Chapter 2
Demand

Demand needs to be estimated for the future periods. However, demand can fluctuate also. Variation in the demand might be as follows:

(i) Increase in demand
(ii) Decrease in demand

An increase in demand may be owing to the reasons as follows:

(a) The product may be liked by the customers, and therefore the demand has increased. Either the number of customers might increase or similar number of consumers started purchasing the item in comparatively larger numbers. It may also be possible that number of customers and the purchased items per customer both have increased.
(b) Because of the competition with other producer companies, the price per item is reduced. The consumers have started purchasing larger quantities due to comparatively lower price.
(c) As the product is advertised a lot, the sales have increased.

Demand rate increase can be depicted by Fig. 2.1, where annual demand or demand rate per year, D is increased to D_1. Because of higher demand rate, the similar lot will be consumed earlier.

Similarly, a decrease in demand might be because of the following reasons among others:

(a) The product is not liked by the consumers. Either the number of customers has decreased or similar number of consumers started purchasing in smaller quantities. There may also be a possibility that number of customers and the desired items per customer both have decreased.
(b) For the reasons, such as an increased cost of transportation and/or manufacturing, price of the item has increased. Because of an increased price, customers might purchase in lower quantities.

S. Sharma, *Inventory Parameters*, DOI 10.1007/978-981-10-4545-5_2

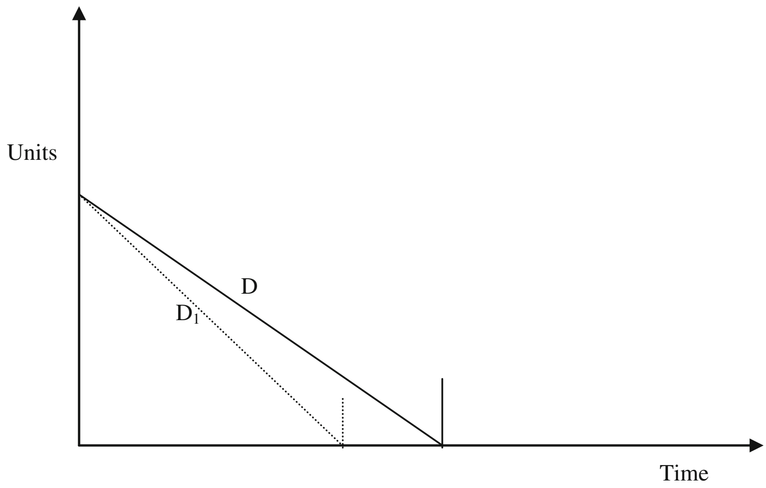

Fig. 2.1 Demand rate increase

(c) The sales have decreased because of other substitutes/alternatives available in the market.

Demand rate decrease can be depicted by Fig. 2.2, where D is decreased to D_1. Because of a decreased demand rate, the similar lot will be completely consumed taking comparatively longer time.

Demand and its variation are among significant factors to be considered for analysis concerning inventory management.

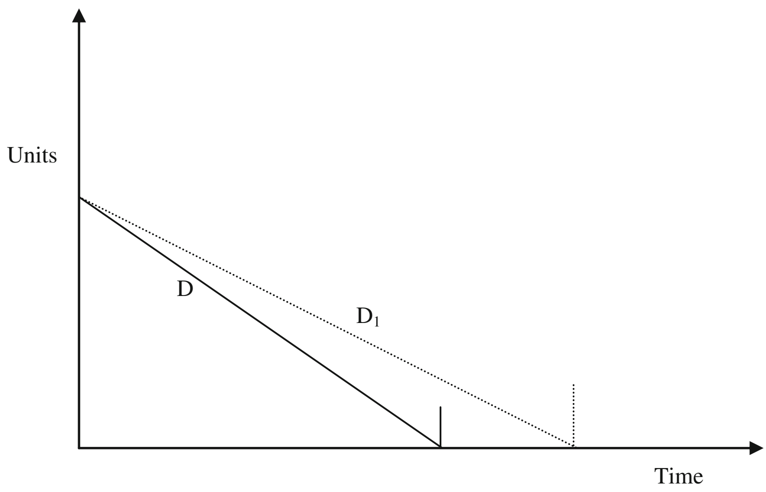

Fig. 2.2 Demand rate decrease

2.1 Increase in Demand

With an increase in demand, the profit earned by the retailer is advantageous. However, it is necessary to know the effects on the purchasing pattern and also on the space requirement to store the items.

