand forecasting tools often fail to anticipate demand

- Process variability

- Production unit downtimes
- Unexpected staff absences

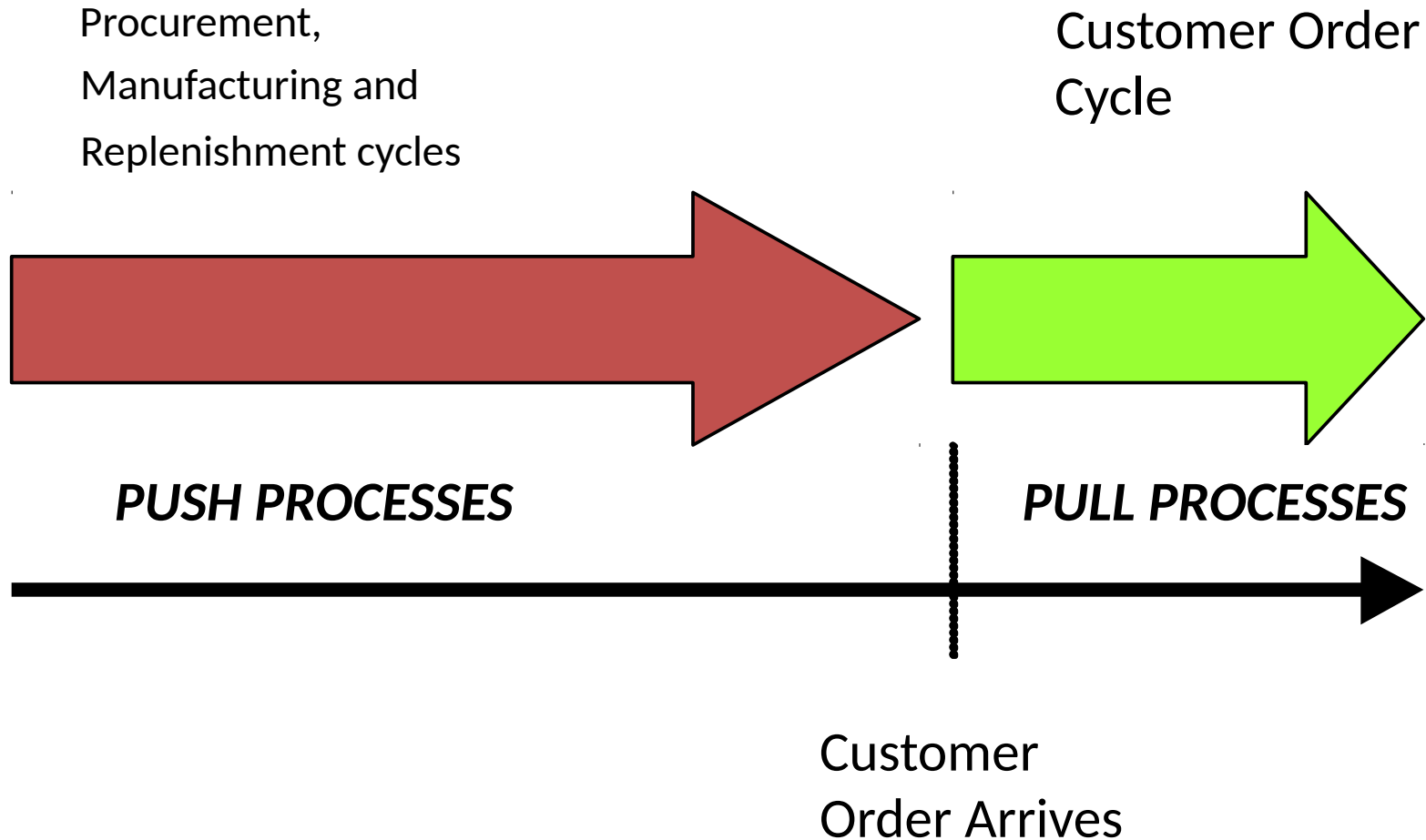
- Supply variability

- e.g., late deliveries from suppliers

# Push/Pull View of Supply Chains

- **Pull processes:** execution is initiated in *response to* a customer order
- **Push processes:** execution is initiated in *anticipation of* customer orders

# Push/Pull View of Supply Chains



# Push-Based Supply Chains

- Production and distribution decisions based on long-term forecasts.
- Manufacturer demand forecasts based on orders received from the retailer's warehouses.
- Longer reaction time to changing marketplace:
  - Inability to meet changing demand patterns.
  - Obsolescence of supply chain inventory as demand for certain products disappears.
  - Variability of orders received much larger than the variability in customer demand due to the bullwhip effect.

