Learning Objectives:

- To appreciate how logistics can influence an organization's strategic financial outcomes
- To review basic financial terminology
- To understand how a Strategic Profit Model (SPM) can demonstrate a financial impact of logistics activities
- To become aware of some of the more common measures of logistics performance

Strategic and Financial Logistic Key terms

- **Assets** - Are what a company owns and include current assets and long-time assets.
- **Asset Turnover**
  - In the strategic profit model, asset turnover measures the efficiency of capital employed to generate sales. Computed by dividing total sales by total assets.
- **Balanced Scorecard (BSC)**
  - A strategic planning and performance management system that evaluates a business from four distinct perspectives: customers, internal business procedures, learning and growth, and financial.
- **Balance Sheet**
  - Reflects an organization's assets, liabilities, and owners' equity at a given point in time.
- **Cost Leadership strategy**
  - Requires an organization to pursue activities that will enable it to become the low-cost producer in an industry for a given level of quality.
- **Differentiation strategy**
  - Entails an organization developing a product and/or service that offers unique attributes that are valued by customers and that the customers perceive to be distinct from competitor offerings.
- **Expenses (cost)** - Provide a dollar value for the costs incurred in generating revenues during a period of time.
- **Focus strategy** - Concentrates an organization's effort on narrowly defined market to achieve either a cost leadership or differentiation advantage.
- **Income statement** - Shows revenues, expenses, and profit for a period of time. Also called profit & loss (P&L) statement.
- **Liabilities** - Financial obligations that a company owes to another party.
- **Net profit margin** - Measures the proportion of each sales dollar that is kept as profit.
- **Owner’s equity** - Difference between what a company owns and what it owes at any particular point in time.
- **Return on asset (ROA)** - Indicates what percentage of every dollar invested in the business ultimately is returned to the organization as profit. Calculated by ROA = net profit margin × asset turnover.
- **Revenues (sales)** - A dollar value of all the products and/or services an organization provides to their customers during a given period of time.
- **Strategic Profit Model**
  - Provides the framework for conducting return on assets analysis by incorporating revenues and expenses to generate a net profit margin, as well as an inclusion of assets to measure asset turnover.

Connecting Strategy to Financial Performance

- Logistics managers must find ways to:
  - communicate how logistics capabilities provide value
  - support corporate strategy and success in financial terms.
- Logistics resides at the functional level of the organization.
- Functional units must translate corporate and business unit strategies into discrete action plans.
- Three generic strategies that can be pursued by an organization
  - **Cost leadership strategy** requires an organization to pursue activities that will enable it to become the low-cost producer in an industry for a given level of quality
  - **Differentiation strategy** entails an organization developing a product and/or service that offers unique attributes that are valued...
by customers and that the customers perceive to be distinct from competitor offerings

- **Focus strategy** concentrates an organization’s effort on a narrowly defined market to achieve either cost leadership or differentiation advantage

- **Logistic strategy decisions involve:**
  - Determining the number and location of warehouses
  - Selecting appropriate transportation modes
  - Deploying inventory
  - Investments in technology that support logistics activities

- **Logistics strategy is directly influenced by strategic decisions in functional areas of:**
  - **Marketing** (product availability, desired customer service levels, and packaging design directly influence logistics decisions)
  - **Manufacturing** (strategic decisions by manufacturing to implement just-in-time system would influence logistics decisions in warehousing, transportation, and inventory management)
  - **Finance** (rates of return may affect the decision to manager one’s own warehouse or use a third party provider)
  - **Procurement** (the decisions to move from domestic to global sourcing would naturally affect logistics activities such as the potential use of new modes of transportation)

- **Logistics function can positively affect the financial outcome of an organization by designing a strategy to optimally support the requirement of the business.** The ability of the logistics function to ultimately affect the financial success of the organization is based on the ability of the logistics manager to develop and implement strategies that are aligned with the overall corporate strategy.