Example 2.1
Assume the following parameters:

Annual demand, D = 600 units
Ordering cost, C = ₹30
Annual inventory carrying cost per unit, I = ₹10

Using the Eq. (1.4),

$$Q^* = \sqrt{\frac{2DC}{I}} = \sqrt{\frac{2 \times 600 \times 30}{10}} = 60 \text{ units}$$

And, the total related annual cost from Eq. (1.5),

$$E^* = \sqrt{2DCI} = \sqrt{2 \times 600 \times 30 \times 10} = ₹600$$

Now, if demand rate is increased by 15% (say), then the new annual demand is 690 units. The calculation for a revised purchasing lot size and cost is as follows:

$$Q^* = \sqrt{\frac{2 \times 690 \times 30}{10}} = 64.34 \approx 64 \text{ units}$$

And

$$E^* = \sqrt{2 \times 690 \times 30 \times 10} = ₹643.43 \approx ₹643$$

Instead of purchasing 60 units as lot size, 64 units are now procured in one lot.

$$\text{Relative change in } Q = \frac{64.34 - 60}{60} = \frac{4.34}{60} = 0.072$$

$$\% \text{ change in } Q = 0.072 \times 100 = 7.2\%$$

$$\text{Similarly \% change in } E = \frac{643.43 - 600}{600} = \frac{43.43}{600} = 0.072$$
$$= 7.2\%$$

Example 2.2
Consider the base data of Example 2.1. Analyze if an increase in *D* is as follows:

Increase in *D*	5%	10%	15%	20%	25%	30%
D	630	660	690	720	750	780

Following the procedure explained in Example 2.1, demand *D* is increased by the given percentage and approximate values are obtained such as:

(i) *Q*
(ii) % increase in *Q*
(iii) *E*
(iv) % increase in *E*

Table 2.1 represents the variation in parameters with reference to an increase in demand.

With the increase in demand, optimum lot size and related cost increase. Such information helps in the following activities:

(i) Procurement planning
(ii) Transportation planning
(iii) Arrangement of space required
(iv) Related costs/expenditure in purchase of larger quantities

Let:

P = % variation in parameter

For the present discussion, *P* refers to the % increase in demand, therefore the increased demand:

Table 2.1 Effects on parameters with respect to demand increase

Increase in *D*	5%	10%	15%	20%	25%	30%
I	630	660	690	720	750	780
Q	61	63	64	66	67	68
% Increase in *Q*	2.5%	4.9%	7.2%	9.5%	11.8%	14.0%
E	615	629	643	657	671	684
% Increase in *E*	2.5%	4.9%	7.2%	9.5%	11.8%	14.0%

$$D_1 = \left(1 + \frac{P}{100}\right)D$$

$$\begin{aligned}
\text{Increase in the lot size} &= \sqrt{\frac{2D_1C}{I}} - \sqrt{\frac{2DC}{I}} \\
&= \sqrt{\frac{2\left(1 + \frac{P}{100}\right)DC}{I}} - \sqrt{\frac{2DC}{I}} \\
&= \sqrt{\frac{2DC}{I}}\left[\sqrt{\left(1 + \frac{P}{100}\right)} - 1\right]
\end{aligned}$$

And:

$$\%\ \text{increase in}\ Q = \sqrt{\left(1 + \frac{P}{100}\right)} - 1$$

Now:

$$\begin{aligned}
\text{Additional cost incurred} &= \sqrt{2D_1CI} - \sqrt{2DCI} \\
&= \sqrt{2CI}\left[\sqrt{D_1} - \sqrt{D}\right] \\
&= \sqrt{2CI}\left[\sqrt{\left(1 + \frac{P}{100}\right)D} - \sqrt{D}\right] \\
&= \sqrt{2DCI}\left[\sqrt{\left(1 + \frac{P}{100}\right)} - 1\right]
\end{aligned}$$

And:

$$\%\ \text{increase in}\ E = \sqrt{\left(1 + \frac{P}{100}\right)} - 1$$

These generalized results help the decision makers/business owners to know well in advance the estimation related to the following:

(a) What will be the increase in optimum lot size?
(b) How much additional space would be needed to place the additional units of an item?
(c) How much additional expenditure would be required because of the cost increase?

The derived results are also summarized in Table 2.2.

