MANAGERIAL ECONOMICS

FINAL EXAM

SIR ZAFAR UL HAQ

SHARJEEL SHAH

ID # 16682

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Q#1

Cost is generally taken into aspect from the firm's, company or sellers point of view in managerial economics. It refers to the amount of money incurred in the production of a commodity or a service. The total aggregate of all the factors in the production like transportation, electric bills of the machines, labour and all other factors are included to reach to an amount which can be termed as cost. In order for further explanation, these are all the expenses incurred by the business while in the process of supplying services and goods to the consumer. There are different types of cost:

- Opportunity cost and actual cost
- Direct and indirect cost
- Explicit and implicit cost
- Historical and replacement cost
- Fixed cost and variable cost
- Real and prime cost
- Total, average, and marginal cost

DIFFERENCE BETWEEN THE FOLLOWING COSTS

1. **Fixed and Variable Cost**

Fixed costs refer to the amount spent by the business or seller on fixed inputs like rents, interests, maintenance, and administrative expenses. Fixed cost remains constant irrespective of the sales and revenue generated by the firm or business and is graphically represented as a horizontal straight line. For example, the rent of the building is fixed irrespective of the fact of the level of output and its revenue generation, thus this comes under the sphere of fixed cost.

While on the other hand, variable costs are the costs that are spent on various other factors which are variable and are related to the level of output and sales of a business and thus they tend to change accordingly. These include price of raw materials, sales taxes and duties, transportation charges etc. These costs keep on changing hence the term variable cost and they effect the level of output and sales and are directly proportional to them. For example, the price of fuel hike will cause the transportation cost to increase and thus the overall level of output and revenue is also affected by it, that is one example of variable cost.

2. **Direct and Indirect Cost**

Direct cost corresponds to the costs which can easily be connected to a specific cost object, which might be a product or service. This includes software, equipment and raw materials, labor etc. For instance, if an employee is designated to work on a specific project for an assigned number of hours, his labour on that project is a direct cost. If a firm develops software or development applications, those are direct costs.

While Indirect Costs Indirect costs extend beyond the expenses that are spent in creating a product to include the costs involved with sustenance and running of a company. The materials and supplies needed for a business everyday operations are examples of indirect costs. Though these commodities contribute to the business as a whole, they are not assigned to the creation of any one service. Indirect costs include supplies, utilities, office equipment, rents, and other such accessories etc.

3. **Explicit and Implicit Cost**

Explicit costs are the cost incurred by hiring resources from outside the organization or business itself in the process of production. It is also called as out of pocket costs. Examples include, electricity bills, salaries, cost of raw materials, rent and interest etc.

While on the other hand, Implicit costs are the expenses incurred in the usage of the self owned resources of organization that are used in production. They aren't properly defined or reported as expenses. An example of an implicit cost is time spent on one activity of a business that could better be spent on a different pursuit. Management will compute implicit costs only for decision-making or choosing between different alternatives.

4. **Actual and Opportunity Cost**

Actual Costs or Outlay Costs or Absolute Costs mean the actual amount of expenses incurred for producing or acquiring a good or service. These are the costs which are generally recorded in the books of accounts for cost or financial purposes such as payment for wages, raw-materials purchased, other expenses paid etc. This could be the historical, past, or present-day cost of the product. This is not the budgeted or forecasted costs that management has anticipated as they might include vendor expenses like the costs of delivery, set up and testing. These costs also reflect factors like vendor discounts or

price increases. For example, an laptop repairing shop may estimate that laptop repairs will cost Rs 5000, but the actual cost may actually be Rs 6000. A customer might not be aware of the actual cost until the expenses are incurred during the repairs.

While, Opportunity costs represent the benefits an individual, investor or business misses out on when choosing one alternative over another.
While financial costs do not show opportunity cost, business owners can use it to make educated decisions when they have multiple options before them. For instance, If a person buys a HP laptop instead of Lenovo Laptop, then the Lenovo laptop that he foregoes is the opportunity cost. Another example could be that you spend time and money going to a movie, you cannot spend that time at home reading a book, and you can't spend the money on something else.

Q#3(a)

Regression basically means the dependency of one variable over another variable. Regression analysis refers to a method of mathematically sorting out which variables may have an impact. It shows the dependency of dependent variable or endogenous variable on the independent variable or explanatory variable. This phenomenon is termed as regression. The importance of regression analysis in managerial economics is that it helps determine which factors matter most, which it can ignore, and how those factors interact with each other. The importance of regression analysis in managerial analysis lies in the fact that it provides a powerful statistical method that allows a business to examine the relationship between two or more variables of interest. The benefits of regression analysis are multiple in managerial economics:
The regression method of forecasting is used for, as the name implies, forecasting and finding the causal relationship between variables. An important related, almost identical, concept involves the advantages of linear regression, which is the procedure for modelling the value of one variable on the value(s) of one or more other variables.

