

Inventory Management for Retail Business: A Case Study of Pizza Hut

By

Porntip Worakijthamrongchai

A PROJECT

Presented to the Faculty of Graduate School of Computer and Engineering Management

in Partial Fulfillment of the Requirements for the Degree

ort

MASTER OF SCIENCE

COMPUTER AND ENGINEERING MANAGEMENT ASSUMPTION UNIVERSITY

December, 1998



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ASSUMPTION UNIVERSITY

December 1998

The Graduate School of Assumption University has approved this final report of the threecredit course, CE 6998 Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

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December 1998

ABSTRACT

This project describes the characteristics of retail business, inventory management, view of value chain in retail business, and using retail management system to improve the business strategies. The purpose of an inventory management system is to provide information on the amount of merchandise in stock and its condition. EPOS systems have significantly improved the retailer's ability to operate tighter and more rational stock control.

In addition, a system diagram of retail business is to be clear. Functional decomposition of retail management system and context diagram are also identified in this project.

Finally, to analyze existing business process of case discussion: Pizza Hut's aspect of retail business and Inventory management, is presented.

ACKNOWLEDGEMENTS

I am indebted to the following people and organizations. Without them, this project would not have been possible.

I wish to express my sincere gratitude to my advisor, Dr. Tatchapol Poshyanonda. His patient assistance, guidance, and constant encouragement has led me to the project completion. I would like to express appreciation to my Advisory Committee members: Prof. Dr. Srisakdi Chamonman, Dr. Chamnong Jungthirapanich and Assoc. Prof. Somchai Thayarnyong for their constructive comments and advice throughout the project.

I would like to thank Khun. Sumalee Patitus the General Manager of Skyblitz(1995) Company Limited for her help in further information and recommendation.

Special appreciation is due to my family for their fervent and continuous encouragement. Above all, I am forever grateful to my parents whose willingness to invest in my future has enabled me to achieve my educational goal.

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I. INTRODUCTION

The importance of controlling merchandise has already been made clear. It involves the maintenance of a correct balance between the range carried and the sales to which it gives rise. The aim is to obtain as big a turnover as possible with the most economic inventory level. There is a clear indication that the rate of stockturn has a decisive effect on the net profitability of a retail business.

The Inventory System of Pizza Hut allows you to compare theoretical raw material usage and cost based on sales with actual usage and costs based on physical inventory counts. This comparison allows you to monitor raw material costs, spot overuse, and ensure adequate item pricing. To calculate the theoretical usage information, the system performs what is called a 'recipe explosion'. This process, which can be configured to occur every few minutes throughout the day, or once at the end of the day, takes the items sold and calculates the precise amount of each raw material that went into making them. These amounts are then accumulated and used to calculate the total raw material usage for each raw material and cost for all items sold.

II. LITERATURE REVIEW

A. Value Chain in Retail Management System

Retailing is a set of business activity that adds value to the product and services sold to consumers for their personal or family use. Often people think of retailing only as the sale of products in stores. But retailing also involves the sale of services: a haircut, a videotape rental, or a home-delivered pizza.

1. Value Chain Concept

Value is the amount buyers are willing to pay for what a firm provides them. A firm's value chain is embedded in a larger stream of activities, which is called the 'Value System'

• IT- Value Chain management. IT serves as a nexus, providing the organization's individual, group and managerial systems the necessary means to accomplish required organization transformations. It refers to the process of organization change causes by IT as information. Informatization includes changes in information flows, knowledge, culture, people and activities. Such a recursive dynamic and IT induced change is illustrated by the application of IT foster inductive thinking. Both organization culture and organization learning which, translated into action, established innovation processes that continued to generate performance improvements in the value chain. Organization which accomplish BPR innovation creatively reengineer that value chain by proactively leveraging boundaries and relationships within the value chain.

• IT- Conversion Effectiveness. IT investments in organizations with a high level

of conversion effectiveness will realize higher productive outputs, i.e., greater payoff, from such investments. Prior research has consistently found top management commitment to IT linked to success use of IT. The firm's previous experiences with IT lead to greater than organization learning. Previous experience with IT increases the firm's IT absorptive capacity, i.e., the firm's ability to recognize the value of, assimilate and apply new information pertaining to IT.



Figure 2.1. Quick Response System can trigger a 'Virtuous Circle' in Logistics

Information on end user demand was captured at the point of sale and rapidly fed back up the supply chain enabling dramatic reductions in lead-times to be achieved and hence substantial reductions in inventory. The use of EDI to enable computer-tocomputer ordering and transaction management is now widespread. Daily information from the Point of Sale enables head office to determine replenishment requirement. This information is transmitted direct to the suppliers who package individual store requirement into bar code parcels. In effect, a just-in-time delivery is achieved which enables minimum stock to be carried in the stores and yet transport costs are contained through the principles of consolidation.

Value are added along the process of retail business not only primary activities but also support activities. Primary activities involved in the physical creation of the product and its sales and transfer to the buyer as well as after-sales assistance. And support activities support the primary activities and each other by providing purchased inputs, technology, human resources, and various firmwide functions. It is illustrated in figure 2.3. Value Chain of Retail Business. Value chain can be improved by using new technology and retail management system such as Internet Technology, Communication Technology. It is illustrated in figure 2.4. Improve Value Chain of Retail Business by Retail Management System

Relationships / of IT Participants Application Area



Figure 2.2. Value Chain Diagram

			-							Procurement	Technology Development	Management	Human Resource	Firm Infrastructure
Inbound Logistics		management DI	systems Account Payable	warehousing and distribution	status, central	Inbound shipment	D Purchasing	Negotiate supplier		4	transportation Routi	FDI Duick reenonce		
Operation	economies	for each target segment, volume	stock turnover	Control, fast	management	Receivable	D Account	D Place on shelf	sourcing	Out-sourcing an negotiating power via	ng system, accounting system	Sunnlier/Customer Data	R	Standardized planr Emphasizing
Outbound Logistics	SSUMP7,	on repairs	delivery Less emphasis	G Outbound shipment /	D Packing	satisfaction	customer	Customer	from lowest cost counti	id volume purchasing e	ystem, inventory	have Print Of Cale	ecruiting Training	ning and budgetary com sales volumes and prof
Marketing & sales	volume economies	initially, catalogue	costs, especially	advertising	Place on shelf	Sale promotion	n Negotiate price	D Procure new /	ries	conomies, l multi-sourcing,	Development market Research	Droduct ·		trols systems, ĭtability
Service				its slower serving pace	approach and	service	associated with traditional	□ Cut costs			system	Damage tracing		
ŕ					/	/								
	а 1975 1975		Figu	e 2.3	3. V	/alu	ie C	hai	n oi	f Ret	ail Bu	sine	SS	

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	- - -	Procurement	Technology Development	Human Resource Management	Firm Infrastructure
Inbound Logistics	 Tele-shopping Negotiate supplier Purchasing process Inbound shipment status, central warehousing and distribution systems Account Payable Management EDI 	Out-sourcing and volu	E-Commerce, World response, Internet, Intr transportation Routi		
Operation	 Selling/cashier (POS) Customer behavior Tele-shopping by using credit card, E- card A/R management Inventory Control, fast stock turnover Inventory Control, fast stock turnover High sales / sq. ft for each target segment, volume economies Place on shelf 	nie purchasing economies Sourcing fr	Wide Web, Satellite, wire anet, Supplier/Customer I Sale, ng system, accounting sys control	Rec	Standardized plannii Emphasizing sa
Outbound I Logistics	L Customer L service level / customer L / customer L L D Packing L L Outbound L L Less Less repairs C Less	Negotiating power via om lowest cost countr	less, EDI, Quick Database, Point Of tem , inventory	cruiting Training	ng and budgetary contr des volumes and profi
Marketing & sales	Procure new / (favorite product Negotiate price Sale promotion Place on shelf Low advertising costs, especially initially, catalogue selling later, volume economies	a central purchasing a ies	Tele-shopping, Product Development market Research.		ols systems, tability
Service	 Cut costs associated with traditional service approach and its slower serving pace 	nd multi-sourcing,	Damage tracing system		:

Figure 2.4. Improve Value Chain of Retail Business by Retail Management System

2. Images of the Future

The example of images of the future include:

• E-Shopping. Turn on your TV and flip to the "video mall" channel with the remote control. Using a wireless keyboard and mouse, drive across the InfoBahn to your favorite electronic mall. A tops-down schematic of the mall, showing the electronic store layouts, appears on your TV screen. Click a button, and a list of the stores, sorted by type, appears in place of the schematic. Click another button, and you start a slow-paced "walk through" of the mall, glancing in the stores along the way. When you come to a store of interest, you "turn" into the store and browse around until you see an item you're interested in. You then click on the item, the TV screen fills with a rotating, three-dimension image of the product. You decide to purchase it by clicking the button at the bottom of the TV screen made "BUY." The TV's set-top box transmits your digital signature and information about the store to your bank, which in turn uses electronic funds transfer (EFT) technology to cut a purchase order and send it to the retailer, with advisory instructions designating your home address as the ship-to point.

• Digital Mannequins. Enter a Scantron store. Swipe your credit card, and enter a booth where, using both lasers and soundwave technology, a computer scans every part of your body, creating an exact image of each component, imperfections and all. Outside the booth, collect a small form-factor card with digital models of your body image stored in it, as well as the software required to display, from any angle, this data in aggregated form -- as an arm, a head, or a body -- on your personal computer.

• Mass Customized Clothing. Go to your favorite retail clothing store to pick up a new suit. Using the store's computer system, select the suit style and fabric that suits you. Test an electronic mock-up of the suit, built by the computer, against a variety of accessories: shirts, ties, belts, shoes. Enter some information about your preferred fit: slightly big in the shoulders, tight waist, somewhat long in the legs. Insert your body image card in the computer system, and view yourself in the suit. Click a single button, fill in delivery instructions, and transmit the entire data set -- suit style, fabric choice, your digital mannequin, and your e-personal digital signature and electronic bank account information -- to a manufacturer's factory, where your job is queued for computer-integrated manufacturing (CIM) systems that, within 12 hours, have produced your suit to specification. Within 24 hours, via overnight shipping, the suit has arrived where you asked for it: your home, your office, or the next stop on your two-week business trip.



Figure 2.5. Inventory Management and Logistics Process Vision

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B. <u>A Requirement Checklist</u>

1. What Is Retailing?

The word 'retail' is derived from the medieval French term Retailer, Which meant 'to cut or divide into pieces.' It was associated with the French taillier, or tailor, Although today retailing has a far more expanded meaning, in essence the process is the same. For example, when a grocer today orders and receives a 24-unit case of canned peaches, the case is usually opened and the 24 cans are placed on the shelf. In this way, the grocer is 'dividing' a large unit of merchandise into smaller units for resale to customers.

Retailing, as it is known today, includes any activities involved in the sale of products or services to the ultimate consumer for personal or household consumption. Retailing consists of the final activities and steps needed to place merchandise in the hands of the consumer or to provide services to the consumer. Quite simply, any firm that sells merchandise or provides services to the final consumer is performing the retailing function. Regardless of whether the firm sells to the consumer in a store, through the mail, over the telephone, through a cable television shopping network, door to door, or through a vending machine, it is involved in retailing.

a. The Retail Function

Retailing is a marketing activity. As such, it is a vital part of the total system of activities that the business sector performs in planning, pricing, promoting, and distributing products and services that will satisfy the wants and needs of present and potential customers.