Table 2.2 Results with reference to % increase in demand

Increase in the lot size	$\sqrt{\frac{2DC}{I}}\left[\sqrt{\left(1+\frac{P}{100}\right)}-1\right]$
% Increase in the lot size	$\sqrt{\left(1+\frac{P}{100}\right)}-1$
Additional related cost	$\sqrt{2DCI}\left[\sqrt{\left(1+\frac{P}{100}\right)}-1\right]$
% Increase in cost	$\sqrt{\left(1+\frac{P}{100}\right)}-1$

2.2 Decrease in Demand

Although a decrease in demand is not preferred in general, yet there is every possibility to face it. With a decrease in demand, there is profit loss. However, that can be overcome by some other item. It is of practical relevance to know the effects of a decrease in demand on various parameters.

Example 2.3
Consider the base data of Example 2.1. Analyze whether a decrease in D is as follows:

% Decrease in D	5%	10%	15%	20%	25%	30%
D	570	540	510	480	450	420

Following the procedure explained in Example 2.1, demand D is decreased by the given percentage and approximate values are obtained such as:

(i) Q
(ii) % decrease in Q
(iii) E
(iv) % decrease in E

Table 2.3 represents the approximate variation in parameters with reference to a decrease in demand.

With the decrease in demand, optimum lot size and related cost decrease. However, the % decrease is more pronounced in comparison with the previous situation, i.e., the % variation of output parameters corresponding to the demand increase. Such information helps in the following activities:

Table 2.3 Effects on parameters with respect to demand decrease

% Decrease in D	5%	10%	15%	20%	25%	30%
D	570	540	510	480	450	420
Q	58	57	55	54	52	50
% Decrease in Q	2.5%	5.1%	7.8%	10.6%	13.4%	16.3%
E	585	569	553	537	520	502
% Decrease in E	2.5%	5.1%	7.8%	10.6%	13.4%	16.3%

(i) Purchase planning
(ii) Effects on material handling
(iii) How much space would be vacant?
(iv) How much fund is expected to be available for alternate investment?

Let:

P = % decrease in demand

The decreased demand:

$$D_1 = \left(1 - \frac{P}{100}\right)D$$

$$\begin{aligned}\text{Decrease in the lot size } &= \sqrt{\frac{2DC}{I}} - \sqrt{\frac{2D_1C}{I}} \\ &= \sqrt{\frac{2DC}{I}} - \sqrt{\frac{2\left(1 - \frac{P}{100}\right)DC}{I}} \\ &= \sqrt{\frac{2DC}{I}}\left[1 - \sqrt{\left(1 - \frac{P}{100}\right)}\right]\end{aligned}$$

And:

$$\%\text{ decrease in } Q = 1 - \sqrt{\left(1 - \frac{P}{100}\right)}$$

Now:

$$\begin{aligned}\text{Cost reduction} &= \sqrt{2DCI} - \sqrt{2D_1CI} \\ &= \sqrt{2CI}\left[\sqrt{D} - \sqrt{D_1}\right] \\ &= \sqrt{2CI}\left[\sqrt{D} - \sqrt{\left(1 - \frac{P}{100}\right)D}\right] \\ &= \sqrt{2DCI}\left[1 - \sqrt{\left(1 - \frac{P}{100}\right)}\right]\end{aligned}$$

And:

$$\%\text{ decrease in } E = 1 - \sqrt{\left(1 - \frac{P}{100}\right)}$$

Table 2.4 Results with reference to % decrease in demand

Decrease in the lot size	$\sqrt{\frac{2DC}{I}}\left[1-\sqrt{\left(1-\frac{P}{100}\right)}\right]$
% Decrease in the lot size	$1-\sqrt{\left(1-\frac{P}{100}\right)}$
Cost reduction	$\sqrt{2DCI}\left[1-\sqrt{\left(1-\frac{P}{100}\right)}\right]$
% Decrease in cost	$1-\sqrt{\left(1-\frac{P}{100}\right)}$

These generalized results help the decision makers/business owners to know well in advance the estimation related to the following:

(a) What will be the decrease in optimum lot size?
(b) How much additional space would be available to place some other inventory item?
(c) In order to compensate for the loss of profit, how much additional money is available for purchase, store, and sale of some other suitable item?

The derived results are also summarized in Table 2.4.

2.3 Stock Out Situation

The demand exists in the stock out situation, but there is no inventory stock to satisfy those demands. This is shown in Fig. 2.3.