Understanding the importance of regression analysis in managerial economics, the advantages of linear regression, as well as the benefits of regression analysis and the regression method of forecasting can help a small business, and indeed any business, gain a far greater understanding of the variables (or factors) that can impact its success in the coming weeks, months and years into the future. The importance of regression analysis is that it is all about

data: data means numbers and figures that actually define your business. The advantages of regression analysis is that it can allow you to essentially crunch the numbers to help you make better decisions for your business currently and into the future. The regression method of forecasting means studying the relationships between data points, which can help you to:

- Predict sales in the near and long term.
- Understand supply and demand.
- Review and understand how different variables impact all of these things.

Companies might use regression analysis to understand, for example:

- Why sales dropped or increased in the past year or even the past month.
- Predict what sales will look like in the future.
- Whether to chose one marketing promotion over another.
- Whether to expand the business or create and market a new product.

The benefit of regression analysis is that it can be used to understand all kinds of patterns that occur in data. These new insights may often be very valuable in understanding what can make a difference in your business.

Q#3(b)

$Y = = a + bX$

$b = \text{sum } (X-\bar{X})(Y-\bar{y})/\text{sum } (X-\bar{X})^2$

$a = \bar{y} - b\bar{X}$

N= 9

EXCEL RESULTS

X	Y	X-$\bar{X}$	Y-$\bar{y}$	(X-$\bar{X}$)(Y-$\bar{y}$)	(X-$\bar{X}$)^2
100	25	-1183.33333	-218.33333	258361.1111	1400277.78
250	55	-1033.33333	-188.33333	194611.1111	1067777.78
500	68	-783.333333	-175.33333	137344.4444	613611.11
800	90	-483.333333	-153.33333	74111.11111	233611.11
1050	122	-233.333333	-121.33333	28311.11111	54444.44

	1300	200	16.66666667	-43.333333	-722.2222222	277.78
	1650	280	366.6666667	36.6666667	13444.44444	134444.44
	2400	450	1116.666667	206.666667	230777.7778	1246944.44
	3500	900	2216.666667	656.666667	1455611.111	4913611.11
Sum	11550	2190			2391850	9665000
Mean	1283.333	243.3333				

	X	Y	X-X̄	Y-ȳ	(X-X̄)(Y-ȳ)	(X-X̄)^2
	100	25	=C3-C15	=D3-D15	=E3*F3	=E3^2
	250	55	=C4-C15	=D4-D15	=E4*F4	=E4^2
	500	68	=C5-C15	=D5-D15	=E5*F5	=E5^2
	800	90	=C6-C15	=D6-D15	=E6*F6	=E6^2
	1050	122	=C7-C15	=D7-D15	=E7*F7	=E7^2
	1300	200	=C8-C15	=D8-D15	=E8*F8	=E8^2
	1650	280	=C9-C15	=D9-D15	=E9*F9	=E9^2
	2400	450	=C10-C15	=D10-D15	=E10*F10	=E10^2
	3500	900	=C11-C15	=D11-D15	=E11*F11	=E11^2
Sum	=SUM(C3:C11)	=SUM(D3:D11)			=SUM(G3:G11)	=SUM(H3:H11)
Mean	=AVERAGE(C3:C11)	=AVERAGE(D3:D11)				