2. Characteristics of Retailing

There are a number of broad characteristics of retailing that are generally encounter by those who enter the industry. Several of the more important of these aspects are

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• Ease of entry. Anyone with initiative can become a retailer. There are few age, sex, education, or experience barrier to entering this dynamic field. Nor does one always have to make substantial financial outlays. It may be tougher looking for a job than it is to start one's own business. And for those entrepreneurs who have little money but who show promise, funds are often available. As long as the merchandise or services are legal and the appropriate local and state license fees are paid, the aspiring retailer has the freedom to open his or her own business. This freedom and the desire 'to be one's own boss' has prompted millions of people to try their hand at retailing.

• Ease of departure. The fact that the retailing field is easy to enter is related to the high incidence of failure that is found. Probably the greatest causes of retail failure are lack of ability or poor judgement on the part of aspiring retailer. This can manifest itself in various ways, including:

- Overestimation of the demand for the store's offerings
- Poor site selection
- Inexperience in the product line

- Failure to appreciate the importance of customer wants, needs, and attitudes

- Lack of understanding of accounting procedures
- Neglect
- Laziness
- Just plain bad management

• Diversity of alternatives. Although there seem to be limitless choices as to the type of retail business that a person can open, this decision must be tempered by legal considerations. For example, 'head shops' are legal in many states, but the retailing of marijuana remains an activity that normally exists outside the law. Alternatively, one only needs to examine the yellow pages of the telephone directory to find out that there are myriad alternatives when considering a retail business. With imagination, it is possible to think of hundreds of other alternatives that do not even exist in a given retail trade area.

• Competitive nature. In most instances, retailing is a highly competitive industry. While the actual number of retail establishments has not grown substantially, the nature of competition has become more intense. The retailer who desires to succeed in such a competitive environment must therefore employ adept tactics in order to survive. Those who are able to adjust and complete aggressively are usually handsomely rewarded for their effort.

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Figure 2.6. An Example of a Retail Store

• Geographic concentration. Unless one is engaged in mail-order retailing, the trade area in which the retailer can operate is limited. A small neighborhood grocer will draw the majority of his or her customers from within a few blocks to a 1-mile area around the store. On the other hand, a retailer located in a large regional shopping center or a retailer with a nationally known name, such as Neiman-Marcus or Macy's, can expect to draw customers who reside in distant communities. Even then, however, the majority of customers are usually residents of the local trading area.

The draw of a particular retail establishment is dependent on a number of factors. These factors, among others, include store size, accessibility to customers, uniqueness and/or selection of merchandise, the nature and location of competitive stores, price lines, and the amount of promotion. Usually the smaller the trade area, the more personal are the relationships that exist between the retailer and the customer. In addition, a merchant with a small Trade Area can better monitor and meet specific needs and wants of his or her customers.

• Labor intensiveness. An industry is many times characterized as being capital intensive or labor intensive. In a capital-intensive industry, investments in plant and machinery are high. Most manufacturing companies are considered capital intensive. Typically, over 50 percent of the operating expense for the retailer is in wages. Retailing is thus a labor-intensive industry. This makes it essential that the retailer place a high emphasis on the 'people factor' when managing his or her business.

• Seasonal fluctuations. Novice retailers soon learn that their business is subject to seasonal influences and that it is unlikely that the sales volume of their store will remain steady from one month to another throughout the year. This is because sales are highly correlated to customer buying patterns. Customers normally purchase retail goods to satisfy their immediate needs. The homeowner's desire for lawn and garden suppliers is greatest in late spring and early summer. That same homeowner's need for winter clothing is greatest in the fall and winter months. Toy sales are highest from October to December as Christmas Approaches.

Those business that do experience a rather steady sales level, month in, month out, such as a supermarket, will experience sharp fluctuations in the sales of individual items. The height of the season for barbecue sauce, canned tuna, and eggnog are all different, for example. With experience, the retailer learns the aggregate buying habits of his or her customers. This enables the retailer to serve the seasonal needs of goods to meet demand.

• Fashion changes. Fashion has traditionally been viewed by many as a characteristic that is applicable only to apparel and related merchandise. In actuality, no

merchant can escape the dictates of fashion. Furniture, refrigerators, automobiles, typewriters, groceries, houses, and lawn mowers are all subject to the fashion phenomenon. Even tools such as pliers and screwdrivers have a fashion aspect. In many areas of retailing, fashion changes are abrupt. In other sectors, movements in fashion are slower and less dramatic.

• Legal constraints. Just as in any other industry, the retail merchant is subject to a host of local, state, and federal regulations. At one end of the legal continuum, the legal level, the retailer must pay license fees and obey community health and first safety standards, as well as zoning and building codes. At the state and federal levels, controls can range from pricing to employee hiring to the insurance of credit.

Many laws we live under are the result of the lobbing efforts of strong special interest groups. In some cities, for example, store signs must be painted by members of the local painter's union. Other interest groups have pushed through several states and countries laws the prohibit certain goods from being sold on Sunday.

• Dynamic structure. The nature of retailing structure is constantly changing. The agents of change can be found in the competitive, economic, legal, social, and technological environments. The rise of self-service supermarket in the 1930s changed forever the method that customers used in selecting groceries for purchase. The small 'mom and pop' stores that could be found in every neighborhood up to 1970 are a vanishing breed. The development of regional shopping centers has tended to shift consumer loyalties away from the traditional downtown business districts.

Innovations in retailing appear each year as we approach the year 2000. Many of these new methods we accept with ease and indeed welcome; other innovations scare

us. Shopping by television, for example, is something most of us have yet to experience. Because many people enjoy the shopping experience and others use shopping as an excuse to get out f the house, teleshopping may be resisted.

The retailer must keep attuned to changes, must recognize those changes that will affect his or her business, and must capitalize on them.

• Volatile consumer market. In the consumer market there is only one constant, and that is change itself. This means that the markets for retail goods and services are dynamic. The causes of dynamic consumer markets can be tracked to economic, demographic, and societal variables. At this point, let us say that the retailer cannot operate efficiently or profitably without paying close attention to the volatility of the consumer market.

3. Type of Retail Ownership

The major classifications of retail ownership are:

• Independent, single-store establishments. Many such stores are ownermanaged. Thus, management has direct contact with customers and can respond quickly to their needs. Small retailers are also very flexible. They aren't bound by bureaucratic rules that restrict store location or types of merchandise sold.

To better compete against corporate chains, some independent retailers join a retail-sponsored cooperative which is an organization owned and operated by small, independent retailers to improve operating efficiency and buying power. Typically, the retail-sponsored cooperative operates a wholesale buying and distribution system and required its members to concentrate their purchases from the cooperative's wholesale operation.

A wholesale-sponsored voluntary cooperative group is an organization operated by a wholesaler offering a merchandising program to small, independent retailers on a voluntary basis. In addition to buying, warehousing, and distribution, these groups offer members service such as store design and layout, site selection, bookkeeping and inventory management systems, and employee training programs.

• Corporate chains. A retail chain consists of multiple retail units under common ownership and usually has some centralization of decision making in defining and implementing its strategy. Retail chains can range in size from a drug store with 2 stores to retailers with over 1,000 stores such as Safeway, Wal-mart. Fewer than 500 retail chains have over 100 stores, but these chains account for more than 30 percent of the retail store sales in the Unite States. Due to scale economies and an efficient distribution system, corporate chains can sell at lower prices. This forces some competing local retailers out of business, while altering the community fabric.

• Franchising. Franchising is a contractual agreement between a franchisor and a franchisee that allows the franchisee to operate a retail outlet using a name and format developed and supported by the franchisor. In a franchise contract, the franchisee pays a lump plus a royalty on all sales for the right to operate a store in a specific location. The franchisee also agrees to operate the outlets in accordance with procedures prescribed by the franchisor. The franchisor. The franchisor provides assistance in locating and building the store, developing the products and/or services sold, management training and advertising. To

maintain the franchise's reputation, the franchisor also makes sure that all outlets provide the same quality of services and products.

- Advantages of Buying a Franchise include:

i. Franchise generally enjoy higher success rates.

ii. Risk is lower due to a proven method of doing business.

iii. Personal investment normally is lower.

iv. The franchisor may help with financing. The franchise's name alone could make financing more readily attainable.

v. Operating manuals and employee training are available.

vi. A recognized name and image already exist.

vii. National advertising with advertising merchandising assistance is available.

viii. Centralized purchasing and economies-of-scale capabilities yield cost savings.

ix. Management consulting and assistance may be provided.

x. New products and services are more readily available through the franchisor.

xi. You have a protected territory.

xii. Location analysis and counsel are obtainable.

- Disadvantages of Buying a Franchise include:

i. Fees and royalties must be paid. The franchisee agrees to do practically all of the work in exchange for only a portion the profit

ii. Strict adherence to the franchisor's rules and guidelines is required. The décor is specific. Employees wear prescribed uniforms. Even the napkins must be of a certain color and size. iii. There are restrictions on canceling contracts and selling your business at a later time.

iv. Profits can be hurt by the franchisor's business errors.

v. Assessing various franchisor's potentials and deciding on the right one is difficult.

vi. There is significant dependency on the franchisor.

vii. Franchisor-franchisee conflicts often occur.

4. Source of Merchandise

Wholesaling Middleman as Source of Merchandise. There are three categories of wholesaling middleman:

a. Merchant Middleman

Merchant middlemen always take title to the goods they sell and almost always take physical possession. Included as merchant middlemen are regular wholesalers, truck distributors, rack Jobbers, cash-and carry Wholesalers, drop Shippers, assembling, wholesalers and semi-jobbers.

• Regular wholesalers. Regular wholesalers are full-function (or full-service) middlemen who buy goods in carload lots from manufacturers and "break bulk" by distributing smaller lots to retailers within their geographic area. These middlemen perform a wide variety of services and offer complete lines of merchant, handling up to 20,000 items. They usually become the main suppliers to their customers, often setting up a regular schedule for truck deliveries to the stores. Often they send representatives

to the stores to aid retailers in their merchandising activities and to advise them on store operating procedures.

• Truck Distributors. Sometimes called truck jobbers or wagon jobbers, truck distributors serve as specialty wholesales. Often these distributors are one-person operations. The distinguishing feature of truck distributors is that they both sell and deliver merchandise to the retailer during the same period usually have well-known, popular brand names that move rather swiftly from the retailer's shelves such as soft drinks, bread, dairy products, tobacco, potato and candy.

• Rack Jobbers. Rack jobbers are wholesalers who supply self-service retailers with fast-moving nonfood items on an on-consignment basis. More recently rack jobbers have appeared in other retail industries and now can be found supplying items to service stations, hardware stores and drugstores among other types of retailers. It is the rack jobber's responsibility to keep the display fully stocked and in good appearance. The relationship between the retailer and the rack jobber takes inventory of the items remaining and then replenishes the rack.

• Cash-and-carry Wholesalers. Cash-and-carry wholesales are limited-function merchant middleman who do not make deliveries and who operate on a cash-only basis. They exist for the benefit of very small retailers who do not have the sales volume to make it worthwhile for regular wholesales to deliver goods to their store. The retailer then takes a shopping cart and moves up and down the aisles of the warehouse, sale-selecting items for the store. The products are taken to the checkout counter, where cash is paid. Using the boxes that were brought, the retailer transports the purchases back to the store. Cash-and-carry wholesales usually stock only the fastest-moving items and then only those with well-known brand names.

• Drop Shippers. This type of middleman is involved with products that are bulky, such as furniture, lumber and building materials. They take title to the goods they sell, but they do not take physical possession. Upon receiving an order from a customer, the drop shipper will inform the supplier, who then ships the products directly to the retailer.