Example 2.4
Assume the following parameters:

Annual demand, D = 600 units
Ordering cost, C = ₹30
Annual inventory carrying cost per unit, I = ₹10
Annual stock out cost per unit, K = ₹200

Using the Eq. (1.11),

$$\begin{aligned} Q^{*} &= \sqrt{\frac{2DC(K+I)}{IK}} \\ &= \sqrt{\frac{2\times 600\times 30(200+10)}{10\times 200}} \\ &= 61.4817 \text{ units} \end{aligned}$$

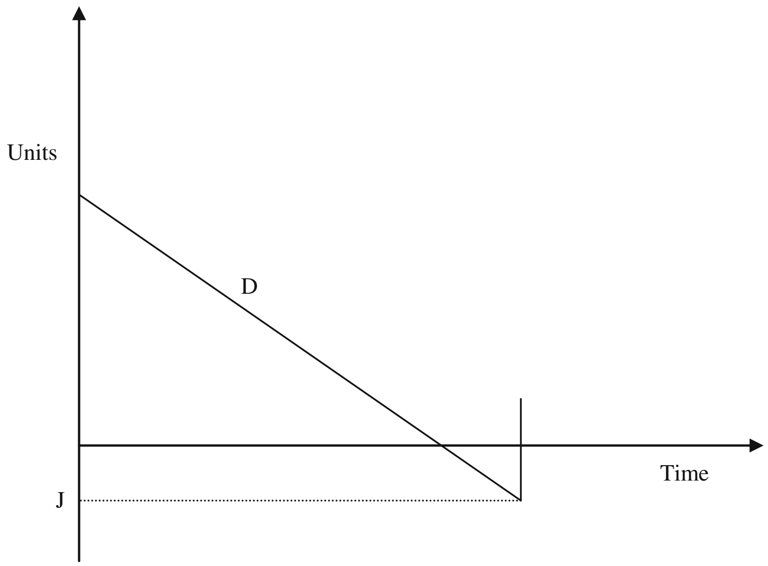

Fig. 2.3 Stock out situation

From the Eq. (1.12), optimum stock out units:

$$J^* = \sqrt{\frac{2DCI}{K(K+I)}}$$
$$= \sqrt{\frac{2 \times 600 \times 30 \times 10}{200(200+10)}}$$
$$= 2.93 \text{ units}$$

And, the total related annual cost from Eq. (1.13),

$$E^* = \sqrt{\frac{2DCIK}{(K+I)}}$$
$$= \sqrt{\frac{2 \times 600 \times 30 \times 10 \times 200}{(200+10)}}$$
$$= ₹585.54$$

If the stock out situation is properly managed, then there is an overall reduced total cost by optimizing the procurement ordering quantity and maximum stock out units. In order to handle the stock out scenario, the ordering quantity has relatively increased. Thus, the introduced shortages or stock outs (in comparison with no stock outs) result into the following:

(i) An increased order size
(ii) A decreased total related cost

Such quantification helps in knowing well in advance the requirement of additional space and also the availability of additional money for better potential use.

2.3.1 Demand Increase

Assume that the demand D is increased to D_1. This is shown in Fig. 2.4. Since a variation in demand affects the order size, stock out units, and total cost, it is of interest to analyze these effects. As it is explained before, the demand is increased by certain percentage and analysis is conducted after computation.

Example 2.5
Consider the base data of Example 2.4 as given below:

