CHAPTER

25

Controlling costs and purchasing food

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It is all very nice and good knowing how to read a P&L statement as well as knowing how much money we need to make to break even. However, what happened when we do not break even. Very often, the first thing we say is that your pricing is too low.

This is, however, the cause for downfall of many restaurant operations. What needs to be done is to ensure that they are getting the best products at the best price and then producing the food the customer wants at a price the customer is willing to pay! To ensure that this is done, there is a seven-step process that needs to be followed. The steps are listed below. Each of these steps will then be further developed and explained.

- Maintain sales histories
- Forecast future sales levels
- Purchase and store needed food and beverage supplies
- Plan daily production levels
- Issue needed products to production areas
- Manage the food and beverage production process
- Price the products at a price so that customers feel it is a value for money operation

25.1 Maintaining sales histories

One of the first things you learn as an F&B manager is to ask yourself how much business am I going to do today, tomorrow, next week, and so on. This is so that you can produce just the right amount of food.

You don't want to produce too much because if you do you will have too many leftovers, which you might have to throw away. Any time you throw food away you throw money away, so producing too much is never a good sign.

Also, you don't want to produce too little as you might lose the opportunity to make a sale. You might also get a customer upset if he comes all the way to your restaurant only to find the food he wanted has been sold out.

You want to be able to produce enough so that you can reduce the amount of leftovers, while at the same time ensuring that you do not run out too early. To avoid both running out and making too much, we need to forecast (predict) how much sales we will be doing on a daily basis and we will then prepare quantity of food according to this prediction.

As indicated before, to predict what will happen in future, we will normally refer to what has happened in the past. For this reason, it is important that you keep your sales histories for a few years.

The sales histories should be kept not only in revenue and expenses but also in items sold, i.e., volume of sales.

A sales history is a systematic recording of sales achieved during a predetermined time period (Dopson and Hayes, 2011). Below (Table 25.1) is an example of sales volume history for 1 weeks' worth of sales.

TABLE 25.1 One week's sales history.

Week 1	Monday	Tuesday	Wednesday	Thursday	Friday
Hamburger	15	18	15	19	17
Cheeseburger	22	19	19	21	22
Hot dog	17	21	18	17	18
Fried rice	12	15	16	17	16
Beef noodles	25	22	18	23	25
Total sales	91	95	86	97	98

Compiled by Miguel Gassman from Multiple Data Sources.

25.2 Forecasting future sales

When we have the sales histories, we can convert the sales to averages. When we know what out average sales are, we can then use this figure to more accurately predict what our future sales will be. Using the above example, we can determine this as shown in Table 25.2:

From the above table we can see that an average of 16.8 hamburgers was sold during week 1. We would traditionally round off the numbers to make it easier to use (Table 25.3).

We can now see that on average, around 17 hamburgers were sold. We can therefore predict that the following week we will sell around 17 hamburgers per day. However, to ensure that we do not run out, we will normally produce a little extra of each just in case we get a few more customers asking for that particular item. This little bit extra that we produce is normally called a safety margin. Safety margins are normally not large amounts, normally 5%–10% maximum.

TABLE 25.2 Sales history averages.

Week 1	Monday	Tuesday	Wednesday	Thursday	Friday	Total sold	Average
Hamburger	15	18	15	19	17	84	16.8
Cheeseburger	22	19	19	21	22	103	20.6
Hot dog	17	21	18	17	18	91	18.2
Fried rice	12	15	16	17	16	76	15.2
Beef noodles	25	22	18	23	25	113	22.6

Compiled by Miguel Gassman from Multiple Data Sources.

TABLE 25.3 Rounded-off figures.

Week 1	Average	Rounded off
Hamburger	16.8	17
Cheeseburger	20.6	21
Hot dog	18.2	18
Fried rice	15.2	15
Beef noodles	22.6	23

Compiled by Miguel Gassman from Multiple Data Sources.

For small quantities such as the figures in the table above, a safety margin of 10% is not a lot; however, when you are working in large scales, 10% can be way too much. So, in every situation, the manager will have to estimate what his safety margin will be.

For this situation we will use a safety margin of 10%. We add the safety margin amount to the historical figure to get a new figure. We then round off this figure to get the actual amount that should be produced on a daily basis for week 2.

It is important to remember that these figures are estimates and consequently may not be 100% correct. This is why one must also, at times, rely on a gut feeling, i.e., what does one want as a manager expect will happen in the next financial period? One could increase or decrease the production of each item by as many as one perceives is needed. All this is not just theoretical—see Table 25.4 for a real-life example of forecasting sales volumes.

Forecasting the number of guests to be served is executed in the same way. Historical figures are used to give an idea of what has been happening. Then one will increase the amount of guests to be served by a figure of expect growth. It can either be that average growth from the sales history one has maintained or it could be an estimated figure.

TABLE 25.4 Forecasting sales volume.

Week 1		Week 2 daily forecast			
	Sales history	Safety margin (%)	Safety margin amount	Total amount	Amount to produce on daily basis
Hamburger	17	10	1.7	18.70	19
Cheeseburger	21	10	2.1	23.10	23
Hot dog	18	10	1.8	19.80	20
Fried rice	15	10	1.5	16.50	17
Beef noodles	23	10	2.3	25.30	25

Compiled by Miguel Gassman from Multiple Data Sources.

Some factors are to be taken into consideration when you are planning a sales forecast. Sales can be affected by

- Competition
- Weather
- Special events in your area
- Holidays
- Facility occupancy (for example, a full hotel will have more customers for breakfast than an empty hotel)
- Your own advertising and promotional offers
- Your competitors advertising and promotional offers
- Quality of service
- Changes in operation hours
- Operational consistency

Dopson and Hayes (2011).