**Basic Financial Terminology**

- Income statement shows for a period of time:
  - **Revenues** A dollar value of all the products and/or services an organization provides to their customers during a given period of time.
  - **Expenses** Provide a dollar value for the costs incurred in generating revenues during a period of time.
  - **Profit difference between the revenue and expense**

  Also referred to as a profit and loss (P&L) statement

- **Balance sheet reflects at any given point in time:**
  - **Assets**
  - **Liabilities**
  - **Owner’s equity**

*see definition on the first page

**STRATEGIC PROFIT MODEL**

While costing and profitability assessment are important aspects of financial controllership, the most critical measure of strategic success is Return on Investment (ROI). There are two ways of viewing ROI. The first is Return on Net Worth (RONW), which measures the profitability of the funds that the owners of the firm have invested in the firm. The second is Return on Assets (ROA), which measures the profitability generated by managing a firm’s operational assets. While owners and investors are most likely interested in RONW, ROA offers a measure of how well management is utilizing assets to earn profits.

Strategic Profit Model issues with reporting financial figures without appropriate context. Many financial measures reported as ratios. Profitability analysis is useful in assessing logistics activities. Return On Investment (ROI) is a common measure of organizational financial success. Return On Net Worth (RONW) measures profitability of funds invested in the business. Return On Assets (ROA) provides a measure of how well managers utilize operational assets to generate profits.

Strategic Profit Model Strategic Profit Model (SPM):

- provides the framework for conducting ROA analysis
- Incorporates revenues and expenses to generate net profit margin
The Figure below presents the Strategic Profit Model (SPM). The SPM is a tool frequently used to analyze ROI in a business firm. In fact, the SPM is a tool that incorporates both income and balance sheet data and demonstrates how these data relate to each other to result in ROA.

One of the primary benefits of the SPM is that it shows very clearly that a key financial objective of the firm is to achieve and increase ROA. Too often, managers focus on more limited objectives. For example, sales management may focus on sales as the primary objective of the business and, therefore, will base decisions on sales volume. Logistics management may focus on costs minimization or turnover and feel that decisions must be based on reducing expense or increasing the firm’s efficient utilization of assets. The SPM demonstrates that there are two fundamental ways in which a firm can increase return on assets: managing net profit margin and/or managing asset turnover. Logistics operations have a significant impact on both.

**Logistics Connections to Net Profit Margin**

Operationally, net profit margin is net profit divided by sales, and looking at net profit and sales as reported on the income statement suggests multiple ways in which net profit margin can be influenced by managerial decisions. The most relevant categories for logistics managers to consider are sales, cost of goods sold, and total expenses.

- **Sales** are the dollar value of all the products or services an organization provides to its customers during a given period of time. The primary influence of logistics activities on sales would be through the improvement of customer service. For example, one logistics decision that could be made by an e-commerce company would be to provide overnight delivery to their customers at no cost. While this type of decision would need to consider the cost implications of providing this level of service, it would be expected that the move would have a positive influence on customer relations and sales.

- **Cost of goods sold** is one category of expenses. It includes all the costs or materials and labor directly involved in purchasing a product or delivering a service. A significant part of this expense category is the cost of materials that are used to make a product.

- **Total expenses** is a measure of the total cost of a fund to the investor. Total costs may include various fees (purchase, redemption, auditing) and other expenses.

Net profit margin actually measures the proportion of each sales dollar that is kept by the firm as net profit. For example, the hypothetical firm has a net profit margin of 5 percent; this is simply means that $0.05 out of every $1 represents net profit for the company. It is important to note that net profit margin is also divided into a number of specific components (sales volume cost of goods sold, and operating expense). For fuller evaluation of whether the firm's net profit margin is adequate, and whether it might be improved, it is necessary to investigate each component to determine whether an increase or decrease in any one of the component or in any combination of components might lead to improved net profit margin performance.