# Bullwhip Effect in Push-Based Supply Chains

- Leads to inefficient resource utilization
- Planning and managing are much more difficult.
- Not clear how a manufacturer should determine production capacity? Transportation capacity?
- Results:
  - Higher transportation costs
  - Higher inventory levels and/or higher manufacturing costs
  - more emergency production changeovers

# Pull-Based Supply Chains

- Production and distribution demand driven
  - Coordinated with true customer demand rather than forecast demand
  - firm does not hold any inventory and only responds to *specific* orders.
  - Reduced lead times through the ability to better anticipate incoming orders from the retailers.
  - Reduced inventory since inventory levels increase with lead times
  - Less variability in the system
  - Decreased inventory at the manufacturer due to the reduction in variability.



# Implementation of Pull-Based Systems

- Often difficult to implement
  - when lead times are long
  - more difficult to take advantage of economies of scale
- Advantages and disadvantages of push and pull supply chains:
  - new supply chain strategy that takes the best of both.
  - **Push-pull** supply chain strategy

# Decisions in Supply chain

# The Supply Chain

The supply chain begins with acquiring the goods or materials needed to satisfy the end product. Businesses must choose vendors, freight carriers, and possibly warehouse solutions. Inventory storage and the handling of goods-in-process are part of supply chain management as well. Marketing and distributing the product to the consumer wraps up the process.

Essentially, supply chain management includes every decision made about the products or services a company delivers to their customers. The best way to understand the various phases of supply chain management and how certain points influence others is to look at the 3 levels of SCM decision-making a bit closer.

## Strategic Planning

Every effective supply chain strategy begins with solid long-term decision-making. The strategy level lays the groundwork for the entire supply chain process, from beginning to end, and is an essential part of supply chain management. Strategy level supply chain decisions are usually the first step of developing a good process.

Issues addressed at this level include:

- Choosing the site and purpose of business facilities
- Creating a network of reliable suppliers, transporters, and logistics handlers
- Long-term improvements and innovations to meet client demands
- Inventory and product management throughout its life cycle
- IT programs and systems to make the process more effective

## Tactical Management

Businesses make short-term decisions involving the supply chain at the tactical level. At the strategy level, general planning begins, but processes are actually defined at the tactical level. Tactical decisions play a big role in controlling costs and minimizing risks. At this level, the focus is on customer demands and achieving the best end value.

Common concerns include:

- Procurement contracts for necessary materials and services
- Production schedules and guidelines to meet quality, safety, and quantity standards
- Transportation and warehousing solutions, including outsourcing and third-party options
- Inventory logistics, including storage and end-product distribution
- Adopting best practices in comparison to competitors

## The Operational Level

The operational level of supply chain management is the most obvious. These are the day-to-day processes, decision-making, and planning that take place to [keep the supply chain active](#). The mistake that many companies make is to jump straight into operational management without focusing on the strategy and tactical levels. Effective operational level processes are the result of strong strategical and tactical planning.

Some aspects of operational level management are:

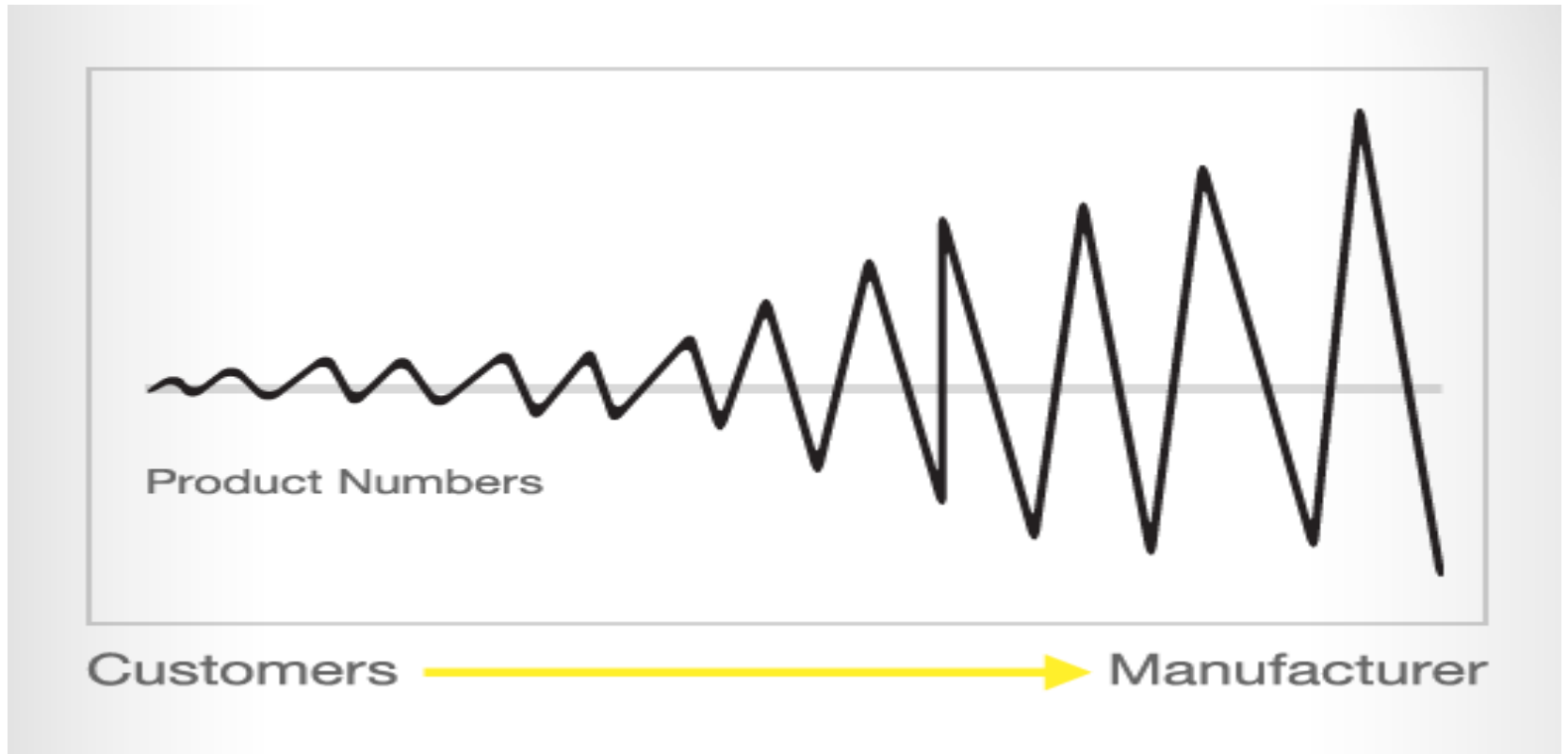
- Daily and weekly forecasting to figure out and satisfy demand
- Production operations, including scheduling and detailed management of goods-in-process
- Monitoring logistics activity for contract and order fulfillment
- Settling damages or losses with suppliers, vendors, and clients
- Managing incoming and outgoing materials and products, as well as on-hand inventories



Through the numerous stages of a supply chain;

- key factors such as time and supply of order decisions,
- demand for the supply,
- lack of communication and disorganization can result in one of the most common problems in supply chain management. This common problem is known as the bullwhip effect; also sometimes the whiplash effect.

What is the bullwhip effect?



The bullwhip effect can be explained as an occurrence detected by the supply chain where orders sent to the manufacturer and supplier create larger variance than the sales to the end customer. These irregular orders in the lower part of the supply chain develop to be more distinct higher up in the supply chain. This variance can interrupt the smoothness of the supply chain process as each link in the supply chain will over or underestimate the product demand resulting in exaggerated fluctuations.

There are many factors said to cause or contribute to the bullwhip effect in supply chains; the following list names a few:

**Disorganization** between each supply chain link; with ordering larger or smaller amounts of a product than is needed due to an over or under reaction to the supply chain beforehand.

**Lack of communication** between each link in the supply chain makes it difficult for processes to run smoothly. Managers can perceive a product demand quite differently within different links of the supply chain and therefore order different quantities.

**Free return policies;** customers may intentionally overstate demands due to shortages and then cancel when the supply becomes adequate again, without return forfeit retailers will continue to exaggerate their needs and cancel orders; resulting in excess material.

**Order batching;** companies may not immediately place an order with their supplier; often accumulating the demand first. Companies may order weekly or even monthly. This creates variability in the demand as there may for instance be a surge in demand at some stage followed by no demand after.

**Price variations** – special discounts and other cost changes can upset regular buying patterns; buyers want to take advantage on discounts offered during a short time period, this can cause uneven production and distorted demand information.