• Assembling Wholesalers. Assembling wholesalers are most frequently found in the marketing of agricultural products. They gather together the output of many small farmer-producers and sort, grade, package, and label the products under a common brand name. They are active in the egg and dairy industries, selling directly to retail grocers.

• Semi-jobbers. Retailers who supply goods to service retailers are called semijobbers, they operate a retail store and sell products directly to consumers, yet they involve themselves in wholesale selling by supplying other retailers with products that are resold or otherwise used while performing a service.

b. Agent (Functional) Middleman

Middlemen who never take ownership to the products they sell or represent are agent, or functional, middlemen. Their major role in the channel is to perform one or more functions that make it possible for the title to goods to move from producers to retailers.

• Manufactures' Agents. The basic task of the manufacturers, agent is to sell. Generally restricted by geographic area, this type of functional middleman will represent part or all of a producer's output on a commission basis. They do not become

deeply involved in credit, promotional activities, or pricing. They specialize in a narrow field such as furniture, farm equipment, apparel or food.

• Selling Agents. Selling agents are differentiated from manufacturers' agents in four ways. First, selling agents are not limited to geographic area as are manufactures' agent. Second, selling agents handle all of a producer's output. Third, selling agents have freedom to set the prices for the goods that they sell. And fourth, they usually have a great deal of authority over the features of the product being manufactured.

• Commission Merchant. The commission merchant is an agent middleman who handles the sale of goods for a principal on a one-time basis, commission merchants will usually take physical possession of the goods and are free to locate retailers and negotiate prices.

• Brokers. The basic function of the broker is to bring the buyer and the seller together. Brokers do not take title or physical possession of goods, nor are they involved in a financing or promotion function.

• Auction Companies. An auction company serves as an agent in the marketing channel, in that it provides the physical surroundings that facilitate transactions between buyers and sellers. Sellers take their products to the facilities and buyers bid against each other, with the goods going to the highest bider. The auction company receives a commission plus other fees from the seller. Some retailers use auction companies to buy fruits and vegetables.

c. Manufactures' Sales Branches and Offices

There is a distinction between sales branches and sales office. Sales branches carry an inventory of merchandise, and when a sale is made, the goods are shipped from the branch warehouse. Sales offices, on the other hand, do not carry stock.

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5. Planning for Sales: The Merchandise Budget

Merchandise management is the analysis, planning acquisition, handling and control of the merchandise investments of a retail operation. As planning occurs, then it is only logical that control be exercised over the merchandise dollars or units that the retailer plans on purchasing. A good control system is vital. The merchandise manager will face the various decision: the dollar amount of inventory needed for stock requirement, the dollar amount available to be spent, the unit or type of goods to be purchased, choosing and evaluating merchandise sources, handling vendor negotiations, handling the merchandise in the store, and evaluating merchandise performance.

a. Dollar Merchandise Planning

Upper management are responsible for the dollar planning of merchandise requirement. Once planned sales for the period in question have been projected, buyers are then able to use any one of four different methods for planning dollars invested in merchandise: basic stock, percentage variation, week's supply, and the stock-to-sales ratio method.

• Basic Stock Method. The basic stock method (BSM) is used when retailers believe that it is necessary to have a given level of inventory available at all times. It requires that the retailer always has a base level of inventory investment regardless of the predicted sales volume. In addition to the base stock level, there will be a variable amount of inventory that will increase or decrease at the beginning of each sales period in the same dollar amount as the period's sales are expected increase or decrease. The BSM can be calculated as follows: Average monthly sales for the season= Total planned sales for the season /
Number of months in the seasonAverage Stock for the season= Total planned sales for the season /
Estimated inventory turnover rate for the
seasonBasic stock= Average stock for the season /
Average monthly sales for the seasonBeginning-of-month (BOM) stock= Basic stock + Planned monthly sales

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Therefore, the basic stock method works best when a retailer has a low turnover (less than six times per year) rate or sales are erratic.

• Percentage Variation Method. This method is used when the retailer has a yearly turnover rate of 6 or more. The percentage variation method assumes that the percentage fluctuations in monthly sales from average sales.

BOM Stock = Average stock for season *

 $\frac{1}{2} \{1+(Planned sales for the month / Average monthly sales)\}$

• Weeks' Supply Method. Generally, the WSM formula is used by retailers such as grocers in which inventories are planned on a weekly, not monthly basis, and where sales do not fluctuate substantially. It states that the inventory level should be set equal to a predetermined number of weeks' supply. The predetermined number of weeks' supply is directly related to the stock turnover rate desired. In the WSM, stock level in dollars varies proportionally with forecast sales. Thus, if forecast sales triple, then inventory in dollars will also triple

Number of weeks to be stocked = Number of weeks in the period /

Stock turnover rate for the period

Average weekly sales	= Estimated total sales for the period /
	Number of weeks in the period
BOM Stock	= Average weekly sales *

Number of weeks to be stocked

• Stock-to-Sales Method. This method is quite easy to use but required the retailer to have a Beginning-of-the-month stock-to-sales ratio. This ratio tells the retailer how much inventory is needed at the beginning of the month to support that month's estimated sales.

Stock-to-sales ratios can be obtained from internal or external sources. Internally, the statistics can be obtained if the retailer has designed a good account system and has proper store historical data so that they can be readily retrieved. Externally, the retailer can often rely on retail trade associations such as the National Retail Federation or the Menswear Retailers Association.

Inventory Turnover is a key factor in a retailer's financial performance. Planned average beginning of the month stock-to-sales goals can be easily calculated using turnover goals, if you divide the number of months in the season by the desired inventory turnover rate, an average BOM stock-to-sales ratio for the season can be computed.

b. Dollar Merchandise Control

Once the dollar merchandise to have on hand at the beginning of each month (or season) is planned by the buyer, it becomes essential to ensure that the buyer does not make commitments for merchandise that would exceed the dollar plan. In short, the
dollars planned for merchandise need to be controlled. This control is accomplished through a technique called open-to-buy.

• Open-to-buy. The open-to-buy (OTB) represents the dollar amount that a buyer can currently spend on merchandise without exceeding the planned dollar stocks discusses previously. Some common buying errors include:

- buying merchandise that is either priced too high or too low for the store's target market,

- buying the wrong type of merchandise (i.e., too many tops and no skirts) or buying too much ' trendy fashion" merchandise,

- having too much or too little basic stock on hand,
- buying from too many vendors,
- failing to identify the season's hot items early enough in the season,

- failing to let the vendor assist the buyer by adding new items and/or new colors to the mix. (All too often, the original order is merely repeated, resulting in a limited selection.)

c. Unit Stock Planning

On the sales floor, items, not dollars, are sold. The assortment of items that will comprise the merchandise mix must then be planned.

• Optimal Merchandise mix. The three dimensions of the optimal mix: variety, breadth, and depth. Each of these dimensions needs to be defined; however, we need first to define merchandise line. A merchandise line consists of a group of products that are closely related because they are intended for the same end use (all televisions); are

sold to the same customer group (junior miss clothing); or fall within a given price range (budget women's wear).



Figure 1.7. Dimensions of and Constraints on Optimal Merchandise Mix.

- Variety. The variety of the merchandise mix refers to the number of different lines the retailer stocks in the store.

- Breadth. Breadth, also called assortment, refers to the number of merchandise brands that are found in the merchandise line. This much selection was entirely inappropriate for a retailer selling convenience goods and already heavily in debt.

- Depth. Merchandise depth refers to the average number of stock keeping units (SKUs) within each brand of the merchandise line.

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-	Wide	Variety	Narcow	
-	Advantages Complete line of merchandise High in-store traffic One-stop shopping High customer loyalty	Advantages Specialized personnel/customer Less costly than wide-wide Customer loyalty within variety group High turnover		
Wide	Disadvantages High insentory careving posts	Disad Limin	luantages ed rarger market	
	Lack of image, merchandise mix is too broad Low turnover		ed traffic	1
	Jª C	6 %		
Breadth "				
	Advantages High store traffic One-stop shopping	Advan Highe Least	naget est turnover among all mixes costly	
	Less costly than wide-wide High attraction towards convenience-type customers			
	OMNIA			
Narrow	Disadrantages SINCE 1969	- Dirad	1.014 P.S.MAC	
	Limited variety High level of stockouts Weak image	Very r Disap Lower	narrow target market pointed customers loyalty	

Figure 2.8. Advantages and Disadvantages of Mixing Variety and Breadth

• Constraining Factors. Consist of 4 constraints as follow:

- Dollar Merchandise constraints. There seldom will be enough dollars to emphasize variety, breadth and depth. If the decision is made to emphasize variety, it would be unrealistic to expect also to have a lot of breadth and depth. Some retailers try to overcome this dollar constraint by shifting the expense of carrying inventory back to the vendor. When a retailer buy a product on consignment, the vendor retains the ownership of the goods, usually establishes the selling price, and is paid only when the goods are sold. Or the retailer might try to get extra dating, where the vendor allows the retailer some extra time before paying for the goods.

- Space constraints. The retailer must also deal with space constraints. If depth and/or breadth is wanted, space is needed. If variety is to be stressed, it is also important to have enough empty space to separate the distinct merchandise lines. As more variety is added, empty space becomes necessary to allow the consumer to clearly distinguish among distinct product lines. Some retailers, especially in the grocery business, have been able to turn this space constraint into an advantage by charging the manufacturers the "slotting fees"

- Merchandise turnover constraints. As the depth of the merchandise is increased, the retailer will be stocking more and more variations on the product to serve smaller and smaller segments. Consequently, inventory turnover will deteriorate and the chances of being out of stock will increase. One does not have to minimize variety, breadth and depth to maximize turnover, but one must know how various merchandise mixes will affect inventory turnover.

- Market constraints. Market constraints should also affect decisions on variety, breadth and depth of the merchandise mix. The three dimensions have a profound effect on how the consumer perceives the store, and consequently on the customers the store will attract. The consumer perceives a specialty store as one with limited variety and breadth of merchandise lines but considerable depth within the lines handled. Therefore, someone who needs to make several

purchases across several merchandise lines, and who is willing to sacrifice depth of assortment, would be more attracted to the general merchandise retailer. The constraining factors make it almost impossible for a retailer to emphasize all three dimensions. However, if you are going to lose customers, lose the less profitable ones by properly mixing your merchandise in terms of variety, breadth, and depth within the dollar, space, turnover and market constraints.

• Model stock plan. After you decide the relative emphasis to be placed on the three dimensions of the merchandise mix, you need to decide what merchandise lines and items to stock. Units are planned using a model stock plan. The model stock plan gives the precise items and quantities that should be on hand for each merchandise line.

- Identify attributes. The first thing the menswear retailer should do is attempt to identify what attributes the customer considers in purchasing shirts. Retailer has identified 6 attributes: 1)type of shirt (dress, casual, sport) 2) size 3) sleeve length 4) collar type 5) color and 6)fabric.



Figure 2.9. Partial Model Unit Plan for Men's Shirt

- Identify levels. The second step is to identify the number of levels under each attribute. The retailer has selected 4 types of shirts to stock, 4 sizes, 2 sleeve lengths, 2 collar types, 4 colors and 2 fabrics.

In relation to the first two steps in the construction of a model stock plan, a basic principle of merchandise management can be identified: stocking requirement will grow explosively as more product attributes and expanded levels are offered on each attribute. If the retailer offers4 shirt types, 4 sizes in each type, 2 sleeve lengths,2 collar styles, 4 color and 2 fabrics, then it will have to stock 512 shirts (4x4x2x2x4x2), just to stock one unit of each.