**Logistics Connections to Asset Turnover**

The ratio of total sales divided by total assets is asset turnover, which measures the efficiency of management in utilizing assets. It shows how many dollars in total sales volume are being generated by each dollar that the firm has invested in assets. For example, the hypothetical company with an asset turnover ratio of 2:1 is generating $2.00 in sales volume for each dollar it has invested in assets. There are a number of assets used to generate sales. The most important are inventories, accounts receivable, and fixed facilities. Inventory is particularly important asset to many firms because it is typically one of the largest areas of asset investment. Thus, it is common in logistics to focus specifically on the management of the inventory turnover ratio. Logistics decisions can influence speed at which invoices are paid – accounts receivable.
**Net profit margin** measures the proportion of each sales dollar that is kept as profit, while **asset turnover** measures the efficiency of the capital employed to generate sales. Together they form the basis for computing ROA.

### BALANCED SCORECARD

The balanced scorecard is an essential element of today's business logistics world. Since its introduction by Kaplan and Norton in 1992, it has become increasingly important. In logistics and especially in logistics controlling, it is a tool that supports company efforts to measure the organization's activities in terms of strategy. In terms of the supply chain, another perspective is added to the traditional balanced scorecard - that of the supplier.

Balanced Scorecard Balance scorecard (BSC) is a strategic planning and performance management system used in industry, government, and nonprofit organizations.

Balanced Scorecard Management should evaluate their businesses from four perspectives:

- **Customers**
  
  The customer perspective determines a company’s strategic goals in terms of customer and market segments that the company wants to address. The key indicators of the customer perspective must facilitate a differentiation by various customer groups - e.g., industrial customers vs. end consumers

- **Internal business processes**
  
  The process perspective shows those processes within a company’s value creation that are designed to promote the achievement of the goals of the financial and customer perspectives. The analysis of a company’s internal processes must be applied to the entire value chain.

- **Learning and growth**
  
  Key indicators in the learning and developmental perspectives describe fundamental elements of the infrastructure that are needed for the other perspectives. To reflect the dynamic character of the supply chain, department-centric thinking must be eliminated.

- **Financial**
  
  Using key indicators, the financial perspective determines whether the implementation of strategies is producing improved earnings. The focus is placed on achieving cost advantages in the entire supply chain. Relevant cost and performance drivers are presented in a structured and linked manner.

Balanced scorecard forces managers to look beyond traditional financial measures (more holistic approach)

### The balanced scorecard in logistics controlling (ADDITIONAL INFO.)

Conventional systems of key indicators generally relate to past events and concentrate on short-term financial value creation. The balanced scorecard, on the other hand, goes a step farther. It is designed to help determine the critical factors of a company’s long-range success. With the balanced scorecard, strategies are implemented in the operational business.

In this process, a company is usually examined from four perspectives - ranging from the traditional financial perspective to the perspectives of the customer, internal business processes, and learning and development. In doing so, a company encounters a problem that results from improvements achieved by logistics measures often being inadequately reflected in reduced costs.

As a result of the balanced scorecard, the logistics value propositions achieved in other perspectives can be described very well.

An expanded version of the balanced scorecard can be used for cross-company logistics networks or supply chains Supply chain. Strategies should be openly communicated within the supply chain, e.g., at supplier workshops. Objectives for individual companies should be derived from them. It is also recommended that a fifth perspective be added to the others: the supplier perspective

### 5 Types of performance in Logistics Management System

- **Cost**
- **Customer Service**
- **Quality**
- **Productivity**
- **Asset Management**

**Cost** - the most direct reflection of logistics performance

- Typically measured in total dollars (or PESO) spent
- Total Logistics Cost aka Total Landed Cost
  
  - Sum of order of processing + inventory + transportation + warehousing and material handling + facility network
- Cost is commonly reported as a4
- Percentage of sales volume
  Ex. Transportation cost as 15% of sale volume
- Cost per unit of volume
  Ex. Loading cost as $5.50 per order

Customer Service- requires specific measures for each element of the basic service platform

- Availability
  - Organization’s fill rate (percentage of customer or consumption orders satisfied from stock at hand. It is a measure of an inventory’s ability to meet demand. Also called demand satisfaction rate.)
    *Item fill rate
    *Line fill Rate
    *Value fill rate
    *Order fill rate
- Operational performance
  - Average order cycle time is average number days elapsed between order receipt and delivery to customer
  - Order cycle consistency
  - On-time delivery