D	C	I	K	Q	E	J
600	30	10	200	61.4817	585.54	2.93

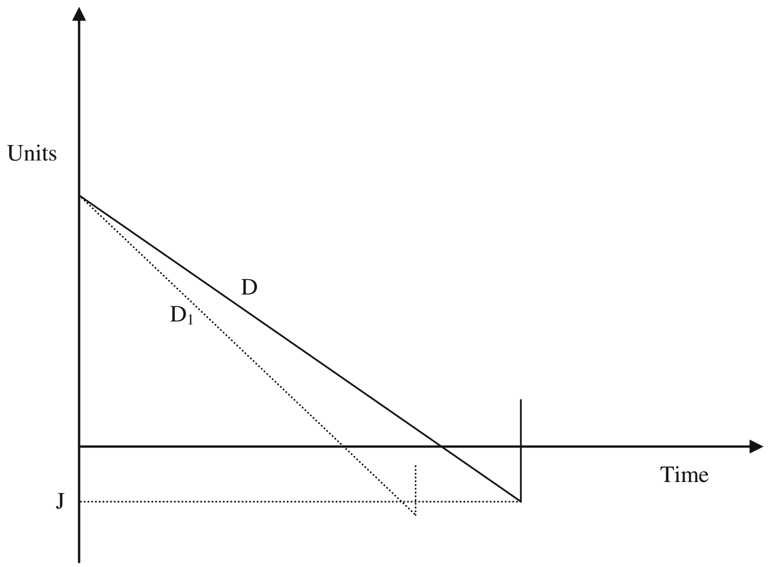

Fig. 2.4 Demand increase with stock out situation

Table 2.5 Effects on parameters with stock out corresponding to demand increase

% Increase in D	5%	10%	15%	20%	25%	30%
D	630	660	690	720	750	780
Q	63	64	66	67	69	70
% Increase in Q	2.5%	4.9%	7.2%	9.5%	11.8%	14.0%
E	600	614	628	641	655	668
% Increase in E	2.5%	4.9%	7.2%	9.5%	11.8%	14.0%
J	3.00	3.07	3.14	3.21	3.27	3.34
% Increase in J	2.4%	4.8%	7.2%	9.5%	11.7%	13.9%

Analyze if an increase in D is as follows:

% Increase in D	5%	10%	15%	20%	25%	30%
D	630	660	690	720	750	780

Following the procedure explained in Example 2.4, demand D is increased by the given percentage and approximate values are obtained such as:

(i) Q
(ii) % increase in Q
(iii) E
(iv) % increase in E
(v) J
(vi) % increase in J

Table 2.5 represents the approximate variation in parameters with reference to an increase in demand. Optimum lot size and cost increase. The analysis helps in knowing the effects on optimum value of maximum stock out units that tend to increase. Usefulness also lies in setting suitable value of maximum shortages that are allowed and planning for other operational activities (on the basis of the output parameters thus arrived), after imposing various practical realities specific to a particular business and consumer/customer group. A successful implementation depends on the estimation of stock out cost for a particular item/business/industry.

As an increased demand $D_1 = \left(1 + \frac{P}{100}\right)D$, and lot size $Q^* = \sqrt{\frac{2DC(K+I)}{IK}}$, increase in lot size:

$$= \sqrt{\frac{2\left(1 + \frac{P}{100}\right)DC(K+I)}{IK}} - \sqrt{\frac{2DC(K+I)}{IK}}$$

$$= \sqrt{\frac{2DC(K+I)}{IK}}\left[\sqrt{\left(1 + \frac{P}{100}\right)} - 1\right]$$

$$\text{Increase in the optimum stock out units} = \sqrt{\frac{2D_1CI}{K(K+I)}} - \sqrt{\frac{2DCI}{K(K+I)}}$$
$$= \sqrt{\frac{2\left(1+\frac{P}{100}\right)DCI}{K(K+I)}} - \sqrt{\frac{2DCI}{K(K+I)}}$$
$$= \sqrt{\frac{2DCI}{K(K+I)}}\left[\sqrt{\left(1+\frac{P}{100}\right)} - 1\right]$$

And, increase in the total related cost:

$$= \sqrt{\frac{2D_1CIK}{(K+I)}} - \sqrt{\frac{2DCIK}{(K+I)}}$$
$$= \sqrt{\frac{2DCIK}{(K+I)}}\left[\sqrt{\left(1+\frac{P}{100}\right)} - 1\right]$$

The derived results are also summarized in Table 2.6.

2.3.2 *Demand Decrease*

Assume that the demand D is decreased to D_1. This is shown in Fig. 2.5 as the decreased demand takes longer time to consume.

Example 2.6
Consider the base data of Example 2.4 as given below:

D	C	I	K	Q	E	J
600	30	10	200	61.48	585.54	2.93

Table 2.6 Results with reference to % increase in demand along with stock out

Increase in the lot size	$\sqrt{\frac{2DC(K+I)}{IK}}\left[\sqrt{\left(1+\frac{P}{100}\right)} - 1\right]$
% Increase in the lot size	$\sqrt{\left(1+\frac{P}{100}\right)} - 1$
Additional related cost	$\sqrt{\frac{2DCIK}{(K+I)}}\left[\sqrt{\left(1+\frac{P}{100}\right)} - 1\right]$
% Increase in cost	$\sqrt{\left(1+\frac{P}{100}\right)} - 1$
Increase in the stock out units	$\sqrt{\frac{2DCI}{K(K+I)}}\left[\sqrt{\left(1+\frac{P}{100}\right)} - 1\right]$
% Increase in the stock out units	$\sqrt{\left(1+\frac{P}{100}\right)} - 1$