25.3 Purchase and store-needed food and beverage supplies

Once you know how many of each item you will need to produce, it is time to order the ingredients to be able to produce those items. To understand which items and how many of each item to order, it is necessary to use standardized recipes.

25.3.1 Standardized recipes

A standardized recipe is a recipe that should be used by everyone producing the same dish in your restaurant. It is the recipe that has been designated as the correct one to use in the restaurant (Dittmer and Heefe, 2009).

Standard recipes are useful to a foodservice operation for the following reasons:

- It does not matter who makes it, it should always look and taste the same
- The portion size should always be the same
- There is a guide for chefs, so therefore less supervision is required during the production process
- The cost of the dish should be more or less the same every time it is produced.

Keiser et al. (2008).

A standardized recipe should contain the following information:

- Menu item name
- Total yield (number of servings)
- Portion size
- Ingredient list
- Preparation/method section

- Cooking time and temperature
- Special instruction (if any)
- Recipe cost (this is optional)

Dopson and Hayes (2011).

It is important that the same recipe is used every time no matter how many guests are being served. For instance, if you have a recipe for four persons, the same recipe would be used as if the chef was making enough food for 50 persons. However, to ensure consistency, you should convert the recipe to 50 persons. The method used for converting the recipe up or down is called the factor method.

To use the factor method, you need to calculate the conversion factor, which is calculated as follows (Dopson and Hayes, 2011):

Equation 25.1: The factor method:

$$\frac{\text{Desired yield}}{\text{Current yield}} = \text{Conversion factor.}$$

Compiled by Miguel Gassman from Multiple Data Sources.

Take for example the recipe mentioned above, the current yield is 4, we, however, need to make the same recipe for 50 persons, the conversion factor would be

Equation 25.2: The factor method example:

$$\frac{50}{4} = 12.5$$

Compiled by Miguel Gassman from Multiple Data Sources.

Once we have obtained the conversion factor, we will multiply all the ingredients in the recipe by the conversion factor.

25.3.1.1 Product yield

When ordering food for a recipe, it is important to remember that it is not possible to use 100% of the food that is purchased. Normally it is necessary to trim or peel the food before the food is ready to be cooked or served. Whenever we trim or peel the food, the part we discard is waste and is usually disposed. It is therefore necessary to remember that if we need 25 kg of potatoes, we will need to order more than 25 kg of potatoes to ensure that after we have peeled and cleaned them, we have at least 25 kg of ready-to-prepare potatoes.

To find out how much of an item we need to order to ensure we get enough of the ingredient to prepare the food, we will do a *yield test or butchers test*. Most products when they are delivered, they are in the *AP* or *as purchased state*. This refers to the weight or count that we receive or pay for. It is then necessary to trim, peel, cook, or portion the product so that we only have the part we will serve to the guest left; this is known as the *EP* or *edible portion*. The parts of the product that we peel, trim, and loose due to cooking loss or

portioning are known as *product loss* or *waste*. Therefore, the AP is what the foodservice operation receives from the supplier, and the AP is what the guest receives from the foodservice operator (Dopson and Hayes, 2011):

Equation 25.3: The concept of the Edible Portion:

Yield Test Results		
Item name	**Leg of Lamb (bone in)**	
AP amount tested	3.2kg	
AP price per Kg	$75.80	
As Purchased	3.2kg	100%
Fat Loss	0.4kg	12.5%
Bone Loss	0.8kg	25.0%
Total product loss	1.2kg	37.5%
Ep portion	2kg	
Product yield	62.5%	
EP Cost per KG	$121.28	

Compiled by Miguel Gassman from Multiple Data Sources.

Yield % is an important area of recipe costing as it is necessary to take into consideration the EP and AP costs for ingredients: Recipes normally have the EP price on them, so it is necessary to calculate the EP price for the ingredients. Most good suppliers will be able to give you the standard yield % for their products. However, it is still advisable to do a yield test every once in a while to ensure the costing remains the same. To calculate the *waste* % of a product we use the following formula:

Equation 25.4: Calculating the **Waste**(%) of Product

$$\text{Waste \%} = \frac{\text{Product Loss}}{\text{AP Weight}}$$

Therefore

$$\text{Waste \%} = \frac{1.2\ \text{kg}}{3.2\ \text{kg}}$$

finally

$$\text{Waste \%} = 37.5\%$$

Compiled by Miguel Gassman from Multiple Data Sources.

Once we have determined waste %, it is possible to determine the yield %. The yield % is the percentage of a product that remains after it has been trimmed, peeled, cooked, or portioned.

Equation 25.5: Calculating the **Yield** (%) of Product (Number 1)

$$\textbf{Yield\%} = (1 - \text{Waste\%})$$

Therefore

$$\textbf{Yield\%} = \textbf{1} - \textbf{37.5\%}$$

Which

$$= \textbf{62.5\%}$$

Compiled by Miguel Gassman from Multiple Data Sources.

Another way to calculate the yield % is by dividing the *EP* weight by the *AP* weight as such:

Equation 25.6: Calculating the **Yield** (%) of Product (Number 2)

$$\text{Yield } \% = \frac{\text{EP Weight}}{\text{AP Weight}}$$

$$\text{Thus Yield } \% = \frac{2.0 \text{ kg}}{3.2 \text{ kg}}$$

$$\text{Ergo} = 62.5\%$$

Compiled by Miguel Gassman from Multiple Data Sources.