- Allocate dollars or units. The third step in developing the model stock plan is to allocate the total dollars or units to the respective item categories. There is an optimum allocation if the model unit plan has recommended quantities for each item that are in direct proportion to market demand patterns. If the plan reflects this optimum, then, by comparing actual stocks with model stocks, one can easily determine if stocks are out of balance. The more actual stocks mirror the model stock plan, the more the stocks balance, it will cause customers to walk out of the store without the item they came to purchase. Worse yet, they might purchase a product that is not well suited to their needs. Over the long run, this may hurt the retailer's business.

- Special problems with new stores. So far, we have ignored the problems of individuals opening their first store. Such individuals will have no past sales records to rely on. Certainly not! Of the three steps outlines previously, the first two pertain as much to the new entrepreneur as to any existing retailer.

• Conflicts in Unit Stock Planning. Unit stock planning is an exercise in compromise and conflict. The conflict is multidimensional because not everything can be stocked. The conflicts are summarized as follows:

- Maintain a strong in-stock position on genuinely new items while trying to avoid the 90 percent of new products that fail in the introductory stage.

- Maintain an adequate stock of the basic popular items while having sufficient inventory dollars to capitalize on unforeseen opportunities.

- Maintain high merchandise turnover goals while maintaining high margin goals.

- Maintain adequate selection for customers while not confusing them if customers are confronted with too many similar items, they will not be able to make up their minds and they may leaves the store empty handed and frustrated.

- Maintain space productivity and utilization while not congesting the store. Take advantage of buys that will utilize the available space, but avoid buys that cause the merchandise to spill over into the aisles.

As should be readily evident at this point, unit stock planning is no easy task. Equally challenging is the selection of vendors from whom to buy the merchandise.

6. The Physical Flow of Merchandise

Retail distribution (or logistics) is the organized process of managing the flow of merchandise from the source of supply – the vendor - through the company's internal processing function - warehousing and transportation – until the merchandise is sold and delivered to the customer. Merchandise flow from vendor to distribution center to stores, or directly from the vendor to stores. When merchandise is temporarily stored at the distribution center, it's prepared to be shipped to individual stores. This preparation may include breaking shipping cartons into small quantities that individual stores can more readily utilize, as well as tagging merchandise with price sticker and the store's label.

The distribution center performs several functions: coordinating inbound transportation, receiving, checking, storing, ticketing, marking, filling orders, and coordinating outbound transportation. To fully understand the distribution function

within a retailing organization, consider a shipment of Hagger slacks arriving at a Kmart distribution center.

• Management of Inbound Transportation .The slacks buyer traditionally worked with Hagger to determine merchandise assortment, pricing, promotion, and terms of purchase, such as discounts to take for early payment. Now, however, the buyer also gets involved in coordinating the physical flow of merchandise to the stores. For example, the slacks buyer arranged for a truckload of hosiery and underwear to be delivered to the Detroit distribution center on Monday between 1 and 3 P.M. The truck must arrive within the specified time because the distribution center has all of the receiving docks allocated throughout the day, and much of the merchandise and much of the merchandise on this particular truck is going to be shipped to stores that afternoon. Unfortunately the truck is delayed in a snowstorm. The dispatcher (the person who coordinates deliveries to the distribution center) reassigns the Hagger truck to a Wednesday morning delivery slot and fines the firm several hundred dollars for missing its delivery time.

• Receiving and Checking. Receiving refers to the process of recording the receipt of merchandise as it arrives at a distribution center. Checking is the process of going through the goods upon receipt to make sure they arrived undamaged and that the merchandise ordered was the merchandise received. The Hagger shipment is received and checked in using electronic scanners. Hagger marks the boxes with unique identifying bar codes. The person on the receiving docks simply scans the bar-coded boxes, and the merchandise is automatically checked in. Unless the merchandise appears to be damaged, there's no need to break open cartons and count merchandise because the contents have electronically recorded.

• Storing. The Hagger shipment is a week early, so it has to be temporarily stored rather than shipped immediately to stored. The merchandise is loaded onto forklift trucks that carry out to pre-specified locations in the distribution center. Often merchandise is ordered in full pallet quantities. A pallet is a platform, usually made of wood, that provides stable support for several cartons and is used to help move and store merchandise.

• Ticketing and Marking. Part of the preparation at the distribution center is ticketing and marking. Ticketing and marking refers to making price and identification labels and placing them on the merchandise. Some retailers ticket and marking merchandise on the store's selling floor. But delegating this activity to salespeople means they have less time to spend with customers.

Identification labels using universal product codes (UPCs) or other identifiers also facilitate the smooth flow of merchandise to the stores. (UPCs are the black-and-white bar codes on most products' packages, which most retailers have adopted as the language for transmitting product information.) these labels can be affixed to shipment cartons and then scanned at the store to quickly check them in. Kmart has negotiated with Hagger and other vendors to ticket and mark merchandise and shipping cartons at the factory, thus totally eliminating Kmart's costs for performing this function. Hagger also puts the slacks on hangers so store employees can take them directly from the shipping carton to the fixture on the floor. Merchandise that is ticketed, marked, and on hangers is referred to as floor ready.

• Filling Orders. Point-of-sale terminals in the Kmart store in East Lansing record each purchase. These data are transmitted to buyers and their staffs so they may formulate replenishment orders for all other item in the store, including Hagger slacks.

The order for the East lansing store is transmitted computer-to-computer to the distribution center. The computer at the distribution center creates a pick ticket (a document that tells the order filler how much of each of each item to get from the storage area.) the pick ticket is printed in warehouse location sequence so the order fillers don't waste time crisscrossing the distribution center looking for merchandise. The computer knows which items are out of stock so it doesn't even print them on the pick ticket. Order fillers take the merchandise to the staging area where it's consolidated with other merchandise and loaded onto trucks.

• Management of Outbound Transportation. Due to increased use of distribution centers by retailers, the management of outbound transportation from distribution center to store has become increasingly complex. The Kmart distribution center runs almost 100 routes in one day. To handle its complex transportation problem, the center uses a sophisticated computer system for routing and scheduling. This system considers customer service levels, road conditions, and transportation operating constraints to develop the most efficient routes possible. It uses an accurate road network to provide stores with an accurate time of arrival and to maximize vehicle utilization.

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Another challenge to multi-store chains is the transportation problems associated with inter-store transfers. For instance, the salesperson working with Leda Perez might have located the blouse she wanted in another store in the chain and had it transferred to the store Leda was shopping at. Buyers can use inter-store transfers to balance stocks by shifting sizes or colors to stores where they're needed. However these inter-store transfers are quite costly so most retailers try to minimize them.

Today more merchandise is sent directly by the vendors to specific stores rather than to a retailer's distribution center. Even though retailers have developed sophisticated distribution systems for bringing merchandise into central distribution centers and then reshipping it to stores, many retailers prefer to have some or all merchandise delivered directly to stores.

Retailers select a distribution method based on the trade-off between distribution costs and the customer service that's possible if the right merchandise is at the store when the customer want to buy it. The advantages of shipping to distribution centers are reducing stockouts, minimizing inventory, and devoting more expensive store space to selling merchandise.

Stockouts are minimized because the distribution center can store buffer store to compensate for errors in sale forecasts. With frequent deliveries from the distribution center, the stores can carry less extra merchandise as back-up stock. Finally, retail space is typically much more expensive than space at a distribution center, and distribution centers are better equipped than stores to prepare merchandise for sales. As a result, many retailers find it cost-effective to store merchandise and get it ready for sale at a distribution center rather than in individual stores.

But distribution centers aren't viable for all retailers. If a retailer has only a few outlets, then the expense of a distribution center is probably unwarranted. Also, if many outlets are concentrated in metropolitan area. In some cases, it's quicker to get merchandise to stores by avoiding the extra step of shipping to a distribution center.

7. Inventory Pricing System

Two methods of pricing inventory are FIFO and LIFO. The FIFO (first in, first out) method assumes that the oldest merchandise is sold before the more recently purchased merchandise. Therefore, merchandise on the shelf will reflect the most current replacement price. During inflationary periods this method allows 'inventory profits' (caused by selling the less expensive earlier inventory rather than the more expensive newer inventory) to be included as income.

The LIFO (last in, first out) method is designed to cushion the impact of inflationary pressure by matching current costs against current revenues. Cost of goods sold are based on the cost of the most recently purchased inventory, while the older inventory is regarded as the unsold inventory. The LIFO method results during inflationary periods in the application of a high unit cost to the merchandise sold and a lower unit cost to inventory still unsold. In times of inflation most retailers use the LIFO method, resulting in lower profits on the income statement, but also lower income taxes. Most retailers also prefer to use LIFO for planning purposes, since it accurately reflects replacement costs. In addition, the Internal Revenue Service only permits a retailer to change its methods of accounting once. Due to these limitations, most retailers today use retail method of inventory valuation which was created in the early 1900s.

Let's study an example of the effect of the LIFO and FIFO methods of inventory valuation on the firm's financial performance. Suppose you began the year with a total inventory of 15 fax machines which you purchased on the last day of the preceding year for \$300 each. Thus, if fax machines were the only merchandise you had in stock, your beginning inventory was \$4,500 (15 x \$300). Suppose also that during the year you sold 12 fax machines for \$700 each for total sales of \$8,400, that in June you purchased

8 new fax machines (same make and model as your old ones) at \$325, and that in November you bought 4 more at \$350. Thus, your purchases were \$2,600 in June and \$1,400 in November for a total of \$4,000, and you would still have 15 fax machines in stock at year end. Under the LIFO inventory approach, your ending inventory would be the same as it was at the beginning of the year. However, using the FIFO approach, we would assume that we sold 12 of the original \$300 fax machines and had 3 left. These 3 fax machines, along with June's and November purchases, resulting in an ending inventory of \$4,900 [(3×3300) + (8×3325) + (4×3350]. Now let's see how these approaches can affect our gross margins.

N SO X	LIFO	FIFO
Net sales	8,400	8,400
Less: cost of goods sold	E VINCI	N
Beginning inventory	4,500	4,500
Purchases SINCE 1	<u>4,000</u>	<u>4,000</u>
Goods available	8,500	8,500
Ending inventory	<u>4,500</u>	<u>4,900</u>
Cost of goods sold	<u>4,000</u>	<u>3,600</u>
Gross margin	4,400	4,800

Table 2.1. Comparing Inventory Pricing System (LIFO & FIFO)

8. Inventory Management

The purpose of a inventory management system is to provide information on the amount of merchandise in stock and its condition. EPOS systems have significantly improved the retailer's ability to operate tighter and more rational stock control.

a. Aims

The importance of controlling merchandise has already been made clear. It involves the maintenance of a correct balance between the range carried and the sales to which it gives rise. The aim is to obtain as big a turnover as possible with the most economic inventory level. There is a clear indication that the rate of stockturn has a decisive effect on the net profitability of a retail business. If correct stock levels are not kept the problems which arise are as follows:

• Too little stock. The merchandise will not generate the full potential sales volume. The gross margin (and therefore the net profit) of the business will be restricted in the short run and in the long run the customer's perception of the business will change for the worse.

• Too much stock. Interest changeable on the stock investment (which is part of the business's working capital) will reduce gross and thus net margins. In the longer term further reductions in gross margin may occur due to mark-downs.



Figure 2.10. Grocery Industry Delivery System Order Cycle

b. Systems of Controlling Stock

The three main systems of controlling stock are unit control, financial control and combination control.

