**ASSIGNMENT SOLUTION FOR DECEMBER CYCLE 2022**

SEMESTER: **1** DATE: **29th October 2022**

SUBJECT: **BUSINESS ECONOMICS**

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**Solution for Question No: 1**

***Introduction***

The business world of today is constantly changing. There are a number of internal and external risk factors that come with its dynamic nature, such as intense competition, technological failure, inflation, recession, and constantly shifting government laws. As a result, every company must make decisions with a high degree of uncertainty. Forecasting demand comes into its own at this point. An organised procedure that an organisation uses to predict the future of one or all of its provided goods or services is known as demand forecasting, and it is also referred to as sales forecasting. It aids businesses in making well-informed decisions. Organizations use historical and current data to predict future trends and necessary changes.

***Concept Detail and Application***

Examples of demand forecasting in real life include:

* The short-term sales forecast for the following quarter is provided by a leading retail store that wants to expand into more areas.
* A car manufacturer would estimate its sales for the upcoming year or quarter if it planned to introduce a new model.

Profits are the ultimate goal of any business, so capital investments are crucial. The acquisition of all fixed assets that will generate revenue in the future is considered capital investment. After that, a lot of careful planning will be needed for a number of other things, like buying raw materials, keeping track of inventory, distributing funds, hiring workers and materials, and pricing. In addition, there might come a time when the company considers expanding further. A company's decision to investigate additional options to increase profits is known as expansion. It is possible to expand by entering new markets or other regions. These crucial decisions could only be made based on guesswork or assumptions if demand forecasting wasn't in place. The company would incur significant financial and labour costs as a result of this, which would result in losses, risks, and resource waste. Demand forecasting comes into play here.

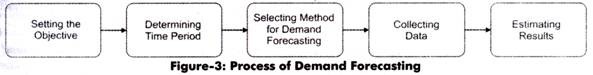
Using demand forecasting, the business organisations would make a detailed analysis and estimate the future demand of the product and then decide on its future prospects.

In the following ways, demand forecasting aids businesses:

* Gives the company a rough idea of the number of products or services that will likely be purchased in the future and their potential in both the current and external markets.
* Enables businesses to make important and well-informed choices about sales, manufacturing, pricing, inventory management, expansions, and other matters. thereby assisting businesses in shifting from reactive to proactive behaviour.
* Even though the outcomes may not be 100% accurate, efficient forecasting methods can significantly determine the future of an organisation's product(s) or service(s).

However, demand forecasting has to be systematically carried out in order to achieve accurate results.

Following are the steps to be carried out sequentially in the process of demand forecasting



* **Setting the objective**

Before beginning the process, it is essential to determine its purpose first and foremost. The goal can be defined in terms of short-term or long-term demand, industry or organisation-specific, or market or segment-specific demand. The planned research will have a clear direction if this objective is completed.

* **Determining the time period**

Forecasting can be done on a short-term (for example, one year) or long-term (for example, more than five years) basis depending on the goal. Businesses must take into account the ever-changing changes in the market and economy when making long-term forecasts because they are both dynamic.

* **Selecting method for demand forecasting**

For demand forecasting, both quantitative and qualitative approaches are available. However, not all forecasting methods will work for every situation. As a result, it is essential to carefully select the method based on the forecaster's level of expertise and experience, as well as the target date and time. For forecasting, there are numerous quantitative and qualitative approaches. Nevertheless, depending on the objective, time frame, and available data, the organisation may need to employ one or a combination of multiple approaches. It is essential to perform the forecasting process with the appropriate level of expertise because it also involves operational and financial costs.

* **Collecting and analysing data**

To carry out the forecasting procedure, appropriate data must be collected. Primary (first-hand data) or secondary (previously available data) sources—or both—may contain the data. Since the data is collected in its raw form, experts must analyse it to extract useful information.

* **Estimating results**

Last but not least, an estimate of demand for the specified years is made using the obtained data. Typically, the estimates will be presented as equations in a comprehensible format that can be understood and used.

***Conclusion***

The efficacy of the forecasting process has a significant impact on the data's accuracy. In terms of capital investments, profit margins, cash flows, inventory accounting, resource allocation, expansion decisions, operating costs, staffing, and price determination, demand forecasting aids in risk management. Simply put, it assists in determining the future demand for a service or product.

As a result, for organisations to make effective decisions regarding the product roadmap, it is essential to carry out the process of demand forecasting in a methodical and sequential manner.

**Solution for Question: 2**

***Introduction***

The cost is defined as the monetary value of expenditure incurred on a specific thing or activity. It refers to the amount of resources required for production of products and services. It may or may not be recorded in the books of accounts based on its type.

***Concept Detail and Application***

* Total Cost (or Short Run Total Cost - SRTC) is defined as the actual cost incurred by the business to produce a certain level of output. It consists of 2 elements: Total Fixed Cost (TFC) and Total Variable Cost (TVC).

Mathematically it is expressed as, **SRTC = TFC + TVC**

When Quantity, Q = 1,

TFC = 100

TVC = 20

**SRTC** = TFC + TVC = 100 + 20 = 120

When Quantity, Q = 2,

TFC = 100

TVC = 30

**SRTC** = TFC + TVC = 100 + 30 = 130

When Quantity, Q = 3,

TFC = 100

TVC = 40

**SRTC** = TFC + TVC = 100 + 40 = 140

* Average Fixed Cost (AFC) is the average of the total fixed costs that does not change with change in the levels of output. It is the fixed cost per unit obtained by dividing the Total Fixed Cost by the quantity of output.