Once you know how much *EP* weight you need to a recipe, you can calculate how much *AP* weight you need to order to be able to produce the correct amount of portions. We calculate the *AP* weight as follows:

Equation 25.7: Calculating the AP weight Required

$$\text{AP Required} = \frac{\text{EP Weight}}{\text{Yield } \%}$$

Therefore

$$\text{AP Required} = \frac{2 \text{ kg}}{62.2 \%} = 3.2 \text{ kg}$$

Compiled by Miguel Gassman from Multiple Data Sources.

So, to recap, to calculate the EP cost of lamb required to get 2 kg per kg after all the waste has been removed, we take, for example, the leg of lamb above. It costs $75.8 per kilogram to purchase, so the total paid for the leg was

Equation 25.8: Total Cost Required to Meet Sufficient Edible Portions

$$3.2 \text{ kg} \times \$75.8 = \$242.56$$

Compiled by Miguel Gassman from Multiple Data Sources.

Once we have removed all the waste, the total cost of the leg of lamb is still $242.56, but there is only 2 kg of edible portion. So, to calculate the *EP cost* (EP price per kg), we do it as follows (Equation 25.9):

Equation 25.9: Calculating the EP cost

$$\text{EP cost per kg} = \frac{\text{AP Price per KG}}{\text{Yield \%}}$$

Therefore

$$= \frac{\$75.80}{62.5\%}$$

Which

$$= \$121.28$$

Compiled by Miguel Gassman from Multiple Data Sources.

To calculate the recipe costs, you will always use the EP cost.

Once you know how much of a particular item you will need to purchase, you can go ahead and place your order.

25.3.2 Purchasing the ingredients

Once you know how much you need to purchase, you need to remember that when purchasing you are trying to determine the following:

- What should be purchased?
- What is the best price to pay?
- How can a steady supply be ensured?

25.3.2.1 What to purchase?

When the chef order steak, what steak does he want? If you order the wrong steak, he will not accept it and maybe the supplier will not accept that you return it. Therefore, when the chef orders a steak, you need to identify exactly what steak he wants in terms of quality, type, size, and quantity. To ensure we get the correct product for the correct recipe, a product specification needs to be established, also known as a standard purchase specification.

A *product specification* contains carefully written description listing in appropriate detail the specific and distinctive characteristics that best describe the items to be purchased. Product specifications commonly identify product name, pricing unit, grade, size, weight, degree of freshness, color, intended use, and other similar characteristics of a product (Dittmer and Heefe, 2009).

These product specifications are to be given to the suppliers so that when you order the particular steak the chef wants, you can order according to your product specification number. This way the supplier knows exactly what you want and can deliver accordingly.

25.3.2.2 What is the best price to pay?

Once you know the required products needed, it is time to figure out what is the best price to pay. *Take note, the best price to pay is usually not the cheapest price!*

The *best price* is, in fact, the lowest price that meets both the long-term goals of both the foodservice operation and the vendor (Dopson and Hayes, 2011). This means that it is a win-win situation for both the foodservice operator and the vendor. The foodservice operator is happy to pay the price for a product/service that the vendor is happy to offer.

Remember, vendors have more than one price. They will offer the same product with different prices to different customers, but more than the product itself is the service the vendor offers. If you manage to create a good working relationship with a vendor, the vendor will not only offer you good prices but also offer many guarantees that other suppliers might not offer. It is important to build a good working relationship with your vendors.

At the same time, it is important not to limit yourself to only one vendor per product whenever possible. The more vendors you have, the better chance you will have of getting a better deal, as you will need to get the vendors to fight for your business. Having too many vendors, on the other hand, will make it difficult to build a good working relationship and will also create too much paperwork. Therefore, it is a good idea to get around two to three vendors per product type. This way you can spread your business around them as well as ensure that you can get the best prices and best service constantly.

To ensure you get the best prices from your suppliers, you will regularly have to send the vendors a "*Bid Sheet*" for them to list the prices they can offer for certain products. The bid sheet will be sent to various suppliers.

Once all the suppliers have returned the completed bid sheets, it is then necessary to create a *Price Comparison Sheet*. A price comparison sheet is a sheet where you list down the different prices quoted by different vendors from a particular product; see both Tables 25.5 and 25.6.

25.3.2.3 How much is required to be purchased?

We have now managed to get the right product at the best price to ensure the right quality. We now have to find out how much we need to purchase. Before we purchase anything, we need to know how much of the products we have in our inventory. We do this by doing a daily inventory. This is done by using a daily inventory sheet as below (Table 25.7).

The par value is a preestablished level that a company needs to carry or have in stock of a particular item. The on-hand amount is the actual amount that is actually available. The special-order column is for when it is necessary to order an extra amount of a particular ingredient as more is required for the operation on the day. To calculate the order amount, the following formula is used:

Equation 25.10: Calculating the Order Amount

$$\text{Par Value} - \text{On Hand} + \text{Special Order} = \text{Order Amount}$$

$$\text{So, the quantity of macaroni to order is } (10 - 4) + 6 = 12$$

Compiled by Miguel Gassman from Multiple Data Sources.

Once we know how many of each ingredient is required, we can go ahead and prepare the purchase order.

TABLE 25.5 A comparison sheet.

Bid Sheet

Supplier: _____
Supplier address: _____
Supplier contact no: _____
Supplier email: _____

Item Number	Item Description	Unit of measure	Price per unit
201	Purple Cabbage	Kg	
202	Chinese Cabbage	Kg	
203	Cabbage	Kg	
204	Iceberg Lettuce	Kg	
205	Romaine Lettuce	Kg	
206	White Onion	Kg	
207	Purple Onion	Kg	

Bid prices guaranteed from _____ to _____

Salesperson: _____

Vendor Chop: _____

Compiled by Miguel Gassman from Multiple Data Sources.