Quality-often include service reliability performance

- Accuracy of work activities performed
- Damage frequency is the ratio of number of damaged units to the total number of units
- Number of customer returns of damaged or defective goods
- Number of instances when information is not available on request
- Number of instances when inaccurate information is discovered

Productivity-measured in terms of output of goods compared with quantities of inputs

- Labor productivity
  - Units shipped per employee
  - Units received per employee
- Equipment downtime (Period during which an equipment or machine is not functional or cannot work. It may be due to technical failure, machine adjustment, maintenance, or non-availability of inputs such as materials, labor, power. Average downtime is usually built into the price of goods produced, to recover its cost from the sales revenue. Opposite of uptime. Also called waiting time.)

Asset Management-considers utilization of capital investment in facilities, equipment and inventory

- Facilities and equipment
  - Capacity utilization
    *Ex. Warehouse utilization of 80% is not shipping all it is capable of shipping
  - Downtime is the percentage of hours that equipment is not utilized
    *Ex. Forklift with 2% annual downtime
- Inventory
  - Inventory Turnover Rate (is a measure of the number of inventory is sold or used in a time period such as a year)
    Equation= Inventory Turnover=Cost of goods sold / Average Inventory
  - Days of supply (the amount available to meet forecasted sales volume)
    *Ex. 50 days of supply (100 units per day forecast and 5000 units on hand)
- Return on assets and return on investment

Common Logistics Measures

Transportation Measures
Focus:
- Labor
- Cost
- Equipment
- Energy
- Transit Time

Measurements:
- Return on Investment (ROI) - it is the ratio between the net profit and the capital that was employed to produce that profit.
- Outbound freight costs - is the transportation cost associated with the delivery of goods from a supplier to its customers.
- Outbound freight costs as percentage of net sales: Calculated by dividing outbound freight costs by net sales.5
- Transportation Labor Productivity or Truckload Capacity - Generally used for shipments over 10,000 lbs. Calculated by dividing the total pounds shipped by the theoretical maximum. Ex.
  - Ex. Assume your trucks can hold 40,000 lbs. of product. During the prior month, there were 675 shipments totalling 22.95MM lbs.
The percentage utilization was 85%. The 15% unused capacity is an opportunity for more efficiency.

- **On Time Deliveries** – percentage or number of shipments which were delivered on time. Measured by the number of days (or hours) from the time a shipment leaves your facility to the time it arrives at the customer's location.
- **In Transit Damage Frequency** – loss or damage of freight shipments while in transit in carrier operated warehouse.

**Warehouse Measures**

Focus:

- Labor
- Cost
- Time
- Utilization
- Administration

Measurements:

- **Warehouse Order Processing Cost** - The costs to fulfill customer orders include order taking and customer service, storing and maintaining inventory, shipping and product tracking to ensure delivery. Also known as purchase cost or set up cost, order cost is the sum of the fixed costs that are incurred each time an item is ordered. These costs are not associated with the quantity ordered but primarily with physical activities required to process the order.
- **Warehouse Labor Productivity**
- **Picking Errors**

**Inventory Measures**

Focus:

- Service Levels
- Inventory Investment

Measurements:

- **Obsolete Inventory** - inventory that has had no sales or usage activity for a specific period of time. The period of time varies by company and industry and may even vary by product line within a specific company and may range from weeks to years.
- **Inventory Carrying Cost** - A financial measurement that calculates all the costs associated with holding goods in storage, usually expressed as a percentage of the inventory value. It includes inventory-in-storage, warehousing, obsolescence, deterioration or spoilage, insurance, taxes, depreciation, and handling costs.
- **Inventory Turnover** - The cost of goods sold divided by the average level of inventory on hand. This ratio measures how many times a company's inventory has been sold during a period of time. Operationally, inventory turns are measured as total throughput divided by average level of inventory for a given period. How many times a year the average inventory for a firm changes over or is sold.
- **Information Availability** –

**Design and Implementation of Measures**

- Tailored to the organization and level of decision making
- Data collection and analysis
- Behavioral Issues
- Frequent Communications and Constant Updating