• Unit stock control. This is a method of controlling stocks by physical units of merchandise rather than by cash investment. The merchandise characteristics of the stock are compared with those of the products bought by the public in the period under review. The advantage this method has over others is that it can be used to monitor changes in the characteristics of the merchandise being sold and is usefully allied to range crestion (model stock-building). The stock is physically counted and often merchandise sub-groups are stock-taken on a rotation basis. This is not a full stock control system because :

- It cannot control the profitability of the inventory held
- It therefore requires back-up by financial systems of control

- It loses some of its usefulness if not screened by some system of market SINCE 1969

• Financial stock control. As its title suggests, such a system uses cash limits for monitoring stock levels and may be used as an alternative or a back-up to a unit stock control system. This value approach works by comparing the total value of the stock from time to time with the value of the sales it has produced. It is still a common form of stock control particularly against small retailers and has two advantages, as follows:

- it is cheap to operate since the figures it uses are produced by the normal accounting operations of the business.

- Because it deals in money figures it can be used to regulate the gross margin attained or to be aimed at.

• Combination control. As the name implies, this method is a combination of unit and financial control, and although it is more complex, most retailers would benefit from controlling both the financial investment in stock and the units in inventory.

Items that generate high profits or items that customers expect to be in stock should be controlled by the combination method because stock-outs will substantially reduce profits. Equally, very expensive items overstocked could create financial problems.

c. Periodic and perpetual inventory control

The details of inventory control are summarized as follow:

• Periodic inventory. One method of keeping track of inventory is to count the stock on hand once, twice or more times per year on a specific date. It is a costly and time-consuming procedure and, although suitable for accounting purposes, periodic inventory control is rarely sufficient for decision-making purposes.

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The three main ways by which stock may be observed and recorded are stocktaking, stock check and stock calculation.

Although all three methods lay different emphasis on particular aspects of observation and recording, the objective is the same: the maintenance of a correct balance between stock levels and sales. Too much cash unnecessarily tied up in stock can severely reduce the profitability of a business.

- Stocktaking. The process involves the counting and valuing of every item of stock at a given time. It is therefore the most comprehensive and if properly carried out, the most accurate of the three method mentioned. Physical stocktaking is initially done for strictly merchandise control reasons and consists of:

The breakdown of stock into component parts of the range (i.e. lines and merchandise sub-groups relating to size, style, color, price line, etc.) to assess its composition.

Stock rating by age to find how long products have been in order to depreciate themCurrent valuation – the taking of cost or market value whichever is the lower – irrespective of the original cost.

Other reasons for stocktaking include:

i. Valuing the stock asset for final accounts purpose, including depreciation and tax

ii. Finding true stocking rates

iii. Isolating fast and slow-selling lines

iv. Find true stockturn losses

v. Finding the true gross margin

vi. Ascertaining agreed figured for assurance purposes

vii. Physical stocktaking by staff has the additional benefit of

familiarizing staff with merchandise.

Preparation for stocktaking. The interference with customer service can be minimized to a great extent by:

i. Re-sorting the stock by sub-categories to aid counting

ii. Checking goods for missing tickets or other information sources

iii. Clearing up all outstanding queries from suppliers, debits

iv. Locating and identifying all goods allocated to the department that are, for whatever reason, not physically present

v. Making appropriate arrangements for dealing with customers' own goods

vi. Fixing cut-off dates for invoices, transfers, price changes, etc. that affect the value of stock

vii. Briefing staff

viii. Requisitioning supplies and equipment

ix. Pre-counting case lots and similar quantities which are then 'frozen' until after the take

x. Preparing a layout plan showing how the stocktake is to be operated.

Main method of stocktaking

• Cost-price method. For goods that have a short shelf-life and consequently low stocks, like produce, items are counted at buying (cost) price. This method is a very accurate trend recorder. The disadvantages of this method are: it may involve searching through many old invoices which can be time-consuming Because the gross margin cannot be calculated in this way there is no way of estimating unknown stock losses, e.g. through pilferage.

• Selling-price method. Current retail selling prices are used here and this method is popular in trades where large stock variety makes control difficult, e.g. DIY. The advantages of this method are:

- It points out both high and low profit lines

- It is a good indicator of unrecorded stock losses because known stock losses, e.g. breakages, can be built in; the largest cause of hidden stock loss is, of course, pilferage

- It allows an interim gross profit percentages to be estimated without taking physical stock.

The main disadvantage is that, because individual invoices are not consulted the margin used is an average.

• Cost and selling methods. By using the modifying factors described previously to obtain 'cost or market value', we find the difference between current selling price and true cost value of the stock to the company, thus giving a book figure for current stock at selling prices. Therefore the stock can be stated both at current selling and true cost values. The advantages of the cost and selling method are:

i. Accuracy. The only limitation on the accuracy of the book stock figures is the amount of the shortage.

ii. Shortage control. Any shortage found after an accurate calculate must be due to shrinkage

iii. Pricing control. All initial prices and subsequent changes must be recorded, yielding valuable data for pricing and mark-down control

iv. Margin control. Initial margins are calculable, therefore controllable.

- Stock check. This is simplified or less comprehensive form of stocktaking that has as its object an assessment of the selling qualities of the stock rather than its true value. It is frequently confined to quantities, price lines and the qualities of the assortment, e.g. color, size, style, etc.

- Stock calculation. This method can give a very close approximation to the value of stock carried at any given time by a consideration of the stock actually found at the last stocktaking and the additions thereto and deduction therefrom which have subsequently been made.

• Perpetual inventory. The perpetual inventory system aims to provide information on a continuous basis by monitoring merchandise movements into the store (deliveries) and out of the store (sales).

The perpetual method provides up-to-date information which can be used both for accounting and managerial purposes. The main disadvantage is the cost of operating such as a system due to its complexity.

Although it is possible to operate such a system by hand using documents it is the introducing of computerization, particularly EPOS, which has really made the methods feasible.

- By hand. The tag system has been used for some time mainly clothing retailers whereby a tag attached to the garment contains information of product, style, size, color, etc. the information is read from tag which is removed when the item is sold, the computer then producing the appropriate inventory reports.

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- Computers. Perpetual inventory is one of the advantages introducing electronic point-of-sale (EPOS) equipment. One of the best methods currently in use for data capture at point of sale is the use of optical scanning to read bar codes. Very detailed information on the item can thus be held by the computer to produce many different reports including the amount of inventory for that item at the time, the disclosure of slow-moving lines and those items which fall below a pre-set re-order level. The store computer can also be programmed to phone through order every night to a central warehouse computer for delivery the following day.

From overview of value chain conceptual and Requirement of retail business such as merchandise planning. We realized what do retailers want to improve for increasing the potential of the retail business including:

• Reduce delivery lead-time.

• Fresh /quality food. Because raw materials have the expired date and some required proper environment. Storing will be designed efficiently.

• Customer satisfaction. Such as guarantee delivery lead time, provide customer need of each one by using customer database, avail of quick food service without the usual waiting time.

- Have variety of item menu.
- Promotion set which is reasonable priced.
- Good site selection to open new branch
- Coordinate with other food products such as Pepsi, Swenzen ice-cream
- Service with enthusiasm and respect
- Mail order for promotion

C. A Retail Management System

1. Retail Information System

A RIS can consist of a store owner regularly reading retail trade association magazines, talking to customers to determine how satisfied they are with their merchandise and services, and regularly studying quarterly income statements and balance sheets. Or a RIS can be much more extensive, such as analyzing vendor reports, conducting marketing research studies, and using scanning equipment to track both products and customers with automatic identification programs. The retail Information System is a blueprint for the continual and periodic systematic collection, analysis, and reporting of accurate and relevant data about any past, present or future developments that could or already have influenced the retailer's performance. Several prominent features of the RIS are:

- Both continual and periodic collection of relevant data should occur.
- The data collection activities should be systematic and relevant.
- Analysis and reporting of data are important parts of the RIS.
- The data can be about the past, present and/or future.

a. Source of Retail Information

Source of retail information consists of Internal and external information as follow:

• Internal Information. Internal information if found within the retailer's records. Retailers are able to generate databases from a wide range of information in the normal course of their business. One of the ways retailers can make use of the internal information is with the automatic identification systems equipment such as bar codes and scanners. The use of these bar code symbols has enabled the retailer to work with the vendors by using electronic data interchange (EDI), a computer-to-computer communication system, to advise about inventory levels, the status of deliveries, and projected reorder point.

• External Information.

- Published statistics. A vast amount of statistical data is published by a variety of public and private sources.

- Standardized retailing information services.
- Publicly circulated research reports.

The impact of technology on retailing has been considerable. The most cited examples are those relating to information technology and these have been very influential. However, we should not overlook technological developments in distribution, materials handling and packaging. These too have a considerable impact on retailing operations.

Returning to information technology: here we have seen both internal and external development benefits. The internal benefits that have accompanied EPOS (electronic point of sale) data collection and EFTPOS (electronic funds transfer at point of sale) are well documented. EPOS has enabled retailers to manage inventories much more effectively. Stock levels have generally been lowered for most companies and, at the

same time, available has increased. EPOS data has facilitated merchandise replenishment and reordering. The accuracy and immediacy of the data flows produced by EPOS systems also provides reliability, and as a consequence inventory planning and replenishment systems are able to operate on lower levels of stock and to shorter, more accurate, replenishment cycles.

Another feature available from EPOS data is the facility to schedule labour more effectively. It follows that by deploying labour at peak activity periods overall staff costs can be reduced significantly. EPOS also reduces operations costs such as price-marking. The benefit extends into the replenishment cycle: labour schedules in distribution centres may also be planned more cost-effectively.

The external benefits are equally important. The availability of EPOS data and the retailers' willingness to make the data output available to supplier has brought about an entirely fresh approach to supplier-distributor relationships. Prior to the advent of EPOS systems, product movement data (sales data is not recognized by EPOS) was available on subscription and only after a manual count and slow processing, which implies some delay. Its usefulness was limited. By contrast EPOS data is now linked with replenishment and production systems, thereby creating a supply chain. The benefits of lower costs and information currency are shared by members of the supply chain and, furthermore, the available of the data has extended the supply chain such that packaging and raw materials suppliers can benefit.





2. Toward a Strategic View Retailer

The move towers professional management of the retailing business required managers to consider the marketing, finance and operations interface areas of their businesses. From this view developed a view of strategy. The activities of significant importance are indicated in bold type. These are sales management, gross margin and operating margin management, financial management, cashflow management, return on investment and asset management. These activities are important components in the strategic management of the business. Without sales, the business is clearly not viable. However, even with a large sales volume, there will be insufficient cover for overhead charges (which includes depreciation), interest and a return for the shareholders unless marketing and buying, together with operations management, are managed effectively. Financial management has a particularly influential role because it determines the asset structure and funding base of the business and therefore the level of risk to which the business is exposed. The decision taken by the financial manager will influence both cashflow and, of course, the return on investment earned by the business.

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3. Enhancing Retail Profitability Using Computer Aided Design

Computer Aided Design can enhance retail profitability by better planning and management of store design and layout. The five key areas where profits can be enhanced are:

• Productivity Savings. Productivity savings are directly measurable. A computerized store model is a single representation of all the information relating to the

physical structure and contents of a retail store. Therefore once constructed, and drawing whether plan, section or elevation can be specified and called off immediately and because they come from a single data source they will all be entirely consistent. Further, as the model is based on 'real' objects, complete and comprehensive schedules of fixtures and fittings can be produced at any time. Using an attached database these schedules can include specification and pricing information too.

Having this coherent and three dimension model of the store on the computer allows senior designers, planners and retailers to examine more easily all aspects of the design and layout without having to check dozens of individual drawings thus saving significant amounts of supervision and checking time.