TABLE 25.6 A price comparison sheet.

Price Comparison Sheet

Vendors **Category:** Produce
A) Gerome's Primary Veggies
B) Junior's organic plants
C) Dell's Fist Choice Greens

Price Comparison Sheet

Item Number	Item Description	Unit of measure	A	B	C	Best Bid ($)	Best Company	Last Price Bid
201	Purple Cabbage	Kg	$ 14.50	$ 14.00	$ 13.50	$13.50	C	$ 13.00
202	Chinese Cabbage	Kg	$ 12.50	$ 13.00	$ 13.00	$12.50	A	$ 13.00
203	Cabbage	Kg	$ 13.50	$ 13.75	$ 13.80	$13.40	A	$ 13.50
204	Iceberg Lettuce	Kg	$ 15.00	$ 14.00	$ 14.50	$14.00	B	$ 14.00
205	Romaine Lettuce	Kg	$ 14.00	$ 14.00	$ 13.50	$13.50	C	$ 13.00
206	White Onion	Kg	$ 9.00	$ 8.70	$ 9.50	$ 8.70	B	$ 9.00
207	Purple Onion	Kg	$ 7.00	$ 8.00	$ 6.50	$ 6.50	C	$ 8.00

Compiled by Miguel Gassman from Multiple Data Sources.

TABLE 25.7 The daily inventory sheet.

Daily Inventory Sheet						
Item	Description	Unit	Par Value	On hand	Special Order	Order Amount
Ketchup Bottle	330g	Bottle	10	6		4
Mustard	250g	Jar	10	4		6
Chilli Sauce	250g	jar	10	9		0
Sardinnes (canned)	180g	can	24	10	12	26
Chick peas (canned)	800g	can	12	2		10
White Beans (canned)	800g	can	12	5	12	19
Spaghetti	500g	pkt	10	5		5
Macaroni	500g	pkt	10	4	6	12

Compiled by Miguel Gassman from Multiple Data Sources.

25.3.2.4 *Preparing the purchase order*

The purchase order is a formal agreement that a product is going to be bought for a specific price from a specific supplier (Dittmer and Heefe, 2009). This document is then sent to the selected supplier that contains the following information; see also Table 25.8.

TABLE 25.8 An example of a purchase order.

Supplier: _____			Purchase order #:		_____
Supplier Address: _____			Delivery Date:		_____
Suppliers Contact Person: _____					
Supplier Contact: _____					
Item Number	Item Description	Unit of measure	Quantity ordered	Quoted price	Extended Tprice
			Total Value of order		_____
Order date: _____			Comments		
Order by: _____					
Received by: _____					
Delivery Instuctions: _____					

Compiled by Miguel Gassman from Multiple Data Sources Dopson, L.R., Hayes, D.K., 2011. Food and Beverage Cost Control, fifth ed. Willey and Sons, INC.

Purchase order information should contain the following:

- Item name
- Specification number
- Quantity ordered
- Quoted price
- Extended price
- Total value of the order
- Supplier information
- Date of order
- Date of expected delivery
- Special delivery instructions
- Comments

25.3.3 Receiving the goods

Now that the items have been purchased, it is time to receive all the items. To properly receive the items ordered, it is necessary to have the following:

1. Proper location: It is necessary to have enough space to be able to check all the items ordered.
2. Scales: Never trust the supplier word for the amount delivered. Everything should be counted or weighed to verify the invoice is correct.
3. Thermometer: Some items should be delivered at a certain temperature to ensure their quality, so have a thermometer available to ensure the product is at the right temperature.
4. Calculators: Never trust the extended price on the invoice, although it is a computer-printed invoice as sometimes the totals are manually input.

If the products received are not to the required standard or are in fact the wrong product, they should be returned. If the quantity received is not the same as the quantity delivered, a credit memo is issued, which is signed by both the delivery person and the receiving person. This credit note is then sent to the supplier to revise the invoice.

Always reconfirm the invoice price with the quoted price on the purchase order to ensure they are the same. Very often many establishments request the delivery invoice be accompanied by a copy of the purchase order received by the supplier.

25.3.3.1 Placing the items in storage

Once the items are confirmed as the correct items and they are in a good quality, it is necessary to store the items properly. The best way to ensure that products do not pass their validity date is to use the FIFO system. FIFO stands for first in first out, which means that the older items are used first and the new items are placed at the bottom of the pile. This method helps reduce spoilage as well as products passing their use-by dates. In small operations with small storage areas, most products are bought daily whenever possible to ensure a little spoilage as possible except items with a long shelf life such as canned and bottled goods.

For larger operations such as restaurants in hotels, normally all items are stored in the storeroom. These storerooms have different areas for storing different products. They will also very often buy in bulk to try to get a better purchase price. Different types of storage areas that will exist in these storerooms are

5. Dry storage: It is the space where dry goods, canned, and bottled goods are normally stored. Normally, the temperature is between 18 and 24°C.
6. Refrigerated storage: Here, temperature normally ranges between 2 and 4°C. Different fridges are used for storing different types of food, such as
   - Fish and seafood
   - Meats
   - Vegetables and fruit
   - Dairy products.
   - Freezer storage: Temperature normally varies between −18 and −23°C.

Whenever storing any products, there are a few basics that need to be observed (Dittmer and Heefe, 2009).