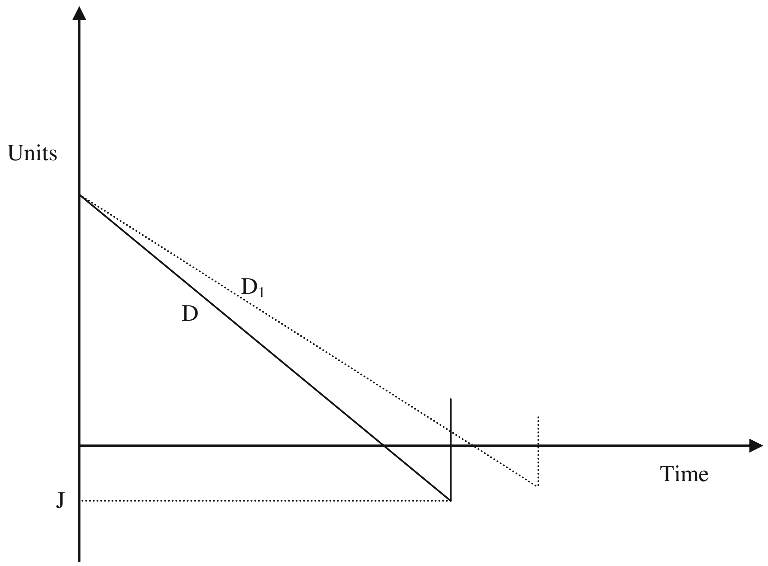

Fig. 2.5 Demand decrease with stock out situation

Analyze if a decrease in *D* is as follows:

% Decrease in *D*	5%	10%	15%	20%	25%	30%
D	570	540	510	480	450	420

Demand *D* is now decreased by the given percentage and approximate values are obtained such as:

(i) *Q*
(ii) % decrease in *Q*
(iii) *E*
(iv) % decrease in *E*
(v) *J*
(vi) % decrease in *J*

Table 2.7 represents the variation in parameters with reference to a decrease in demand, Optimum lot size, and cost decrease. The analysis helps in knowing the effects on optimum value of maximum stock out units that tend to decrease. Various resources including space and money will be available for alternative use.

A reduction in demand and its effects are illustrated with the use of example. However, it is necessary to generalize the results for wide applications concerning any business/industry/product type. Such a generalization of the results will help in developing furthermore insights.

Table 2.7 Effects on parameters with stock out corresponding to demand decrease

% Decrease in D	5%	10%	15%	20%	25%	30%
D	570	540	510	480	450	420
Q	59.92	58.33	56.68	54.99	53.24	51.44
% Decrease in Q	2.53%	5.13%	7.80%	10.56%	13.40%	16.33%
J	2.85	2.78	2.70	2.62	2.54	2.45
% Decrease in J	2.53%	5.13%	7.80%	10.56%	13.40%	16.33%
E	570.71	555.49	539.84	523.72	507.09	489.90
% Decrease in E	2.53	5.13	7.80	10.56	13.40	16.33

Let:

P = % decrease in demand

The decreased demand:

$$D_1 = \left(1 - \frac{P}{100}\right)D$$

Decrease in the lot size:

$$= \sqrt{\frac{2DC(K+I)}{IK}} - \sqrt{\frac{2\left(1-\frac{P}{100}\right)DC(K+I)}{IK}}$$

$$= \sqrt{\frac{2DC(K+I)}{IK}}\left[1 - \sqrt{\left(1-\frac{P}{100}\right)}\right]$$

Decrease in the optimum stock out units $= \sqrt{\frac{2DCI}{K(K+I)}} - \sqrt{\frac{2D_1CI}{K(K+I)}}$

$$= \sqrt{\frac{2DCI}{K(K+I)}} - \sqrt{\frac{2\left(1-\frac{P}{100}\right)DCI}{K(K+I)}}$$

$$= \sqrt{\frac{2DCI}{K(K+I)}}\left[1 - \sqrt{\left(1-\frac{P}{100}\right)}\right]$$

And; decrease in the total related cost:

$$= \sqrt{\frac{2DCIK}{(K+I)}} - \sqrt{\frac{2D_1CIK}{(K+I)}}$$

$$= \sqrt{\frac{2DCIK}{(K+I)}}\left[1 - \sqrt{\left(1-\frac{P}{100}\right)}\right]$$

Decrease in the demand results into:

(a) Reduction in the procurement lot size
(b) Decrease in the optimum stock out units
(c) Reduction in the total related cost

As discussed before, such information is useful for the estimation of the following:

(i) Reduction in the applicable transportation and material handling cost
(ii) Availability of space for storing and selling other alternative item
(iii) Availability of funds for a particular business situation

The derived results are also summarized in Table 2.8.