Changes, once time consuming and expensive to carry out, are straight forward and cheap. Any change is made once in the model of the store and all relevant drawings and schedules are automatically updated. No more inconsistencies or forgotten scraps of information, everything is managed by the system. As change can be so easily carried out, this model, or prototype, of the store need never be out of date. The mythical 'as built' drawing becomes a reality.

• Speed. The retail industry is one of the most dynamic areas of business today. Speed is essential, delay simply means loss of profit. Store modeling can significantly reduce delay and increase speed in a number of the key areas:

The speed of model creation and the ease of pulling off any drawing means that many more design alternatives can be examined in the time a single manually produced

design would take to complete. Instantly available catalogues of standard fixtures and fittings make the planning and layout of shop floors a very fast operation.

• Co-ordination. The three dimensional construction of a store in the computer model ensures proper co-ordination of the building, its structure and services systems, and therefore a fully consistent set of production and 'as build' drawings. This single aspect alone saves significant cost in the construction, layout, maintenance and refurbishment of stores.

Stores must open on time whether for the first time or after a major refit. Planning all the activities involved in this exercise can be a nightmare particularly as it involves so many disciplines such as: architects, structural, mechanical and electrical engineers, telecom experts, interior designers and shop fitters. The task of coordinating the ceiling alone with its tiles, fluorescent lights, downlighters, diffusers, sprinklers and smoke detectors can be a major undertaking that traditionally leaves a lot to be resolved on site, usually at the last minute.

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The modeling concept largely solves these problems by allowing a prototype of the store to be constructed in as much detail as is necessary well ahead of actual construction. The ceiling for example can be set out and precisely engineered by each discipline individually but actually all working on the same integrated database. Thus the work of all team members is coordinated as well as the store itself.

Shop fitting can be 'fitted' three dimensionally and to millimeter accuracy because the store model stores all information full size, not to some reduced scale.

• Quality. Quality is often an elusive goal particularly when time is short and pressure is high. The desire to finish on schedule often leads to shortcuts and insufficient time spent looking at alternatives. Communication suffers and those best able to make judgements on trading potential are given little time and the final design doesn't quite live up to expectations.

Store modeling improves quality by transferring production drawing time into design time. The fact that the very same model built to produce 3D colour visualization can also be used to produce construction information means that accurate and useful communication can be made with retail professionals at all stages of the design process.

This ability to play visual 'what if' games not only on the concept model, but also in any odd shaped store in the property portfolio provides a powerful tool to ensure a quality solution. Furthermore the single source of information that the store model represents ensures that the quality once achieves will be accurately and consistently carried throughout.

• Merchandising. Fundamentally, because all the physical data about the store is held in a single comprehensive database and not on a collection of drawings and schedules, the retailer now has full control of his trading environment.

He can walk through the shop at customer eye level, compute the hot spots, decide where to put 'speeders' to simulate customers to go into the next section or where to put 'eye-catchers' to slow them down. In short visually interrogate the design concept.

With feedback on liner footage updated as new layouts are tied, more efficient arrangements and greater stock utilization will often result. Once all the stores are modeled, specific analysis can be carried out on every store by the same skilled and experienced staff. New product ranges requiring new presentation and layout. Special events or seasonal changes can all be catered for on an individual store basis often by making global database changes, all of which can be readily communicated to store managers via easy to read retailer needs.

4. Introduction to Retailing Management System

In an increasingly competitive retail environment, opportunities and risks are heightened. Retail management recognizes the competitive advantage that can be provided by actionable information. There is no argument that retail management requires more apposite information more quickly, cheaply and accurately. They cannot be expected to function efficiently and effectively without the pertinent information; management can only be as good as the available information that is accessible to them.

Management information is essential for planning and controlling a profitable business; the strategic aim of any business is to earn an acceptable return on investment. To realize their full potential, Management Information Systems (MIS) must be viewed as emancipatory. It must be recognized that new decision-making processes become feasible.

5. Charge Card, EPOS Systems and EFTPOS Systems

While the cashless society is referenced frequently, cash payments predominate. Indeed, the success of ATMs for consumers can be thought to undermine the possibility. The growth in the use of cheques has fallen, probably partly because of the attractions of 'plastic' cards. EPOS systems and EFTPOS systems, are appropriate to distinguish between a payment system, such as charge cards and EFTPOS systems, and EPOS system which should be all about management information – stock control, cash management and product marketing. It is appropriate to make some brief comments about the different systems, primarily in relation to their potential to provide useful information.

• Charge Card. For credit/charge cards, different payment authorization methods exist, including the main Credit Authorization Telephones (CATs) system and the Fully Automated Credit Transaction Systems (FACTS); it is not a debit card, and therefore, not an EFTPOS system. Importantly, the transaction data, and therefore potentially the information about consumers' purchasing patterns, reside with the charge card issue rather than the retailer. Retailers with their own store cards, however, have the opportunity to create and maintain excellent marketing information systems. Similar and related opportunities exist with the customer information from the mail order catalogues and newer 'specialogues'.

• EPOS Systems. It is appropriate to consider EPOS systems in more detail, because it allows a discussion of an appropriate structure; on which the EPOS data can be integrated with data, and geodemographic local market data charge cards and EFTPOS systems.

It is the characteristics of EPOS data that are of interest, because data from charge cards and EFTPOS systems would be integrated directly within an EPOS data matrix structure. For retailer, EPOS data can be stored in terms of three dimensions:

- spatial dimension, such as individual stores or departments;

- within stores product dimension, such as the individual lines offered by the stores;

- temporal dimension, such as daily, weekly or monthly time slices.

For the marketing management, each EPOS data matrix cell comprises a number of different data items of interest, such as sales volume and money sales. Analysis of the data matrix can proceed by focusing attention on one or more of the dimensions – by approaching vector or matrix operations. Such functional descriptions can be defined further, and the form of this EPOS data matrix in any specific analysis or individual company will differ, depending on their particular business objectives and circumstances. The perspective of this EPOS data matrix is consistent with the general trend in Management Information Systems of an overwhelming demand for more and more detail.

At the same time as recognizing the 'data overload' dangers, it must be emphasized that EPOS data of a much enhanced quality than data previously available both in terms of accuracy and is timeless. In terms of generating useful and actionable management information, this data can support more appropriates analyses. For example, linked with branch promotions, advertising effectiveness for specific merchandise can be monitored and, if necessary, changes could be made during a campaign in response to identified opportunities or problems.

While the process of building up the level of information required has barely begun, there is an associated need for far more analysis integrated around the data streams that are coming into place and for far more selection of issues at different levels.

• EFTPOS Systems. EFTPOS systems should be characteristed by: an electronic transfer of funds between the consumer's bank account and the retailer's bank account with consumer's payment authorization occurring at the point of sale.

Standardization regarding EPOS systems has been helped for the electronic transfer of information between a supplier and retailer. As EPOS systems design converges with the microcomputer technology, the availability of PC-based application software could be helpful.

However, if a successful EFTPOS system is introduced, it is clear that the appropriate data could be available to satisfy retailer's desires for more precise information on consumers' purchasing patterns. That is, from an EFTPOS system, it would be possible to relate goods and services transactions with payment transactions to ascertain individuals household expenditure patterns.

Whatever the future, retail management should have access to better information. However, the management culture may need further development to accept information as a corporate source.

Information: A Corporate Resource. Competitive forces have created new demands on retail management's decision making, and new strategic business approaches have been developed and implemented. Retailers are now starting to plan strategically, although it must be stressed that there is no single strategy. Information is a prerequisite for the formulation and the implementation/monitoring of any successful business strategy:

- To describe the current situation of the company in the market place;
- To understand the market dynamics;
- To assess business opportunities and determine the ways to exploit them;

- To plan the company's evolution and the associated resource requirements.

Ultimately, however, the success and relevance of any retail MIS will not be dependent on data availability but on management's style and process of decision making. Failures to provide meaningful and actionable systems are often more attributable to the type of user interface, particularly communications, than to system's technical specification. To ensure timely action, appropriate head office information resource management will be essential; the information processing architecture, especially the communication network, is of paramount importance for the decision making process – branch data to head office back to branch.

Thus, the basic information requirements are consumers' purchasing patterns. In more detail, it is desirable to know not only what merchandise is selling by branch, but also which customers types are buying particular goods and services. Information derived from credit card, EPOS and EFTPOS system data would therefore be directly pertinent. As part of the process of 'creating' information, retail management already recognize the power simulation models; such management tools offer a safe means to examine the implications of alternative decisions, such as opening new stores or extending existing stores. Given the general paucity of data available to retailers, it is important to note that charge cards/EPOS/EFTPOS data would facilitate the enhanced application of such methods. However, the results of such approaches are restricted to a stationary analytic specification of embedded models and decision options; no management feedback can be incorporated explicitly and the approach is reactive, rather than proactive.

In terms of conventional Database Management Systems (DBMS), the EPOS data matrix could be established and maintained as an enormous collection of records with a simple and regular structure (such as sets of attribute-value pairs). For management, the functional focus would be report generation, particularly aggregation results across different dimensions and exception reporting using query inputs to match and filter across the structured exception reporting using query inputs to match and filter across the structures database. For retailers, for example, it would be useful to know that certain branches, given their local marketing potential, had a well-below average sales performance for specific brands.

In contrast, KBMS incorporate both data and reasoning. The knowledge base of rules can be aligned to the query of DBMS and its inputs can be aligned to the conventional data elements in a relational database. That is, in a KBMS, the inputs are often a set of answers to questions or a situation described by a data entry, such as a brand's weekly sales history across different branches.


Figure 3.1. System Diagram of Retail Business

III. A SYSTEM MODEL

A. System Diagram of Retail Business

System diagram of retail business include:

• Customer Order Entry. Customer order entry is the heart of business systems.

Without customer orders for goods or services, business organizations cease to exist.

• Inventory. The purpose of the inventory is to be sure that adequate but just enough stock is physically in storage.

• Purchasing. The purchasing system allows timely ordering of inventory so, ideally, stock will always be available to satisfy all customer orders.

• Receiving. The receiving system posts material receipts from vendors to the inventory master record.

• Customer Invoicing. The purpose of the customer invoicing application is to since 1969 provide customer billing statements for each sale of goods and services.

• Accounts Receivable. The accounts receivable application post customer payments and prepares the monthly customer billing statement such Credit Card Processing.

• Account Payable. The account payable application produces payments to vendor for material received in the receiving application.

• Payroll. Retail Management System related to employee database such as

work hour, over time, performance



Figure 3.2. Context Diagram of Retail Management System

This diagram shows the retail management system related to external entity which are integrated in overall systems. The external entities are supplier, customer, inventory, accounting, cashier and purchasing. Each one is essential for managing business strategies.

B. Functional Decomposition Diagram of Retail Management System

Functional Decomposition Diagram of Retail Management System includes:

- Open new branch
 - Select location, survey, trade-off opportunities
 - Construction branch
 - Maintain facilities
- Material Procurement
 - Select vendor, negotiate

- Ordering. Internet is utilized by widespread. Retailer may use it to order in part of E-Shopping and EDI.

• Inventory Control

- Physical Inventory. Stock on hand, In transit, On order. Inventory screens can show company totals on hand, on order, received and sold for each inventory item. Or one can select cost, price, margin, first/last date sold, dates received, UPC codes, or other elements. From any store a user can view quantities for other stores, back rooms or warehouses.

- Receiving. As merchandise is received, the department have to generates a voucher that clearly displays all the information needed to verify the shipment

against the P.O. and packing slip. This one-step receiving process updates inventory by units, cost and retail, and implements authorized price adjustments. It produces designed or standard price tags for the quantities of goods received. Receiving vouchers can update accounts payable.