- Storage containers: Products must be stored in the appropriate containers. All containers should be tight, sealed, and insect-proof containers (for dry goods).
- Shelving: Shelves should be slated to help the circulation of air. At no time should items be stored directly on the floor. For large heavy items such as rice and flour, they should be stored on crates on the floor. All shelves should be a minimum of 15 cm off the bottle from the floor.
- Cleanliness: Absolute cleanliness should be maintained at all times in the storeroom. Storerooms are great places for vermin and insects to breed. So, a regular cleaning schedule should be implemented.

25.3.3.2 Determining inventory value

In most establishments, the value of the food inventory on hand is done at the close of the accounting period, week, month, or year. Most places do a monthly inventory. Doing the inventory check is the only way to know exactly what is available in the storeroom. This is done by doing a physical inventory.

Taking physical inventory required counting the actual number of units (pieces) on hand for each individual item (Dittmer and Heefe, 2009) and recording that amount on a specially prepared inventory form. An inventory form lists all the items available in the storeroom by storage area so that when doing the inventory, you do not have to move around to look for the items on the list. The inventory list identifies the following:

- Product name
- Product code
- Measuring unit
- Price per unit of measure
- Quantity that should be in stock
- Space for the actual amount of items on stock.

TABLE 25.9 A costed inventory stock list.

Date of purchase	Quantity	Unit cost	Total value
Opening inventory	10	$9.50	$95.00
June 09	36	$9.80	$352.80
June 18	36	$9.70	$349.20
June 25	24	$10.00	$240.00
Total available for sale	**106**		**$1037.00**

Compiled by Miguel Gassman from Multiple Data Sources.

Calculating the value of the inventory is then a question of using the formula

Number of items on hand × Unit cost of item = Inventory value for item

Before determining the inventory value of goods, it is necessary to determine the unit cost value of the inventory items on hand because sometimes the same item will have a different cost. We will be using cans of tomato paste to demonstrate how to calculate the unit cost of each stock item.

For the month of June, the inventory record for cans of tomato paste shows the following (Table 25.9):

On the 30th of June, an inventory was conducted and it was found that there were 15 cans left in the store room. It is now necessary to assign a value to these cans.

The three most common methods of calculating the cost price of inventory items are

- Actual purchase price method
- Weighted-average purchase price method
- Latest purchase price method

25.3.3.2.1 Actual purchase price method

This method involves using the actual price for each item that is in the storeroom. This is one of the better methods but requires that each item being received is marked down with the actual price of purchase (Table 25.10).

Note that there are still cans listed from the opening inventory and all the other times items were purchased, so the stock rotation was not properly conducted.

TABLE 25.10 Tabulated inventory value.

No. of cans	Purchased price	Total value
4	$9.50	$38.00
4	$9.80	$39.20
5	$9.70	$48.50
5	$10.00	$20.00
Total value		$145.70

Compiled by Miguel Gassman from Multiple Data Sources.

25.3.3.2.2 Weighted-average purchase price method

When we cannot guarantee that the stock has been properly rotated, the weighted-average purchase price offers a good solution. You can calculate the weighted-average price of the cans by dividing the total value of the good available for sale by the number of good available for sale (Equation 25.11).

Equation 25.11: The weighted average price of Inventory

$$\frac{\text{Total value of good available for sale}}{\text{Number of goods available for sale}}$$

equals

$$= \frac{\$1,037.00}{106}$$

which then

$$= \$9.78/\text{can}$$

Compiled by Miguel Gassman from Multiple Data Sources.

We can then calculate the inventory value of the item by multiplying the number of items on hand. In this case, the cans of tomato paste, as follows (Equation 25.12):

Equation 25.12: Calculating the Inventory Value of the Item

Total Stock on Hand = Number of Units on Hand × Weighted Average Price/Unit
which
$= 15 \times \$9.78$
Total stock on hand
$146.70

Compiled by Miguel Gassman from Multiple Data Sources.

25.3.3.2.3 Latest purchase price method (most recent price)

A simpler and faster method to calculating the value of the stock item is to use the latest price which the goods were purchased for. In the above example, the last price paid for the cans of tomato was $10.00 each. Therefore, the inventory value would be calculated as follows:

Equation 25.13: Alternative Method of Calculating Inventory Value

Total Value of Stock on Hand = Number of Units on Hand × The most Recent Price
which
$= 15 \times \$10.00$
$= \$150$

Compiled by Miguel Gassman from Multiple Data Sources.

25.3.4 Determining the food cost

Once we have calculated the total value of all the stocks on hand, we can now turn out attention to calculating the total food cost for the month. This method is applicable to all foodservice operations:

Equation 25.14: The basic formula to calculate the cost of food issued is:

$$\text{Opening inventory} + \text{Purchase} = \text{Total Goods Available for Sale} - \text{Closing inventory} = \text{Cost of food issued}$$

Compiled by Miguel Gassman from Multiple Data Sources.

where the *Opening Inventory* is the value of goods that are available for sale at the beginning of the accounting period, *Purchase* is the value of all the goods purchased during the accounting period that are for sale, *closing inventory* is the total value of goods in the storeroom at the end of the accounting period that have not yet been used, i.e., are still in the storeroom, and *cost of food issued* refers to all the food that was used to generate the sales achieved.

This formula is fine when you are talking about a single standalone restaurant. In this case the cost of food issued would be considered as the cost of food sold. However, when you are working in an establishment with multiple restaurants such as a hotel, very often food is transferred from one restaurant to the other. Also, very often the hotel will offer its employees complimentary meals as a benefit to the staff.