% decrease in the output parameters (concerning demand reduction)

$$= 1 - \sqrt{\left(1 - \frac{P}{100}\right)}$$

% increase in the output parameters (concerning demand increase)

$$= \sqrt{\left(1 + \frac{P}{100}\right)} - 1$$

The percentage decrease in the output parameters is relatively more in comparison with the percentage increase. This is demonstrated in Table 2.9. For all practical purposes, the demand cannot decrease by more than 100%, i.e., $P \leq 100$.

Analytically also, it can be shown for $P \leq 100$:

$$1 - \sqrt{\left(1 - \frac{P}{100}\right)} > \sqrt{\left(1 + \frac{P}{100}\right)} - 1$$

Table 2.8 Results with reference to % decrease in demand along with stock out

Decrease in the lot size	$\sqrt{\frac{2DC(K+I)}{IK}}\left[1 - \sqrt{\left(1 - \frac{P}{100}\right)}\right]$
% Decrease in the lot size	$1 - \sqrt{\left(1 - \frac{P}{100}\right)}$
Cost reduction	$\sqrt{\frac{2DCIK}{(K+I)}}\left[1 - \sqrt{\left(1 - \frac{P}{100}\right)}\right]$
% Decrease in cost	$1 - \sqrt{\left(1 - \frac{P}{100}\right)}$
Decrease in the stock out units	$\sqrt{\frac{2DCI}{K(K+I)}}\left[1 - \sqrt{\left(1 - \frac{P}{100}\right)}\right]$
% Decrease in the stock out units	$1 - \sqrt{\left(1 - \frac{P}{100}\right)}$

Table 2.9 Comparison of % variation in the output parameters

P	$1-\sqrt{\left(1-\frac{P}{100}\right)}$	$\sqrt{\left(1+\frac{P}{100}\right)}-1$
10	0.051	0.049
20	0.105	0.095
30	0.163	0.140
40	0.225	0.183
50	0.293	0.225
60	0.367	0.265
70	0.452	0.304
80	0.553	0.342
90	0.684	0.378
100	1	0.414

Or

$$2 > \sqrt{\left(1+\frac{P}{100}\right)+\sqrt{\left(1-\frac{P}{100}\right)}}$$

Maximum value of right hand side (R.H.S.) corresponds to P = 100, therefore:

$$2 > \sqrt{\left(1+\frac{100}{100}\right)+0}$$

Or

$$2 > \sqrt{2}$$

And, that is true.

2.4 Demand Estimation for Variety of Products

While estimating the demand of products, few factors should be taken care of. These factors vary from product to product, pertaining to different types of business/industry. Some of these might be as follows:

(i) FMCG
(ii) Pharmaceutical
(iii) Agricultural
(iv) Hi-tech

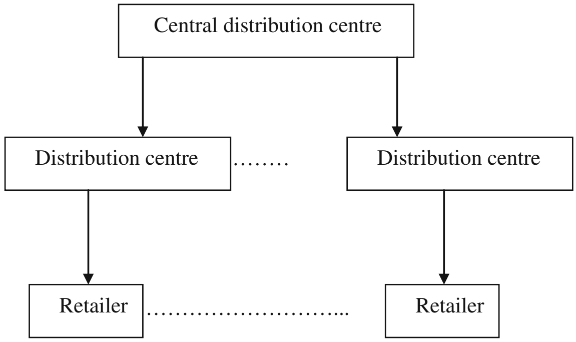

Fig. 2.6 Various levels in distribution system

2.4.1 *FMCG*

In case of the fast-moving consumer goods, demand might be estimated at various levels (Fig. 2.6) such as:

(a) Central distribution centre
(b) Distribution centre
(c) Retailer

Depending on the case, central distribution centre may ship the FMCG products to various distribution centres. Each distribution centre may also send the products to different retailers in a specific area. Estimation of a demand at distribution centres also depends on the transportation time and the duration for which the inventories are kept at a location before shipment. Additionally the following factors among others may also be considered:

(a) Season
(b) Geographical area
(c) Consumer group
(d) Retailer location
(e) Presence of the competitor products
(f) Price of the product
(g) Price discount offer by the company and its competitor
(h) Unavoidable price increase
(i) Advertisement of the product

2.4.2 *Pharmaceutical*

Additional attention may be paid to the following factors (Fig. 2.7) for an estimation of demand of the medicines:

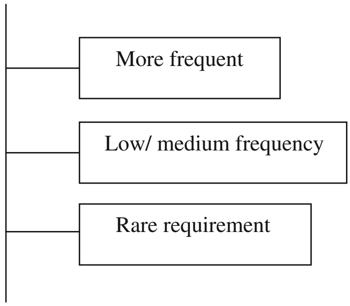

Fig. 2.7 Frequency of requirement for medicine

(a) Some of the medicines are more frequently required by the patients.
(b) There are requirements at low or medium frequency.
(c) Few medicines might be rarely required.

In view of the above, a judicious estimation regarding the demand should be made. Such estimation should also lead to the duration. Certain medicines might be needed more for a specific duration in a year. This may happen because of wide-spread disease in a particular season. This information is also helpful in determining the procurement ordering quantity on the basis of prediction.

In certain case, the retailer may also arrange for the medicines in a day or more if the customer is ready to wait. Such demands might be analyzed separately in the context of the following:

(i) Whether any stock should be kept for such occasional requirement?
(ii) If any stock is to be kept, what should be the quantity?

2.4.3 Agricultural

At a macro level, the following aspects would be helpful in understanding the agricultural scenario:

(a) Production of food grains
(b) Consumption side

In the context of the production of food grains, the following factors among others might be relevant:

(i) Area that is used for sowing a particular food grain
(ii) Yield per hectare
(iii) Growth rate concerning agriculture
(iv) Workers associated with agricultural tasks

(v) Area under irrigation

Concerning the consumption of food grains, the related factors among others might be:

(i) Earning level of the citizens
(ii) Population growth
(iii) Poverty level
(iv) Price of the food grains

These may help in macro level understanding of the supply-demand situation. In case where aggregate supply is more than the aggregate demand, then price reduction might happen affecting the demand positively. When aggregate demand is more than the aggregate supply, price rise happens and demand might decrease. However, after the farm output, the agricultural products including the food grains undergo several activities such as transportation, storage, and further processing among others.

In the context of fruits and vegetables, a demand should also be associated with the required freshness level. Qualitatively, the freshness level may be at lower level or higher level comparatively. The consumer who will purchase these items for consumption on the same day or for shorter period, might need comparatively lower freshness level. That is, their demand might be satisfied with less remaining shelf life also. On the other hand, the consumer who will purchase these items for consumption during the whole week or for longer periods might need comparatively higher freshness level. That is, their demands are satisfied with higher remaining shelf life.

2.4.4 Hi-Tech

In case of hi-tech products such as certain computer and telecommunication equipment, the product life cycle might be shorter. Thus, the demand estimation may also be linked to a shorter product life cycle. The existing version might become obsolete. Requirement of the exactly similar components/subassemblies also vanishes. Additionally, demands might be influenced by the following:

(i) Availability of substitute product:

In case where substitute product is available at the market place, the demands might be affected negatively.

(ii) Price:

When the price is on higher side, the demand might reduce. Relatively the demand might increase if price is on lower side.

(iii) Resale value:

In a situation, when resale value is considerable, it might be a considerable factor for some of the consumers for a decision regarding purchase.

(iv) Whether the citizens are technology savvy in general? or how much proportion is technology savvy?
(v) Purchasing power:

In general, higher purchasing power of the population may contribute toward purchase of the products.

(vi) Business requirement:

Because of a requirement of productivity improvement, hi-tech products may be used in the business process.

(vii) Peer/Societal pressure:

A section of the population may be inclined to purchase the product because of society pressure or peer group.

(viii) Govt. policy:

Government may also encourage the use of certain category of products in order to enhance its procedures/systems.

http://www.springer.com/978-981-10-4544-8

Inventory Parameters
Sharma, S.
2017, XI, 237 p. 47 illus., Hardcover
ISBN: 978-981-10-4544-8