Mathematically it is expressed as, **AFC = TFC/Q**

When Quantity, Q = 1,

TFC = 100

**AFC** = TFC/Q = 100/1 = 120

When Quantity, Q = 2,

TFC = 100

**AFC** = TFC/Q = 100/2 = 60

When Quantity, Q = 1,

TVC = 100

**AFC** = TFC/Q = 100/3 = 33.33

* Average Variable Cost (AVC) is the average of the variable cost per unit obtained by dividing the Total Variable Cost (TVC) by the quantity of output.

Mathematically it is expressed as, **AVC = TVC/Q**

When Quantity, Q = 1,

TVC = 20

**AVC** = TVC/Q = 20/1 = 20

When Quantity, Q = 2,

TVC = 30

**AVC** = TVC/Q =30/2 = 15

When Quantity, Q = 3,

TVC = 40

**AVC** = TVC/Q = 40/3 = 13.33

* Average Total Cost (or Average Cost -AC) is the sum total of the Fixed and Variable Costs divided by the quantity of output. It is also determined by adding the Average Fixed Cost (AFC) and Average Variable Cost (AVC).

Mathematically it is expressed as, **ATC = AFC + AVC**

When Quantity, Q = 1,

AFC = 100

AVC = 20

**ATC** = AFC + ATC = 100 + 20 = 120

When Quantity, Q = 2,

AFC = 50

AVC = 15

**ATC** = AFC + ATC = 50 + 15 = 65

When Quantity, Q = 3,

AFC = 33.33

AVC = 13.33

**ATC** = AFC + ATC = 33.33 + 13.33 = 46.66

* Marginal Cost (MC) is defined as the change in the Total Cost divided by the change in the quantity of output

Mathematically it is expressed as,MC **=**

When Quantity, Q = 1,

**=** 120 - 100 = 20

= 1 - 0 = 1

**MC** = = 20 / 1 = 20

When Quantity, Q = 2

**=** 130 - 120 = 10

= 2 - 1 = 1

**MC** = = 10 / 1 =10

When Quantity, Q = 3

**=** 140 - 130 = 10

= 3 - 2 = 1

**MC** = = 10 / 1 =10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Quantity(Q) | Total Fixed Cost (TFC) | Total Variable Cost (TVC) | Total Cost (TC) **TC = TFC+TVC** | Average Fixed Cost (AFC), **AFC = TFC/Q** | Average Variable Cost (AVC), **AVC = TVC/Q** | Average Total Cost (ATC), **ATC = AFC + AVC** | Marginal Cost (MC), **MC = Change in TC/ Change in Q** |
| 0 | 100 | 0 | **100** | **0** | **0** | **0** | **0** |
| 1 | 100 | 20 | **120** | **100** | **20** | **120** | **20** |
| 2 | 100 | 30 | **130** | **50** | **15** | **65** | **10** |
| 3 | 100 | 40 | **140** | **33.33** | **13.33** | **46.66** | **10** |
| 4 | 100 | 50 | **150** | **25** | **12.5** | **37.5** | **10** |
| 5 | 100 | 60 | **160** | **20** | **12** | **32** | **10** |

***Conclusion***

Hence, the above costs are considered by a business to produce its commodity. The different types of costs have their own significance. The various combination of inputs and outputs are considered when the cost of a product or service is determined which help in taking business decisions.

**Solution for Question: 3a**

***Introduction***

Income elasticity of demand measures the responsiveness of the quantity demanded of a commodity with respect to a change in income of the consumer. It can be positive, negative or even non-responsive (i.e., 0 income elasticity of demand).

***Concept and Application***

Mathematically, income elasticity is expressed as

**Income elasticity of demand =**

were,

Percentage change in quantity demanded =

and

Percentage change in consumer income =

Hence, **Ei =**

Initial Income = Rs. 20000

Final Income = Rs. 25000

= Rs (25000 - 20000) = Rs 5000

Initial Quantity of cloth, = 40 units

Final Quantity = 60 units

= (40 - 20) units = 20 units

Substituting the formulae in the above Equation,

Ey  = / = \* = 2.0

**Income elasticity of demand Ey = 2.0**

***Conclusion***

Since the above **income elasticity of demand is 2**, the demand is **positive and more than unitary**. It means that a proportionate change in the income of the consumer results in a considerably large increase in demand for clothes.

**Solution for Question: 3b**

***Introduction***

Price elasticity of demand is the ratio of the change in the quantity demanded of a commodity with the effect of change in its price. Simply put, it measures how the demand changes when there is a change in price. Its value can be positive, negative or even zero.

***Concept and Application***

Mathematically, price elasticity is expressed as

**Price elasticity of demand =**

were,

Percentage change in quantity demanded =

and

Percentage change in price =

Hence, **Ep =**

Initial Price = Rs. 500

Final Income = Rs. 400

= Rs (500 - 400) = Rs 100

Initial Quantity of product, = 20000 units

Final Quantity = 25000 units

= (25000 - 20000) units = 5000 units

Substituting the formulae in the above equation,

Ep **==**  = \* = 1.25

**Price elasticity of demand Ep = 1.25**

***Conclusion***

Since the above **price elasticity of demand is 1.25**, the elasticity of demand is **positive and more than unitary**. It means that a proportionate change in the price of the product results in a large increase in its demand.