When Restaurant A transfers some food to Restaurant B for sale in Restaurant B, it is only fair that the cost of the food also be transferred to Restaurant B. If the cost is not transferred to Restaurant B, Restaurant A's food cost will be unfairly high.

Similarly, a meal offered to an employee should not be charged to the restaurant as it is not a cost that was created to the sale of food, it is a staff benefit so it is a Human Resources cost and should be charged to Human Resources accordingly.

When these two factors mentioned above come into play, we revise the formula for calculating the cost of food sold to the following:

Equation 25.15: Calculating the Cost of Multiple Outlets/Conditions

$$\text{Opening inventory} + \text{Purchases} - \text{Closing Inventory} \pm \text{Transfers} - \text{Employee meals} = \text{Cost of Food Sold}$$

Compiled by Miguel Gassman from Multiple Data Sources.

We can display this in the following formula:

Equation 25.16: Transfers Effects on Food Costs

$$\text{Opening Inventory} + \text{Purchases} = \text{Goods available for sale} - \text{Closing Inventory} = \text{Cost of food issued} - \text{Transfers out} + \text{Transfers in} - \text{Employee meals} = \text{Cost of food sold}$$

Compiled by Miguel Gassman from Multiple Data Sources.

TABLE 25.11 Hugo's Big Restaurant costs.

Total sales	**$1,116,800.00**
Opening inventory	$78,550.00
Purchases	$455,100.00
Closing inventory	$101,250.00
Transfer to Restaurant A	$5200.00
Transfer to marketing	$4300.00
Transfer from Restaurant B	$1200.00
Transfer from bar	$2100.00
Employee meals	$2550.00

Compiled by Miguel Gassman from Multiple Data Sources.

When we look at the figures for Hugo's Big Restaurant below, for instance (Table 25.11): we can then calculate Hugo's Cost of food sold by the following equation:

Equation 25.17: Cost of Food Sold at Hugo's Place

$$\text{Opening Inventory} + \text{Purchases} = \text{Goods available for sale} - \text{Closing Inventory} = \text{Cost of food issued} - \text{Transfers out} + \text{Transfers in} - \text{Employee meals} = \text{Cost of food sold}$$

$$\$78,550.00 + \$455,100.00 + \$533,650.00 - \$101,250.00 = \$\,432,400.00 - \$9,500.00 + \$3,300.00 - \$2,550.00 = \$423,650.00$$

Compiled by Miguel Gassman from Multiple Data Sources.

With the cost of food sold we can now calculate Hugo's cost of food sold in percentage (%) using the following formula (Equation 25.18):

Equation 25.18: Cost of food sold in % at Hugo's Place

$$\text{Food Cost \$} = \frac{\text{Cost of Food Sold}}{\text{Total Sales}}$$

Which equals

$$= \frac{\$423,650}{\$1,116,800}$$

Ergo Hugo's Food Cost %

$$= 37.93\%$$

Compiled by Miguel Gassman from Multiple Data Sources.

25.4 Plan daily production levels

One of the first questions a chef and foodservice manager need to ask themselves is "How much of each dish to prepare today?" This is a question that needs to be answered every day. Not only do they need to ensure they have enough ingredients to prepare the food, but they also need to schedule enough staff to prepare and serve the food.

The process for determining how much of each menu item needs to be prepared is based on the following formula (Dopson and Hayes, 2011):

Equation 25.19: Cost of food sold in % at Hugo's Place

$$\text{Prior Day's Carryover} \pm \text{Today's Production} = \text{Today's Sales forecast} \pm \text{Margin of Error}$$

Compiled by Miguel Gassman from Multiple Data Sources.

where *Prior Day's Carryover* is the amount of food that was produced for the day before that was not sold and can be carried over to be sold today without affecting the quality of the dish and *Margin of Error* should be a small sum because forecasting food sales is an imprecise science, so usually foodservice managers will find they need to produce a few more of each item.

From the above example (Table 25.12), it can be seen for the African chicken dish that five extra portions are produced as the safety margin, that is why the new production is 45 portions for the day.

For the sautéed vegetables, there were zero items carried over. This is because the quality of vegetables is greatly reduced from 1 day to the next, so it cannot be kept from 1 day to the next. This does not mean that if not all portions are used, the vegetables are thrown away. The vegetables will be used to prepare another dish such as soup or stews.

For the Serradura, there are 120 portions carried over, which is a lot more than the forecasted daily average. This is because some items when produced are in bulk, as producing one item only takes a lot of manpower, and the items can be stored for a while without the quality deteriorating. The same happens for the lamb curry, which is a dish that takes a long time to prepare from scratch; as such, Chefs normally produce large batches and

TABLE 25.12 Example of production schedule.

Menu item	Sales forecast	Prior Day's carryover	New production	Total available	Number sold	Carryover
African chicken	55	15	45	60		
Lamb curry	52	12	100	112		
Sautéed vegetables	78	0	100	100		
Serradura	45	120	0	120		

Compiled by Miguel Gassman from Multiple Data Sources.

TABLE 25.13 Example of a food requisition order.

Item requisitioned	Unit	Quantity requested	Quantity issued	Unit cost	Total cost
Rice	Kg	10	10	$12.00	$120.00
Beef chuck	Kg	12	15	$85.00	$1275.00
Cabbage	Kg	3	2.5	$8.00	$20.00
Canned tomato	Can	10	10	$12.00	$120.00
Total					**$1535.00**

Compiled by Miguel Gassman from Multiple Data Sources.

then extra batches and then store them in individual portions; they will then just finish the cooking once the food is ordered. Also, some dishes get better with time if properly stored.