b= sum (X-X̄)(Y-ȳ)/sum (X-X̄)^2

Putting Values b=2391850/9665000=0.24748

a= ȳ- bX̄

a= 243.33 - (0.247*1283.33) = -73.65

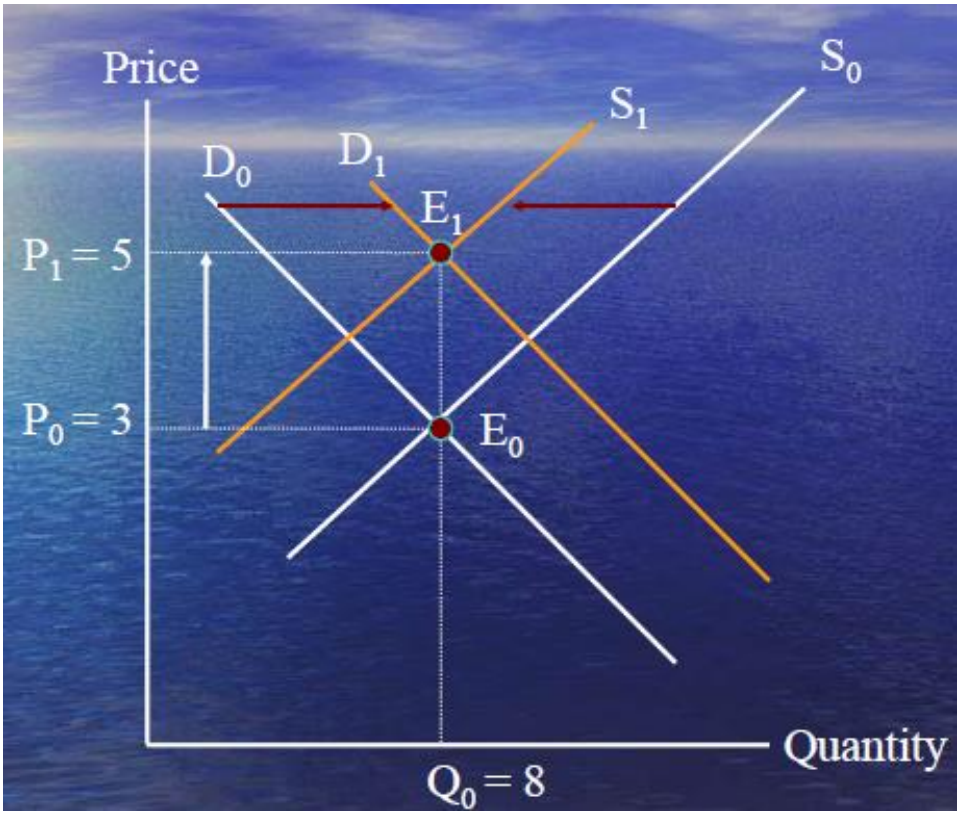
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.969881417							
R Square	0.940669963							
Adjusted R Square	0.932194243							
Standard Error	73.03022898							
Observations	9							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	591924.0996	591924.1	110.9840829	1.5159E-05			
Residual	7	37333.90041	5333.414					
Total	8	629258						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-74.26013106	38.74830441	-1.91647	0.09683082	-165.8853114	17.36504926	-165.8853114	17.36504926
X Variable 1	0.247475427	0.023491012	10.5349	1.5159E-05	0.191928009	0.303022844	0.191928009	0.303022844

INTERPRETATION

The value of beta is 0.25 so it means that so it means that for every one unit increase in X (Independent Variable), the value of Y (Dependent Variable) will increase by 0.25 times. The value of R squared is 0.94 which depicts that 94% of the variation in Y (Dependent Variable) is explained by X (Independent Variable).

Q#2(a)

In the advent of COVID-19, there is a shortage of facemask in the market which leads to a decrease in supply. Decrease in the supply would prompt the businesses to increase their supply of facemasks which will lead the prices to be increased along with the quantity as per the law of supply. The Supply curve will shift to the left side in the equilibrium diagram. Simultaneously, due to this situation the demand will also be affected. The Demand for the face masks will increased causing an increase in price and decrease in the quantity as per the law of demand. The Demand curve will shift to the right in this case in the equilibrium diagram. Below depicts the effect of such a situation on the equilibrium point and condition.



Since in this scenario, the shortage in supply would be equal to the rise in demand, so the quantity will remain constant eventually as the quantity increased due to increase in supply will also be decreased simultaneously due to the increase in demand, while the prices will increase due to both increase in supply and increase in demand.

Q#2(B)

Variables can basically be defined as attributes of object or study. It can be a characteristic, number, or quantity that increases or decreases over time, or takes different values in different situations. A variable represents a concept or an item whose magnitude can be represented by a number, i.e. measured quantitatively. Variables are called variables because they vary, i.e. they can have a variety of values. Thus, a variable can be considered as a quantity which assumes a variety of values in a particular problem. There are generally two types of variables used in managerial economics:

- **Independent Variable**
- **Dependent Variable**

The difference between the dependent and independent variable are as follows:

The Independent variable is also called as explanatory, regressor or exogenous variable, while the dependent variable is also termed as predictand, response and endogenous variable because the dependent variable is explained by the Independent variable as the independent variable value is already known to us and we find the value of the dependent variable or the effect of independent variable on the dependent variable through mostly regression analysis. If two or more variables are involved, then we find the value of the dependent variable through regression analysis by finding the effect of one variable by keeping other constant on the dependent variable. Hence we can calculate how these Independent variables individually have an effect on the outcome of the dependent variable, and we can also find the combined effect of all the independent variables on the dependent variable as per our demand and choice. Let's assume a household, we find the effect on the consumption of that household if the income and household size are increased. So, in this case the dependent Variable is the Consumption while the Independent variables are income and household size and we can find the cause and effect of these independent variables on the dependent variable i.e. expenditure through regression analysis and see the trends and interpret it easily through that by doing it on SPSS.