- Inbound / Outbound Logistics
- Transfer and Distribution
- Accounting (A/P, A/R)

- Receive Invoice from inventory department to verify the shipment against the P.O.

- Payment by cash, check (credit due), etc.
- Production Planning, Recipe Management
 - Define constant ingredient, recipe

- Control Production Process and scheduling. To serve customer satisfaction

- Quality Control
- Sale / Marketing

- P.O.S. & Cashier. It totals up sales, returns, tax, shipping, and sums paid in and paid out for each tender and each credit card. It totals all line item discounts by the reasons they were given.

- Sale Ordering. Buy by the case and sell by the unit
- Product, Price, Place, Promotion- place on shelf. Why should a store lose

customers and sales because clerks can't find an item or price? Look up the correct price of an item is critical of this system.

- Integrated Credit Card Processing. supports authorization and processing of credit cards, debit cards, and check verification.

- Delivery, transportation and Routing
- Maintain Customer

- Customer Lists, Mailing. Mail to specific customer groups generates a much larger return than general mailings. There are hundreds of ways that retailers have used the system's mailing capacity to increase store traffic and sales volume.

- Gift, Mail Order and catalog
- Retention Program

The beginning of improving retail management system, inventory control is significant and necessary to operate and improve it before another.

C. Inventory Control Processing

Inventory Control Processing includes:

- Order to supplier or warehouse
- Receive goods from supplier or warehouse
- Transfer from branch to another branch
- Sale in-store or delivery
- Return goods to supplier or warehouse
- Physical Inventory, monitor by supplier, department, class, size and color -

Stock on hand, In transit, On order

- Inventory Movement Order, receive, transfer, return, adjust, etc.
- Inventory Valuation Quantity on hand, Cost of goods
- Min, Max Level and Reorder, Purchase Orders

- Pricing, Ticketing for adjustment
- Pricing/quantity verification
- Case to unit conversion. The Case to Unit Conversion feature helps retailers

who buy by the case and sell by the unit. A PO can be entered by the case and will be converted by the system into units of inventory.

• Report and Statistics for forecasting



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Table 3.1.	Value of Process – Compare to Adding Retail Management System		

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Report and Statistics for forecasting	Case to unit conversion.	Pricing/quantity verification	Pricing, Ticketing	Min, Max Level and Reorder	Inventory Valuation :	Inventory Movement	Physical Inventory, monitor	Return Goods to supplier or warehouse	Sale in-store or delivery & Cashier	Transfer from branch to another branch	Receive goods from supplier or warehouse	Order to supplier or warehouse	Inventory Process		
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Database System	POS	POS, Inventory system	Check price from P/O	Inventory System	Inventory System	Inventory System	Inventory System	Inventory System	POS .	POS	Verify P/O	E-Commerce, EDI	Remarks	L	

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D. Generic Inventory of the retail management system

Generic Inventory of the retail management system includes:

• To keep outlet information: transportation routing of outlets to manage inbound logistics, identify routing and scheduling for reduce delivery lead-time from warehouse to outlets, actual usage, sale amount of period.

• To keep damage tracing to be information for the next ordering to warehouse and storing. Due to overestimation of demand for the store offering, raw material in the store of outlet will become the waste which affect to cost of each outlet.

• To monitor stock on hand, in transit and on order to plan if it's necessary to transfer between outlets when shortage is occurred in other outlets

• To keep customer information such as transportation routing of customer for delivery process or special order for serving customer appropriately in next time.

• To keep actual usage at previous period to forecast the next time. To be available raw material at all time so that the outlets always provide variety of item menu. And using merchandise planning concept to tell how much inventory is needed at the beginning period to support the estimated sale which it may forecast from the theoretical usage for avoiding overestimation of the demand.

• To keep pricing of each part of main meal and condiment which can calculate the proper pricing whether orders are mixed.

• Case to unit conversion. The Case to Unit Conversion feature helps retailers who buy by the case and sell by the unit.

• The automatic reordering from supplier if raw materials in the warehouse go through the reorder point. Electronic Data Interchange can support them without monitoring from employee.

• To keep diversity of customer need if diversity is high or overload of the outlets, head office should find out nearby location to open new branch.

• To control delivery lead time



IV. A CASE DISCUSSION: PIZZA HUT

A. Business Process / Characteristics

Pizza was originally an Italian dish. According to the dictionary, it is a "bread-like crust covered with a spiced preparation of tomatoes and cheese that is baked." The first pizza restaurant appeared in the United States during the 1930s. By November of 1957, the Saturday Evening Post reported that a pizza craze was sweeping the nation with more 18,000 pizzerias each selling between 200 and 1,000 pizzas each week. In Wichita, two young college students opened the first Pizza Hut restaurant on June 15, 1958. Brothers Frank and Dan Carney had been approached by the owner of a small building at the corner of Bluff and Kellogg. They wanted a nice neighborhood business to locate there, and has read the Post's article about pizza. The Carney's borrowed \$600 from their mother, located John Bender, an airman from McConnell Air Force Base who had worked as a pizza cook, purchased some secondhand equipment and were ready to open for business. The first night, they gave away pizza to interested potential customers.

Many people ask how Pizza Hut got its name. When the Carneys were setting up their first restaurant, the building had a sign with room for just nine characters. They wanted to use "pizza" in the name, which left room for a word with only three letters. A family member suggested the building looked like a hut--and Pizza Hut was born.

The tiny restaurant became almost an overnight success. By December, the brothers had opened a second Pizza Hut restaurant and number three followed in February 1959. No one could have predicted the enormous success that Pizza Hut would have. After all Dan Carney was only 25 when the first restaurant opened and was working on his master's degree in business administration in Wichita State University. Frank, a 19-year-old student at WSU, was planning a career in electrical engineering. Yet within a year, they were operating three Pizza Hut restaurants in Wichita and had plans for opening the first franchise restaurant in Topeka, Kansas. By 1963, there were 43 Pizza Hut restaurants, and the number grew to 300 by 1968.

In July 1981, the first Pizza Hut was opened in Hong Kong at Tsim Shat Tsui Centre. In May 1987, Jardine Pacific took over the franchise. The business continues to grow and in 1997, the number of outlet has expanded to 57. Apart from the traditional dine-in and take-away business, with the change of life style in Hong Kong, Pizza Hut developed its delivery business in the past few years and the service has now covered about 75% of the population in Hong Kong.

Pizza Hut started its Hong Kong business in 1981. Pizza Hut has 35 restaurants and 22 delivery stores. Pizza Hut has opened 6 outlets in 1997. They were Kwun Tong (Wan Hon Street), Siu Sai Wan, Diamond Hill, Fotan, Macau(Areia Preta) & Mongkok (Grand Century Place). Each year there are over 17,227,800 customers who visited Pizza Hut (including dine-in, take away and delivery). In other words, each person comes to visit Pizza Hut 1.8 times each year (6 million people are now living in Hong Kong). The busiest Pizza Hut is New Town Plaza outlet. There are 1,300 customers who visited this store everyday. The top pizza seller is Supreme. Each year they sell 596,720 Supreme Pizzas which can cover 8 football fields. The most popular pasta is

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Spaghetti American which they sold 717,180 servings last year. The total length of spaghetti can surround the track field 13,447 times.

In the Philippines, Pizza Hut began in 1984. It is now the country's most popular pizza chain serving Metro Manila and surrounding provinces, as well as Cebu City with its Dine-In Restaurants, Delivery Units and Express Counters. The Home of Pan Pizza has indeed come a long way. It is still delighting millions of customers with pizza that is like no other - no wonder it's the world's favorite. So why don't you take home to your loved ones one of world-famous pizzas today?

The reason behind Pizza Hut's success all over the world is its steadfast belief and uncompromising drive in providing customers the best in terms of product quality, service, cleanliness and value.

Pizza Hut pizzas are made with fresh dough baked daily and smothered with very own Pizza Hut special tomato sauce, tender meat toppings, crunchy vegetables and a double layer of 100% pure imported Mozzarella cheese.

Service is an attitude in Pizza Hut. Crew members are trained to make customers feel appreciated. Customers are treated with courtesy, attentiveness, respect, and enthusiasm. Cleanliness is a must in Pizza Hut as much as giving customers the best value for their money.

The equation of Pizza Hut's secret for success sums up to customer's total satisfaction. In 1989, Pizza Hut started its delivery service through its Restaurant Based

Delivery (RDB) units located in Quad Parksquare, Greenbelt (Makati City) and Delta, Quezon Ave. cor. West Ave. (Quezon City). The growing demand for delivery prompted the opening of the first Delivery and Carryout (DELCO) unit in Greenhills, San Juan in 1990. A DELCO unit is a special Pizza Hut store catering mainly to delivery and carryout patrons. It provides facilities for carryout customers who may want to eat in the store. Today, Pizza Hut has a total of 25 DELCO units and 26 Restaurant Based Delivery units.

Another creation of Pizza Hut is the slice unit which caters to customers who want to avail of quick food service. This was conceptualized precisely for people on the go, individuals who want to eat pizza without the usual waiting time.

When the moon likes a big pizza pie, that's more! "That's Amore"-- a song sung by Dean Martin in the '50s--helped popularize pizza in America. The simple Italian fast food made of dough and cheese has indeed won the hearts of pizza goumet by the millions. It has spread far and fast from its country of origin and conquered nearly the world.

In tracing pizza's roots, one finds divergent views of how and when pizza came to be. It is the general consensus among pizza experts that pizza was invented in southern Italy. The city of Naples originated the Neopolitan thin crusted pizza; while Sicily introduced the thicked, breadlike pizza baked in a pan.

Legend has it that the invention of pizza was due to the efforts of frugal Italian farm wives who fed their anxiously waiting children by flattening scraps of bread dough and topping it with soft cheese, olive oil and the day's leftovers. These pies were baked in stone ovens and finished much faster than bread, which was a blessing for mothers trying to keep their hungry children satisfied.

Pizza Hut uses two and a half percent of all the milk produced in the U.S. every year for cheese. That cheese production requires a herd of 250,000 dairy cows producing at full capacity 365 days a year. The cows produce over 3.2 billion pounds of milk. Pizza Hut uses more than 700 million pounds of flour each year, representing the annual yield from nearly 500,000 acres of wheat. Pizza Hut uses 50 million pounds of pepperoni, and if you lay those pepperoni slices side by side, they would create a path that would stretch around the world twice and go to the moon.

Pizza Hut is the world's largest pizza restaurant chain, with more than 10,000 restaurants and delivery/carry out units in all 50 states and 82 foreign countries. It employs more than 222,000 people worldwide. Pizza Hut typically serves nearly 1.3 million pizzas, everyday, to approximately 4 million customers worldwide. Pizza Hut delivers from more than 4,700 locations across the United States of America. Delivery drivers range from age 18 to 80, and individually average 50 miles of driving per day to deliver our products.

With its sister PepsiCo food-service companies Taco bell and KFC, Pizza Hut is part of the world's largest restaurant group, with almost twice as many units as McDonald's. The highest volume Pizza Hut restaurant in the world is in France. Runners-up are located in Hong Kong and Moscow.