25.5 Issue needed products to production areas

Requisitioning ingredients from the storeroom should not be an overly complicated procedure. It, however, cannot be so easy that anyone can go into the storeroom at any time to collect the ingredients. It is important that all food collected from the storeroom should always be requisitioned before pickup. This requisition should then be preapproved by management before any food is collected. Although it is important to ensure that all products are requisitioned, it is a relatively easy procedure to ensure product security, if the following steps are followed (Dopson and Hayes, 2011):

- Food and supplies should only be requisitioned on an as-needed basis
- Required items can only be issued with prior management approval
- Each person removing any item from the storeroom should sign for it
- Products that do not get used should be returned to the storeroom whenever possible.

It is important to remember that what is issued is very often not exactly what was requested; take for example the requisition order below (Table 25.13):

For the ingredients above, for the rice and canned tomatoes, the exact same amount of food ordered is issued as it is easy to measure or count and issue.

For the beef chuck, it is difficult to get a piece of beef that weighs exactly 12 kg, as such whole portions of beef chuck are issued until the minimum order is completed.

For the cabbage, only 2.5 kg is issued as may be only 2.5 kg is available in the storeroom.

As for the amount charged, it is based on the amount issued, not the amount ordered.

25.6 Manage the food and beverage production process

Managing the food production area is a process of controlling five areas (Dopson and Hayes, 2011):

- Waste
- Overcooking

- Overportioning
- Improper carryover utilization
- Inappropriate make or buy decisions

25.6.1 Waste

Waste is very often thought of a minor cost; however, it is important to remember that every time something is thrown away, money is being thrown away. Not cleaning a pot properly when a dish is prepared, the food left over in the pot is then thrown away. Little costs like these add up and, in the end, form a large and important amount.

25.6.2 Overcooking

Overcooking affects the quality of the food as most foods are very heavy in moisture, so when we overcook the food, more water than is planned for evaporates, so the yield is a lot less. Take for example a piece of roast beef, which should be cooked for 1 h. If we let the beef cook for 1.5 h, the size of the beef will be a lot smaller than a similar piece cooked for only 1 h. Also, the meat will be a lot dryer, tougher, and have a lot less flavor. Also, often when we overcook, we burn the food. The only solution for burned food is normally to throw it away, which means we are creating more waste. Overcooking is especially critical in the pastry, as when the food is overcooked, most of the time the only solution is to make a new batch.

Therefore, in an attempt to control overcooking, it is necessary to strictly enforce the use of standardized recipes. If everyone follows the standardized recipe, the chance of overcooking is greatly reduced.

25.6.3 Overportioning

Over portioning is a very widely talked about subject, not only because of the cost implications but also because of operational standardization of the dishes. If 6 kg of a dish has been prepared to serve 100 gr portions to 60 guests, it is important to make sure everyone get correct portion. If we start serving everyone 120 g, then after 50 guests have been served, we will run out of food. Normally the cost of the menu has been planned on 100 g per person; if they are served portions of 120g, then the food cost is 20% higher than expected.

Also, a person is always served a larger portion than what the actual portion is; when the guests come to the restaurant and are served the actual proper size, they will feel as if they are being robbed as the portion is so much smaller.

It is therefore important to ensure that all the necessary tools are made available to the staff to be able to quickly and efficiently prepare and serve the correct size portion every time.

It is important to establish the *standard portion size*, which is defined as the quantity of any item that is to be served each time that item is ordered. It is basically the exact amount of food to be served for each particular dish to each guest at any given time. Every item on the menu can be quantified by one of the three ways: weight, volume, and count (Dittmer and Heefe, 2009).

1. *Weight*: Normally expressed in grams, it is frequently used to measure sizes of portions, for example, steak.
2. *Volume*: Usually measured in milliliters, it is normally used to measure liquids such as soups, coffee, juices, etc.
3. *Count*: Used by operators to ensure all guests get the same quantity of an item, for example, eggs or sausages: Some items are also purchased by count, which defines their size such as prawns: prawn size at 60–70 pieces per kilogram are a lot smaller that prawns that are 20–30 pieced per kilogram.

25.6.4 Improper carryover utilization

When food that is kept from one day to the next as it was not sold is not properly packed and stored, the quality of the food will not be good enough to reuse. In this case, there is no other option than to throw it away. It is therefore necessary to ensure that if food is to be carried over to the next day, it is properly stored. If food cannot be carried over to the next day, then it is important that not too much is produced—only produce the amount that is required, based on your predictions.

25.6.5 Inappropriate make or buy decisions

In an effort to reduce labor costs, many operators decide to purchase food that is preprepared, also known as convenience foods or ready foods. This is not only done to save food costs but also because sometime a particular item requires very specialized equipment so it cannot be made in house. When deciding if a product should be made from scratch or should be bought preprepared, the following four points should be taken into consideration:

1. Is the quality acceptable? If the quality is not good enough, it should not be used.
2. Will the product save labor? If it does not save labor, then what is the use? Normally convenience foods are more expensive.
3. Would it matter if the guest knew that you are using preprepared products? Do you mind if they know that the food you are selling was not 100% made in your restaurant?
4. Does the product come in an acceptable package size? If it come in large packages of five portions each, and you only need one portion, what do you do with the other four portions?
5. Is the appropriate storage space available? Very often these foods come frozen, so is there enough freezer space?