**Demand information** – relying on past demand information to estimate current demand information of a product does not take into account any fluctuations that may occur in demand over a period of time

## Example of the bullwhip effect

Let's look at an example; the actual demand for a product and its materials start at the customer, however often the actual demand for a product gets distorted going down the supply chain. Let's say that an actual demand from a customer is 8 units, the retailer may then order 10 units from the distributor; an extra 2 units are to ensure they don't run out of floor stock.

The supplier then orders 20 units from the manufacturer; allowing them to buy in bulk so they have enough stock to guarantee timely shipment of goods to the retailer. The manufacturer then receives the order and then orders from their supplier in bulk; ordering 40 units to ensure economy of scale in production to meet demand. Now 40 units have been produced for a demand of only 8 units; meaning the retailer will have to increase demand by dropping prices or finding more customers by marketing and advertising.

Although the bullwhip effect is a common problem for supply chain management understanding the causes of the bullwhip effect can help managers find strategies to alleviate the effect.

## **E-MARKETING**

"E-Marketing allows access to customers on a 24/7 basis, 365 days a year (Jobber, 2006)."

**This concept provides a detailed explanation of the uses of electronic communication technologies, such as the Internet, mobile phones and digital televisions, to accomplish marketing objectives.**



## **e-Marketing Definition**

e-Commerce describes the exploitation of electronic means and platforms to conduct company business. e-Marketing (also referred to as web marketing or internet marketing) uses electronic communication technologies including the Internet, mobile phones and digital televisions to accomplish marketing objectives (**McDonald and Wilson, 1999**). More specifically, **e-Marketing** portrays company efforts to inform and communicate with buyers, and promote and sell its products and services over the Internet (**Kotler and Keller, 2006**).

# **Advantage of E-Marketing**

- Internet provides 24 hours and 7 days “24/7” service to its users. So you can build and make customers relationships worldwide, and your customer can shop or order product at any time.
- The cost of spreading your message on internet is nothing. Many social media sites like Facebook, LinkedIn and Google plus allow you freely advertise and promote your business.
- You can easy and instantly update your registered customers or subscribers through email.
- Visitors or potential customers of your website can get up to the minute information on each visit.
- If you are having a sale, your customers can start shopping at the discounted prices literally as soon as they open their email.

# **Disadvantages of E-Marketing**

- If you want a strong online advertising campaign you have to spend money. The cost of web site design, software, hardware, maintenance of your business site, online distribution costs and invested time, all must be factored into the cost of providing your service or product online.
- Almost over 60% of households now a day shop online. While that numbers are continuously growing, your company needs to reach maximum people.

- Some people prefer the live interaction when they buy any product. And if your company has a small business with one location, this may also deter customers from buying who lives on long distances.

- Your company should have updated information on your site. This requires research and skills and thus timing of updates is also critical.

- Is your company web site secure? There are many incorrect stereotypes about the security of the internet. As a result, many visitors of your business web site will not want to use their credit card to make a purchase. So there is a fear in the minds of your visitors of having their credit card info stolen.

## **e-Procurement Definition**

e-Procurement refers to web-based procurement networks in which one or more companies source their suppliers at the lowest costs possible (Ong, 2002). The term e-Procurement is sometimes used interchangeably with 'business marketplaces' (B2B), 'electronic supply chains', 'trading hubs', or 'trading communities'.

## **E-procurement Tools and Application**

**There are several tools and application which fall under e-procurement some of them are as follows:**

In electronic data interchange system, procurement messages are exchange between computers of two separate organizations.

Message is exchange in batch and can be easily transmitted and stored. EDI is mostly used for order transmission, order confirmation, logistic information and order invoicing.

Enterprise resource planning system have separate module to handle the procurement function.

Internet based tools and resources help in the process of procurement. Some of the common applications are email, internet

based EDI, XML based data exchange via the internet etc. Internet

**E-sourcing** tool is used to identify potential suppliers during the selection phase. E-tendering tool is used to send out tenders with procurement requirements, supply schedule, contracting terms, etc.

**E-auctioning** tools bring together potential supplier identified during selection phase under one umbrella to undertake auctioning process.

E-auctioning tools operate under two separate mechanism, upward price mechanism for selling organization and downward price mechanism for the buying organization. **E-ordering** tool is used procurement of office supplies and services; it is accessible by all employees within the organization and is mainly used for ad-hoc purchases. A web-based ERP tool is used for product-related purchases, is exclusively used by the procurement department, and falls under a planned process

## **E-procurement Benefits**

E-procurement influences the following:

- The cost incurred on goods and services associated with production.
- The cost incurred on procurement process such as ordering, administrative support etc.
- The cost incurred on specification formulation, supplier selection etc.
- The cost benefit in establishing relationship with suppliers.
- It promotes transparency in the process and therefore improves accountability.