Figure 3.3. Work Flow of Pizza Hut

Daily Processing



Figure 3.4. Chart of Daily Processing

Weekly/Monthly Processing



Figure 3.5. Chart of Weekly Processing

V. ANALYSIS & REVIEW OF PIZZA HUT'S INVENTORY MANAGEMENT SYSTEM

A. Mapping Pizza Hut's System to Conceptual Retail Management System

The information flow starts when a customers buys-at the point of sale. POS cash registers provide immediate information on what's selling (and what isn't) for both large and small retailers. Generally, an integral part of POS terminals is the electronic scanner that records UPC information automatically. Before scanners were installed, sales information was obtained by requiring sales associates to manually enter a 13-digit number through a keypad. On the other hand, food retailer or retailer which has less variety of merchandise, always use POS terminal which sets to represent item menus on own keyboard. Item menus serve as the fundamental unit of sales, may represent something as a full course meal which depend on the way menu items are sold. The use of POS terminals for this task reduced errors and customer checkout time. POS technology also provided sales and customer information such as route of customer's address for delivery, affect customer service, and helps in allocating space to products. Pizza Hut application can also be used to show recipes and nutritional information for items or drinks that are entered on the POS terminal.

• POS and Inventory Management. The most basic use for the information available through POS technology is inventory management. Cashier obtained sale volume of item menus, sale amount related customer information from POS terminal. During the day, the information helps pinpoint where to fill in goods or ingredient of popular item menus on the floor. Exact inventory level derived from actual count differ from POS system of other retailing. Due to manufacturing process, POS cannot calculate quantity on hand precisely. Actual usage is derived by doing a physical count of inventory and comparing a previous inventory level with the current inventory level. For reconciliation purposes, the actual usage is compared with the theoretical usage, which is based on sales. The system is also useful for scheduling the sales staff. By aggregating sales data over time throughout the day, store managers can determine the best possible workload.

• POS and Customer Information. It can collect and utilize specific information on what items special customers purchase. Retailers can combine purchase data collected from the POS system with customer information taken from credit cards or directly from customers as Service Merchandise does.

On a daily basis, the marketing and buying staffs know what was sold and to whom, enabling them to target a specific offer. This lets the staff use its promotional budget efficiently. Equally important, the staff can execute a differentiated promotion plan to individual customer group based on their expected contribution to sales or profit.

• POS and Customer Service. POS system can be demonstrated how to ease congestion at the checkout counter on peak selling days remains a problem for many retailers. So it hardly occurred shortage of inventory and it can also increase customer satisfaction. Delivery service, POS terminal used customer information about route of customer address for next ordering. It's unnecessary to ask it again.

B. Analysis & Review

1. Computer System of Pizza Hut in Thailand

The last version, Pizza Hut used the application which run AS/400 platform but it cannot solve Y2K problem and it's complicated to operate and manage inventory system. Inventory system cannot be an online transaction due to no use of computer system at each outlet. In case of ordering raw material, outlet have to call or fax to warehouse/head office and in the evening, head office's officer enter order requisition of all outlets into AS/400. Now he has already converted to Oracle/NT Server by using skyblitz's application which can operate systematically and can also reduce entry officer at the head office.

The Inventory System allows you to compare theoretical raw material usage and costs based on sales with actual usage and costs based on physical inventory counts. This comparison allows you to monitor raw material costs, spot overuse, and ensure adequate item pricing. To calculate the theoretical usage information, the system performs what is called a 'recipe explosion'. This process, which can be configured to occur every few minutes throughout the day, or once at the end of the day, takes the items sold and calculates the precise amount of each raw material that went into making them. These amounts are then accumulated and used to calculate the total raw material usage for each raw material and cost for all items sold.

To accomplish its tasks, the inventory system requires that you create a database containing information about your raw materials, recipes, menu items and vendors

2. Pizza Hut's Inventory System

Inventory system of Pizza Hut is integrated with 3 applications :

a. Point of Sale for Front Room at Each Outlet

The Feature of POS System

- To keep customer information such as transportation routing, item ordering
- To control delivery lead time
- Enhanced cashier and served accountability.
- Check by seat no.
- Enhanced labor control
- Real time price adjustment
- Item prices can be changed at any time from any POS terminals.
- Real time item lockout
- Item can be inactivated at any time from any POS terminals. It would be used

if an item becomes unavailable during the day.

- Inventory count (raw material)
- Parts pricing for pizzas and condiments

Pizza parts pricing calculates the proper pricing whether the pizza has numerous pre-defined topping on different halfs, or more selected topping per half.

b. Skyblitz Application for Back Room at Each Outlet and Head Office

Skyblitz Application includes:

• Back room. consists of 2 departments which are Operations department and Reconciliation. Operations department will operate in form of Inventory movement by means of entry daily transaction such as

- Goods Receive from supplier
- Goods Return to supplier
- Goods Order Requisition
- Goods Receive by order requisition
- Goods Return to warehouse
- Goods Transfer between outlets

Weekly Ending balance gathered from remaining goods or raw material

Stock movement (weekly) is calculated by

Actual usage = Beginning balance –Ending balance

The reconciliation function should be used whenever you need to count the amount of any or all of your raw materials on hand. Once the count is made you can then enter the quantity and compare it with the theoretical count the system says you should have. A variance report will be printed showing any discrepancy between the two values.

- Head office.
 - i. Create Inventory Database

- Entering Raw material Information

- Creating Recipe (ingredients) to keep and add or change standard

recipe ingredient and stand cost of each menu

- Building Menu Items
- Vendor Information

ii. Maintenance and monitoring information such as actual usage, waste of each outlet.

- To manage transferring raw material between outlets.

- Consolidate such as Ideal (Standard), Actual usage, Variance by receiving information from each outlet and comparing to evaluate performance of outlet.

- Receive order via several methods such as telephone at central number: 712-7000, internet at home page of Pizza Hut and distribute order to the outlet which is near the customer.

c. Boon Application for Managing Warehouse

Pizza Hut used private service warehouse belong to EAC (East Asiatic) which is located at Ladkrabung, Bangkok. EAC have Boon's application to operate inventory of warehouse and Pizza Hut Inventory management application.

Warehouse's functions include:

- Goods Receive from supplier
- Receive order requisition
- Distribute to the outlets
- In general, each outlet has to send order requisition by means of entry Goods

Order Requisition Menu in Pizza Hut Inventory management application. This order requisition can be monitored by the head office and warehouse. Before outlet sends order requisition to head office, he must link system by remote line, due to each outlet used PC computer by stand-alone.

3. Pricing of Food Application

There are 3 different pricing as follows:

• Meal Deal Promotions. Meal Deals are similar to multiples, but are generally used for combinating different items into a single promotional price, rather than selling multiples of identical or similar items for a set or reduced price.

• Generic Discounts. The generic coupon option allows you to create a set of discounts that can be easily distributed and updated from a corporate office without necessarily affecting coupons that were defined in-store.

• Generic Coupons. The generic coupon option allows you to create a set of coupons that can be easily distributed and updated from a corporate office without necessarily affecting coupons that were defined in-store.



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Figure 4.1. Daily Sales Data Drives the Replenishment Order System

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4. Inventory Report

The inventory reports are used to monitor usage and cost of raw materials. They are also used to perform inventory reconciliation, calculate food profits and track overuse and waste. To access the inventory reports, select the Report option. The following three reports are considered inventory reports

• Cost of Goods Sold. The Cost of Goods Sold Report contains information based on sales and inventory levels. It can only provide current information after an inventory reconciliation has performed such as

- Beginning Inventory
- Received
- Transfer
- Waste
- Ending Inventory
- Actual Usage
- Theoretical Usage
- Unit Variance
- Amt Variance
- % Variance
- % of Sales
- Actual Cost

• PCA Product Cost Analysis. The PCA report shows the total sales for each outlet, as well as the ideal cost of goods for the items in the outlets, and percentage of dollar sales that costs represents.

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- Sales Amount
- Percent of Sales
- Ideal Cost
- Ideal Cost %
- Actual Waste
- Actual Waste %

• On Hand Goods. The On Hand Inventory Report can be printed at any time to give you a current estimate of inventory levels for each raw material and batch. The report provides a theoretical count that is based on the last physical count minus waste, transfers and usage.

5. Food Application

Food retailer is a self-service food store offering groceries, meal such as Pizza Hut, KFC, Mc Donald, etc.

Many types of Retail which can use only POS application showed integrate system not only Inventory management but also cashier management. Such as convenience store, discount store.

On the other hand, some types of retail have to use Food Application for Inventory management and POS application for cashier management. Due to cooking process, POS application cannot control stock of merchandise.

6. System of Pizza Hut

• Computer Systems in Pizza Hut

- POS located at all outlets
- Inventory Management base on Oracle/NT Server and installed at head

office, warehouse and all of outlets

- Accounting System base on Pattinum/SQL Server
- Manual System in Pizza Hut

- Purchasing system. Due to inconsistency of raw material's price, it cannot print purchase order exactly.

Actual Usage is the amount of raw materials actually used by a restaurant during a specific time period. This amount is derived by doing a physical count of inventory and comparing a previous inventory level with the current inventory level. For reconciliation purposes, the actual usage is compared with the theoretical usage, which is based on sales.

Theoretical usage is amount of a raw material that the computer says should have been used based on the sales entered on the POS terminals. The theoretical usage is used to calculate the amount actually counted during inventory.

Reconciliation. The comparing of the actual count of a raw material with the amount the computer says there should be based on sales data (theoretical usage). Reconciliation is performed whenever inventory is taken so that the manager can compare what should be on hand with what actually is on hand. A report can be generated with the variance can be used to track down theft, waste, or using to much or too little of an ingredient.

A recipe may consist of raw materials, batches, or other recipes. It represents any prepared raw materials or combination of ingredients that are ready to be used within a Menu Item. Menu Item can only be made from recipes. They cannot be made directly from raw materials.

7. Conclusion

Inventory Management of Pizza Hut provides many functions to serve the Retail Business such as:

• Warehouse Management can operate and delivery to outlets rapidly although it's located only one site at Ladkrabung.

• Head Office can monitor actual usage of raw material of each outlet at all time and consolidate information to evaluate performance of outlet speedily.

• To keep damage tracing and report to Head Office and outlet for improving the keeping raw material efficiently. NCE 1969

• To transfer between outlets when storage is occurred in other outlets.

• To keep transportation routing of customer and keep special orders of customers who order by central telephone number or Internet for delivery and keep special order of customer.

• To operate pricing accurately whether order are mixed.

• Consolidate information from outlet rapidly

• Integrate application in whole system. End of day have to transfer data

• To manage cost variance at outlet correctly

But inventory system of Pizza Hut loses many functions such as:

• Cannot automatically reorder from supplier. Employee or authorized purchasing person has to monitor stock on hand at all times. If he neglects, shortage problem may occur.

• Redundant data/information and distribute to several database. It's not consistent if data is updated in any part.

• Necessary to transfer data among systems for integrated processing. It has to find out other technology to support activities.



BIBLIOGRAPHY

- 1. Bolen, William H. Contemporary Retailing. Englewood Cliffs, NJ: Prentice Hall, 1988.
- 2. Christopher, Martin. Logistics and Supply Chain Management. Irwin Professional, 1994.
- 3. Cox, Roger and Paul Britain. Retail Management. London: Pitman, 1996.
- 4. Golden, Lawence G., and Donald A. Zimmerman. Effective Retailing. Boston: Houghton Mifflin, 1986.
- 5. Grover, Varun, and William J. Kettinger. Business process change: concepts, methods, and technologies. Harrisburg, USA: Idea Group, 1995.
- 6. Levy, Michael. Retailing Management. Chicago: Irwin, 1995.
- 7. Levy, Michael and Barton A. Weitz. Essentials of Retailing. Chicago: Irwin, 1996.
- 8. Lewis, Robert. IT in Retailing. Columbia, MD: GP Publisher, 1989.
- 9. Martin, Merle P. Analysis and Design of Business Information System, 2nd Edition, Englewood Cliffs, NJ: Prentice Hall, 1995.