25.7 Price the products at a price so that customers feel it is a value for money operation

We have so far discussed various important points on how to control your costs. The process started with maintaining your sales histories so that it could better forecast your sales,

once we know more or less how much business we will be doing we can order the correct amount of ingredients and store them accordingly. We then plan our daily production levels and ensure that we have not only enough ingredients but also enough staff to prepare and serve the food. The food is then requisitioned, picked up from the storeroom and prepared, and ready to serve to the guest.

Now it is the next step and very possible the most important step, calculating the selling price. After all the hard work has been put into the preparation of the food, if the guests feel that the value is not there, they will not buy the product. So, it is important that the items are priced correctly.

Very often when the company is making a loss, although all the control measures have been put in place properly, the first thing the managers say is that the prices are too low. The goal of any company is to increase revenue, which is calculated by

Equation 25.20: Calculating Revenue

$$\text{Price} \times \text{Number of items sold} = \text{Revenue}$$

Compiled by Miguel Gassman from Multiple Data Sources.

From the above formula we can see that two factors that affect total revenue are *price* and *number of items sold*. Following the theory of law and demand, the higher the price, the lower the number of items sold and vice versa, the lower the price, the higher the volume of sales. So, whenever you increase your prices, the volume of sales will also go down.

Customers are very conscious of the *price/value relationship*. Should they feel that the value is there, they will not mind paying whatever price is stipulated. It is therefore necessary to ensure that you get the correct pricing strategy. Before you decide on the prices you will be charging, it is necessary to take into consideration the following factors that significantly affect your level of business.

1. *Competition*: What your competitors charge is definitely a factor that affects your price. If two competitors offer a similar product, customers usually go for the cheapest. However, if the quality of one of the products is better and more expensive than the other and the customers feel the price is justified, they will choose the more expensive product. It is also important to remember that it is very easy for a competitor to lower their prices by offering a lower quality product. Never assume because your competitor offers a cheaper product, you also have to offer the product at the same price.
2. *Service levels*: When the service levels are high, guests naturally expect to pay more. However, it is important to make sure the service level is not only high but also good. Having all the necessary hardware to provide great service but then having staff who are unqualified will degrade the experience for the customer drastically. They might not want to return if this happens. So, it is important to have a very high level of consistency in your service.

3. *Guest type*: It is important to identify who your customers are and what they value, as well as how much can they afford to pay. Some guests are more sensitive to prices than others. Once you know what type of customer you are going to serve, then you can plan your pricing accordingly.
4. *Product quality*: Generally speaking, most guests think the higher the quality, the higher the price. It is necessary to remember that not all guests think that all products are of a high quality. It is important then that you be able to identify the best quality product for the right price that the customer will be willing to pay for. The quality will have to be of a consistent quality as well.
5. *Portion size*: It is important to remember that guests eat with their eyes first. So, if you give them dish that looks very small on a very large oversized plate, they might think the portion is tiny. If you give the same portion on a regular size dish, taking this into consideration, it is also important to note that the larger the portion, the higher the cost. So, it is important to ensure that you prepare the correct portion using the standardized recipes which will have more or less standardized cost.
6. *Ambience*: In most cases, creating the right ambience in a restaurant costs money. It could be the decoration or the entertainment. In some cases, guests do not like paying more for the ambience.
7. *Meal period*: As a rule, people are willing to spend more at diner than at lunch. This is because at dinner they normally have more time to relax and enjoy the meal. At lunch time most people only have a limited time to eat so they prefer not to have to spend too much money on the meal.
8. *Location*: The location of your establishment also very much affects the prices you charge. If you are in a location that has a lot of competition in the area, you will need to charge more or less what the competition charges. If you are in a location where the customers have no choice but to use your establishment, then you might be able to charge premium prices. Take for example the amusement parks. The operators in these venues can charge premium prices because they know that the customers do not really have much of a choice.
9. *Sales mix*: It is, most probably, the most important factor when it comes to pricing. It is important to remember that guests do not only buy one item in your restaurant, but also they buy a variety of items. It is therefore important to have some items with a low price and some items with a higher price. The goal is at the end, the total revenue is what is expected.

25.7.1 Assigning menu prices

There are two main methods of assigning menu prices:

1. Product cost %
2. Product contribution margin

25.7.1.1 Product cost %

This is one of the most common methods of assigning menu prices. The formula for calculating the selling price of the item is as follows (the following equation):

Equation 25.21: Product cost

$$\text{Selling price in \$} = \frac{\text{Food cost of the dish(\$)}}{\text{Desired food cost\%}}$$

So for example, if we are selling hotdogs. The food cost of the hot dog is $15.00.

We have established that we want a food cot % of 35%, the selling price of the hotdog will be:

$$\text{Selling price in \$} = \frac{\$15.00}{35\%} = \$42.86$$

Compiled by Miguel Gassman from Multiple Data Sources.

We can then round off the price to any of the following:

- Round up to either $43.00 or $45.00
- Round down to $42.00 or $40.00

25.7.1.2 Product contribution margin

A contribution margin is defined as the amount that is left after the product cost of the menu item is removed from the sales price (Dopson and Hayes, 2011). Therefore, the formula for calculating the selling price using the contribution margin is seen in the following equation:

Equation 25.22: The contribution margin:

$$\text{Selling Price(\$)} = \text{Cost Price of item(\$)} + \text{Desired Contribution Margin}$$

So, for the case of the hotdog above, if the restaurant wants to make $20.00 contribution margin on every hotdog, they sell the selling price for the hot dog will be:

$$\text{Selling Price(\$)} = \$15.00 + \$20.00 = \$35.00$$

Compiled by Miguel Gassman from Multiple Data Sources.

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