# E-FULLFILLMENT

By adding speed and visibility to their logistics operations, retailers delight online customers, and keep them coming back for more.

Order fulfillment includes all of the activities from the point of a customer's purchase decision until the product is delivered to the customer and he or she is fully satisfied with its quality and functionality. For e-tailers, e-fulfillment comprises the following five distinct processes that may be performed by the e-tailer or outsourced to other partners:

- Order capture (the process of taking a customer from the point of a buy decision through successful data capture and checkout).
- Order processing (preparing the order for pick and pack, including credit checking, pick list creation, invoicing, and address label generation).
- Pick and pack (physically selecting the correct items, inspecting them, and preparing them for shipment).
- Ship (transporting the goods from the warehouse to the customer's address).
- After-sales service and returns handling

**The art of managing the organization's relationship with the customers and prospective clients refer to customer relationship management.**

# Need for Customer Relationship Management

- ❖ Customer Relationship Management leads to satisfied customers and eventually higher business everytime.
- ❖ Customer Relationship Management goes a long way in retaining existing customers. Customer relationship management ensures customers return back home with a smile.
- ❖ Customer relationship management improves the relationship between the organization and customers. Such activities strengthen the bond between the sales representatives and customers

# **Steps to Customer Relationship Management**

**It is essential for the sales representatives to understand the needs, interest as well as budget of the customers.** Don't suggest anything which would burn a hole in their pockets.

**Never tell lies to the customers.** Convey them only what your product offers. Don't cook fake stories or ever try to fool them.

**It is a sin to make customers waiting.** Sales professionals should reach meetings on or before time. Make sure you are there at the venue before the customer reaches.

**A sales professional should think from the customer's perspective.**

Don't only think about your own targets and incentives. Suggest only what is right for the customer. Don't sell an expensive mobile to a customer who earns rupees five thousand per month. He would never come back to you and your organization would lose one of its esteemed customers.

**Don't oversell.** Being pushy does not work in sales. If a customer needs something; he would definitely purchase the same. Never irritate the customer or make his life hell. Don't call him more than twice in a single day.

**An individual needs time to develop trust in you and your product.**

Give him time to think and decide.

**Never be rude to customers.** Handle the customers with patience and care. One should never ever get hyper with the customers.

**Attend sales meeting with a cool mind.** Greet the customers with a smile and try to solve their queries at the earliest.

**Keep in touch with the customers even after the deal.** Devise customer loyalty programs for them to return to your organization. Give them bonus points or gifts on every second purchase.

**The sales manager must provide necessary training to the sales team to teach them how to interact with the customers.** Remember customers are the assets of every business and it is important to keep them happy and satisfied for successful functioning of organization.



# **Enterprise Resource Planning (ERP) and Supply Chain Management (SCM)**

An ERP system focuses on the management of business information, offering a macro view into a company by integrating disparate systems across functional groups such as procurement, finance, distribution, and inventory control. A Supply Chain Management system ties in supply chain partners who help a company find the raw materials it needs to deliver products and services to its customers. The integration of both systems usually poses some challenge to CIOs, as there is no set formula as to which system should be implemented first.

## **Advantages of Implementing an ERP System before Supply Chain**

ERP can be executed for corporate functions like human resources, finance and accounting, basic industry-specific procedures, reporting and planning. There are a number of advantages to building a Supply Chain system on top of an existing ERP platform.

- An ERP system outlines a smart process for the company to use technology to automate manual or mundane work processes therefore, making it easier to streamline supply chain management practices.

- ERP systems help to define roles and responsibilities of different users and ensure that ownership is assigned at various levels. This is critical to managing the various aspects of a supply chain management system.

- ERP implementations also help users to gain familiarity with technology systems, terms and sets expectations making transitions to supply chain management applications smoother.

# Benefits of Integrating ERP and Supply Chain Systems

There are many success stories and unfortunately much-hyped failures as well. However, if most projects follow some simple guidelines, companies can increase the chance of success, deliver on time, and proudly involve the relevant group of users who utilize the system to maximum gain. Some benefits to look forward to include:

- Improved efficiencies, lower costs and improve productivity
- Ability to provide better services to customers, and therefore increase customer retention

- Increased ability to manage resources through a streamlined process, and in some cases, an automated workflow
- Leveraging IT to enhance the speed of tasks and increase production
- Ability to cope with business changes in the future and to adapt to changing rules and regulations, therefore enabling the organization to compete more effectively